EMIDWORLD CONGRESS

13-15 NOVEMBER

EMİDWORLD'25

BAKU

PROCEEDINGS BOOK

Editors: Ali KESTANE-Adil AKINCI

2025

AFRO-AVRASYA YAYINLARI

NOVEMBER 13-15 2025 /BAKU

EMIDWORLD'25

PROCEEDINGS BOOK

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EMIDWORLD'25 PROCEEDINGS BOOK
Editors
Assoc. Prof.Dr. Ali KESTANE
Prof. Dr. Adil AKINCI
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EMIDWORLD'25
3th International Congress on Economics Public Finance Business & Social Sciences
13-15 NOVEMBER 2025
BAKU/ AZERBAİJAN
E-mail: info@emidworld.com
www.emidworld.com

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About the Congress

Dear EMIDWORLD Conference delegates,

The EMIDWORLD'25 International Congress on Economics, Public Finance, Business Administration, and Social Sciences was successfully held in Baku, the capital of the Republic of Azerbaijan, on November 13–15, 2025, with the aim of strengthening international academic cooperation and scientific interaction. Organized through the collaboration of Kilis 7 Aralık University and Baku State University, this scholarly event made significant contributions to contemporary scientific discourse through its interdisciplinary framework.

Within the scope of the congress, a total of **278 scientific papers** were presented with the participation of academics and researchers from **33 different countries**, and current theoretical and applied issues in the fields of economics, public finance, business administration, and social sciences were comprehensively discussed with more than **350 participants**. The convergence of diverse academic traditions, methodological approaches, and research perspectives further enhanced the scientific quality and international visibility of the congress.

All submitted papers were meticulously evaluated in accordance with the criteria of originality, scientific methodology, compliance with ethical principles, and contribution to the relevant fields. This rigorous evaluation process reinforced the academic credibility and scientific prestige of the congress. The present Abstracts Book aims to serve as a permanent and reference source for researchers by systematically compiling the core findings and research frameworks of the studies presented at the congress.

On this occasion, I would like to extend my sincere gratitude to Baku State University for its academic and institutional support, to the administration of Kilis 7 Aralık University, to the esteemed members of the scientific and organizing committees, to our reviewers and session chairs, and to all authors who contributed to the congress with their valuable scholarly work. I firmly believe that the EMIDWORLD'25 Congresses will continue to advance as a sustainable academic platform that promotes international collaboration, joint research, and a strong culture of scholarly publication.

With the hope that this **Proceeding Book** will contribute to scientific research, inspire future studies, and foster interdisciplinary interaction, I respectfully submit my regards.

On behalf of the EMIDWORLD'25, I wish to see all of you at our next conference to be held in **Turkish Republic of Northern Cyprus**.

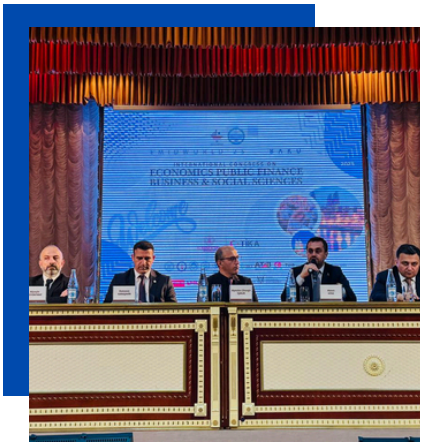
Yours sincerely.

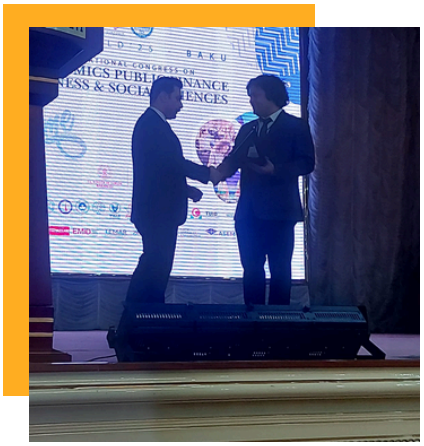
Assoc. Prof. Dr. Ali KESTANE

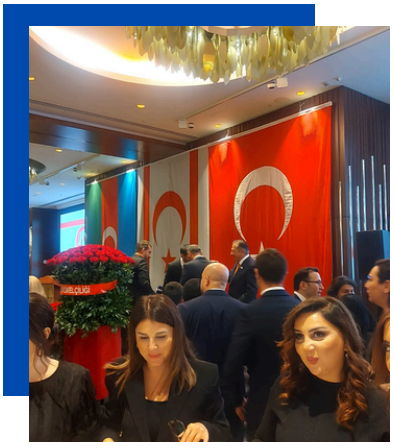
Chair of the Organizing Committee

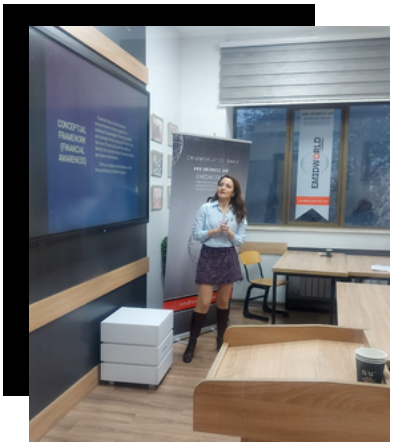
Photo Gallery

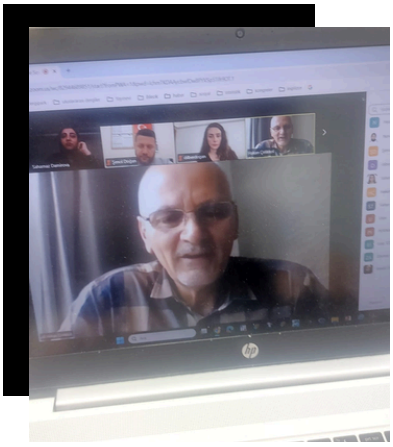
Photo Gallery











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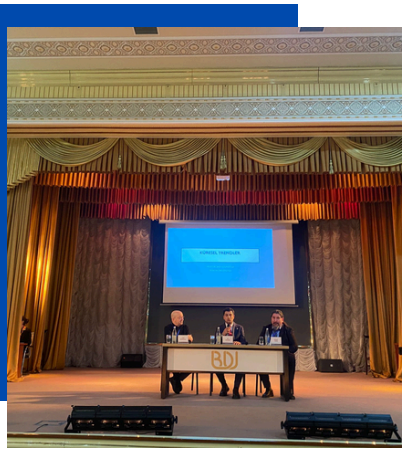

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EMIDWORLD CONGRESS

PROGRAMME (Oral-FacetoFace Presentations)

EMIDWORLD INTERNATIONAL CONGRESS ON ECONOMICS PUBLIC FINANCE BUSINESS & SOCIAL SCIENCES

13-15 NOVEMBER 2025 / BAKU-AZERBAİJAN

13 November 2025, THURSDAY	
09.00-10.00	**Introduction - Registration**
10.00-11.20	**Opening Ceremonies - Music Recital** **Protocol Speeches** Prof. Dr. Elçin Səfəralı oğlu BABAYEV - Bakü Devlet Üniversitesi Rektörü Prof. Dr. Zekeriya AKMAN – Kilis 7 Aralık Üniversitesi Rektörü Doç. Dr. Ali KESTANE- Kongre Düzenleme Kurulu Başkanı Abdullah EREN - TİKA Başkanı / Vekili Erhan UFAK - Türk Sanat Akademisi TSA / Başkanı Erhan UFAK Sanatçı Suat ÖNAL - Osmaniye Milletvekili (24.25., 26. Dönem) Prof. Dr. Birol AKGÜN – Bakü Türk Büyükelçisi Prof. Dr. Serdar YURTSEVER - Girne Amerikan Üniversitesi Rektörü Prof. Dr. Ahmet Vecdi CAN - Uluslararası Vizyon Üniversitesi Rektörü Prof. Dr. Süleyman KIZILTOPRAK - Kütahya Dumlupınar Üniversitesi Rektörü Prof. Dr. Levent KANDILLER - Yaşar Üniversitesi Rektörü Prof. Dr. Rengin AK - Kırklareli Üniversitesi Rektörü Prof. Dr. Mehmet Hasan EKEN - TEMAR Vakfı Başkanı Hüseyin BÜYÜKFIRAT - TUİB Başkanı Mursel RUSTAMOV - ATİB Başkanı Ramazan KARAŞAHIN - UID Başkan Vekili Ahmet KÖSE - T3 Vakfı, Teknofest, BAYKAR Türkiye Direktörü

Opening Panel Session		
	“GLOBAL ECONOMY: TRENDS & PROSPECTS”	
11.30-12.30	HALL I	Keynote Speakers: **Prof. Dr. Sadi UZUNOĞLU – Prof. Dr. Ahmet ATAKİŞİ** Moderator: **Doç. Dr. Ali KESTANE**

12.30-13.30	**LUNCH BREAK**

SESSION CHAIR: Assoc.Prof.Dr. Ali KESTANE		
13:30 - 15.00	Session 1 Hall 1	The Relationship Between Intercultural Communication Anxiety and Academic Success: The Case of International Students - Asst.Prof.Dr. **Ali ÖZBEK** - Asst.Prof.Dr. **Nurgül ERDAL**
		The Impact of Artificial Intelligence Use in Accounting Applications on Information Security - Assoc.Prof.Dr. **Ali KESTANE** - Asst.Prof.Dr. **Ali ÖZBEK**
		The Predictive Enterprise: Integrating AI-Supported Lean Transformation and Smart Quality Management in High-Stakes Industries – Prof. Dr. **Yusuf GÜMÜŞ** - **Aytaj MAMMADOVA**
		International Studies on Greenwashing: A Bibliometric Analysis - Asst.Prof.Dr. **Meryem USLU**
		A Comparison of Public Health Insurance Systems in Türkiye and Azerbaijan; An Evaluation on General Health Insurance and Compulsory Medical Insurance - Asst. Prof.Dr. **Ali ÜNAL** - Expert **Ravil Tagiyev**
		Examination of Azerbaijan and Turkey Health Expenditures, Health Investments and Health Indicators with Time Series Analysis- Asst. Prof.Dr. **Ali ÜNAL** - Expert **Ravil Tagiyev**
		Alignment of Corporate Sustainability Reporting Frameworks: Comparative Study of GRI, ESRS, and TSRS – Prof. Dr. **Niyazi KURNAZ –** Student **Vuqar DAVİDOV**
SESSION CHAIR: Prof. Dr. Mehmet Hasan EKEN		
13.30 - 15.00	Session 1 Hall 2	The Impact of Dividend Policy on Financial Performance: An Analysis of the Bist Banking Index – Asst. Prof. Dr. **Ferit KARAHAN –** Expert **Ecrin ŞARK**
		Bibliometric Analysis of Studies in the Field of Risk Management with Multi-Criteria Decision Making Techniques –Ph.D. **Zeliha OKÇU** – Prof. Dr. **Gülnur KEÇEK**
		Türkiye's Commercial Diplomacy Activities in Azerbaijan: The Role of Business Associations – Asst. Prof. Dr. **Alptekin Cihangir İŞBİLİR**
		Some Issues of Efficiency Increase in Oil and Gas Resources Usage in Azerbaijan – Asst. Prof. Dr. **Nasimi AHMADOV**
		Current Status of Socio-Economic Development in the Karabakh Economic Region - Expert **Svetlana NAJAFLI**
		Innovative Agriculture: Balanced Regional Development and Food Security – Ph.D. **Vilayet RAMAZANOV**

15.00-15.15 COFFEE BREAK

SESSION CHAIR: Prof. Dr. Ahmet ATAKİŞİ		
15.15 - 16.45	Session 2 Hall 1	Assessment of the impact of Oil and Gas Resources on Azerbaijan's Position on Energy Security in the World Energy Trilemma Index - Asst. Prof. Dr. **Nasimi AHMADOV**
		The Assessment of Tourism Potential of Nakhchivan Autonomous Republic - Expert **Tural MEMMEDOV**
		Empirical Findings on Türkiye's Energy Imports – Asst. Prof. Dr. **Süreyya KOVACI**
		Türkiye in the Shadow of Global Warming: Strategic Dynamics of Carbon Emissions on Water Efficiency – Asst. Prof. Dr. **Sabiha OLTULULAR**
		The Effect of Intercultural Communication Anxiety of Foreign Students from Türkiye's Neighborhoods on Psychological Well-Being - Asst.Prof.Dr. **Ali ÖZBEK** - Asst.Prof.Dr. **Nurgül ERDAL**
		Green Financial Instruments and Sustainable Investment Models İn Capital Markets – Asst. Prof. Dr. **Günay RƏSULOVA**
SESSION CHAIR: Prof.Dr. Sadi UZUNOĞLU		
15.15 - 16.45	Session 2 Hall 2	Global Management Mechanisms of National Economic Security in Conditions of Global Instability - Assoc.Prof. Dr. **Lalə VƏLIYEVA**
		Competitiveness and Structural Changes in the Industrial Sector: Azerbaijan on the Path to the WTO – Lec. Ph.D. **Elshan ORUJOV**
		Azerbaijan's Travel and Tourism Development Index (2019-2024) Performance: An International Analysis in the Context of the Commonwealth of Independent States and Regional Competition - Asst.Prof.Dr. **Metin ALLAHVERDI –** Assoc. Prof. Dr. **Fatih VAROL**
		Cluster-Based Development and Cooperation Mechanisms in the Canned Food Industry of Azerbaijan: International Experience and National Adaptation – **Emilya SHUKUROVA**

16.45-17.00 COFFEE BREAK

SESSION CHAIR: Prof.Dr. Dinmukhamed KELESBAYEV		
17.00 - 18.00	Session 3 Hall 1	The Effects of Digitalization and Artificial Intelligence on the Internal Audit Function: A Theoretical and Comparative Analysis - Student **Raazia NADEEM**
		The Relationship Between Financial Awareness and Financial Expectations Among Dental Faculty Students – Student **Tuhfe ÇELİKKOL** – Asst. Prof. Dr. **Ayşe TAŞ** – Assoc. Prof. Dr. **Kader AYDIN** – Assoc. Prof. Dr. **Mediha Mine ÇELİKKOL**
		Opportunities for Using Big Data in Small and Medium-Sized Enterprises in Kazakhstan - Prof.Dr. **Dinmukhamed KELESBAYEV**
		Environmental Issues between the Conflict Over Fossil Energy and the Inevitability of Renewable Energy – Assoc. Prof. Dr. **Mouloud BELGACEMI**
SESSION CHAIR: Assoc. Prof. Dr. Aygün XƏLILQIZI		
17.00 - 18.00	Session 3 Hall 2	Behavioral Dynamics in Global Project Management: A Globe-Based Study Of Azerbaijan – Student **Khayala AHMADOVA**
		Transformation of Political Power and the Changing Nature of Power Sources in the New World Order - **Nadir MIRZALIZADE**
		Architectural Metaphors in Political Speech. - **Lec. Azar MURADZADA**
		Social Work Methods with War Victims and Soldiers in Azerbaijan – Student **Nezrin OĞUZ**
		Common Values of Ethnic Groups in the Tradition of Coexistence in Azerbaijan – Assoc. Prof. Dr. **Aygün XƏLILQIZI**

14 NOVEMBER 2025, FRIDAY

SESSION CHAIR:		**Asst. Prof. Dr. Mehmet Murat AKTAŞ**
10.00 - 11.00	Session 4 Hall 1	Reflections on the Investment Committee in Equity-Based Crowdfunding as an Alternative Financing Method in Turkish Law – Asst. Prof. Dr. **Mehmet Murat AKTAŞ**
		Islam's Solutions to Poverty and Poverty and Incentive to Work – Expert **İbrahim Halil ER** – Expert **Sıddık BADILLI**
		Leading Across Cultures: Strategies For Effective Global Project Teams – Student **Khayala AHMADOVA**
		The Impact of Digital Maturity on Sme Performance: Evidence from Cross-Country Panel Data- **Student Shabnam SAFAROVA**
		A Constructivist Analysis of the Rwanda Conflict: Identity, Securitization, And Post-Genocide Transformation- Lec.**Aytan GURBANOVA**
SESSION CHAIR: Assoc.Prof.Dr. Qalib QAFARLI		
10.00 - 11.00	Session 4 Hall 2	International Experience in Legal Regulation of The Digital Economy, The Formation of an Optimal Model for Azerbaijan-Assoc.Prof.Dr. **Ikram JABRAILOV**
		The Internationalization Process of Uzbekistan Higher Education and The International Turkic States University-Asst.Prof.Dr. **Kadir Kürşat YILMAZ**
		Reform Discourse and Human Rights Reality During the Mirzioyev Period: An International Legal Assessment-Asst.Prof.Dr. **Kadir Kürşat YILMAZ -Assoc.Prof.Dr. Yunus DÜGER**
		The Impact of National Competitiveness on Economic Security-Assoc.Prof.Dr. Aslanov Habil
		Problems Of Developing the Competitiveness of The National Economy Under Geoeconomic Configuration Conditions-Assoc.Prof.Dr. **Qalib QAFARLI**
		Causes Of Caspian Sea Level Change, Eco-Economic Impacts: Regional Sustainable Governance Perspectives. - Lec.PhD. **Nilüfer MURADOVA**

Special Session

	"AZERBAYCAN EKONOMİSİNDE SİVİL TOPLUM KURULUŞLARININ ETKİSİ"	
11.00-12.30	HALL I	Ph.D. Alptekin Cihangir İŞBİLİR – **Hüseyin BÜYÜKFIRAT** – Mursel RUSTAMOV – **Ramazan KARAŞAHİN** – Ahmet KÖSE

12.30-13.30 **LUNCH BREAK**

SESSION CHAIR: Assoc. Prof. Dr. Semra ALTINGÖZ ZARPLI		
13.45 - 15.00	Session 5 Hall 1	Digital Transformation in Azerbaijani Public Administration: Innovative Service Models Through The E-Government Gateway – Asst. Prof. Dr. **Çağdaş ZARPLI** - Student **Elif Gökçe DEMEZ**
		Application of Artificial Intelligence in Public Services: Digital Healthcare – Assoc. Prof. Dr. **Nazim IBADOV** – Student **Sunay ALIYEVA**
		The Role of Information Technologies in the Management of Modern Conflicts – Assoc. Prof. Dr. **Shafag AHMADOVA** – Student **Sara SHAHSUROVA**
		Information Security Policy of the Republic of Azerbaijan: Legal Norms and Reforms – Ph.D. **Sanubar BABASHOVA**
		The Relationship Between Digitalization and Tax Revenues in Local Governments: The Case of Bursa Metropolitan Municipality – Assoc. Prof. Dr. **Semra ALTINGÖZ ZARPLI**
SESSION CHAIR: Assoc.Prof.Dr. Zemfira AKHMADOVA		
13.45 - 15.00	Session 5 Hall 2	Multivector Foreign Policy Model: The Example of Azerbaijan **–** Lec. **Gulgun QULIYEVA**
		The Concept of Ecocolonialism in the Discourse of Postcolonialism – Assoc. Prof. Dr. **Nargiz NAGIYEVA**
		US–EU Relations in the Second Term of Donald Trump - Student **Javid IBAYEV**
		Socio-Economic Analysis of the Application of Digital Technologies in the Field of Marketing in Azerbaijan- Lec. **Khadija ZEYNALLI**
		Mechanisms Of State Regulation of Azerbaijan'S Defense Policy Within the Framework of Partnership with NATO-Student **Mamedova Shams ALIGULUEVNA**-Expert PhD. **Tahir BEHBUDOV**
		Legal Framework and Mechanisms of Migration Management in the Republic of Azerbaijan-Assoc.Prof.Dr. **Zemfira AKHMADOVA**

15.15-15.30 **COFFEE BREAK**

SESSION CHAIR: Assoc.Prof.Dr. Siti Sarawati JOHAR		
15.30 - 17.00	Session 6 Hall 1	Urban Rural Polarization and Inequality of Opportunities Sociological Perspectives on Contemporary Divides- Student **Nihad GASIMOV** -Other **Sadiq NAGIZADA**
		Linking Leading Procyclical Indicators to Business Cycles: Evidence from Azerbaijan- Lec.PhD. **Esmira AHMADOVA**
		Emotional Intelligence as A Predictor of Affective Commitment Among Employees in Public Organizations - Assoc.Prof.Dr. **Siti Sarawati JOHAR, Dr. Noranifitri MD NOR,** Dr. **Nur Azah RAZALI,** Dr. **Nurul Aimi RAZALI** Dr. **Nor Shela SALEH,** Associate Prof. Dr. **R Zirwatul Aida R IBRAHIM**
		The Role of the Budget in Public Finance Management- Prof.Dr. **Sərvər ABBASOV**

SESSION CHAIR: Assoc.Prof.Dr. Sabina GARASHOVA		
15.30 - 17.00	Session 6 Hall 2	The Effectiveness of Social Awareness Programs in Combating Violence Against Children- Res. Asst. PhD. **Aysel NAGIYEVA**
		The Role of Civil Society in Achieving the Sustainable Development Goals- Student **Ulvi HASANOV-** Lec.PhD. **Sevinc ALIYEVA**
		The Problem of Ukraine'S Sovereignty in U.S.–Russia Relations-Assoc.Prof.Dr. **Sabina GARASHOVA**
		Artificial Intelligence and Post-Humanist Epidemiology: Rethinking the Boundaries of Reason and Knowledge-Lec. **Ali BABAYEV**
		The Influence of New Media on Political Communication-Lec. **Fayrushina LEYLA**

CLOSING SESSION - Next EMIDWORLD for 2026		
17.15-18.15	HALL 1	Prof. Niyazi KURNAZ **Prof. Dr. Adil AKINCI** Assoc. Prof. Dr. Ali KESTANE

EMIDWORLD CONGRESS

PROGRAMME (Virtual Presentations)

EMIDWORLD INTERNATIONAL CONGRESS ON ECONOMICS PUBLIC FINANCE BUSINESS & SOCIAL SCIENCES

13-15 NOVEMBER 2025 / BAKU-AZERBAIJAN (**UTC/GMT +4**)

13 NOVEMBER 2025, THURSDAY		
SESSION CHAIR: Prof. Dr. Bahar ERDAL		
13:00 - 14.30	Online Session 1	The Validity of Fisher Effect in Inflation Targeting Regime in Hungary - Prof.Dr. **Bahar ERDAL**
		The Control Strategy of the National Strategic Plan in the Framework of the New Cap 2023–2027: Governance, Evaluation and Comparative Analysis Approaches at the European Union Level - Student **Antonia LAMPRIDOU**
		Climate-Induced Labor Migration: Emerging Trends and Socioeconomic Drivers - Lec.PhD. **Bahtiyor ISMOYILOV**
		Tax Philosophy: Normative Theories and Critical Insights from Turkish Practice – Student **Alper KILIÇASLAN** – Student **Esvet AKYOL**
		Development of the Modern Labor Market - PhD. **Farkhad BATIROV**
		The Macroeconomic Impact of Digital Transformation: An Empirical Analysis of Türkiye – PhD. **Hamit CAN –** Assoc. Prof. Dr. **Meltem OKUR DİNÇSOY**
		Smart Cities In China And The Eu: Localizing Experiences For Sustainable Urban Development - Prof. Dr. **Denys ILNYTSKYY –** PhD. **Olga DROBOTIUK –** Student **Vladyslav ANDRUSYK**
SESSION CHAIR: Prof.Dr. Vahid ABBASOV		
13.30 - 15.00	Online Session 2	Tax Awareness and Tax Perception Among University Students: Theoretical Framework and An Empirical Assessment - Asst. Prof. Dr. **İbrahim OLGUN** - Student **Ayşe SANCAR**
		Impact of Directive (Eu) 2024/1265 on Sustainable Resource Management Within the EU - Assoc. Prof. Dr. **Rezarta TAHIRAJ**
		The Impact Of Digitalization On The Logistics Performance Index (LPI) – Res. Asst. **Ümit GEZİCİ**
		Enhancing Economic Integration in the South Caucasus: From Preferential Trade to a Potential Free Trade Agreement between Türkiye and Azerbaijan - Asst. Prof. Dr. **Özgül UYAN**
		Macroeconomic Instability and the Regulation of Inflation - Prof.Dr. **Vahid ABBASOV**
		The Causal Relationship between Financial Development and Human Development in Turkey: An Empirical Study Using the Hatemi-J Approach - Asst.Prof.Dr. **Selin Zengin TAŞDEMIR**
		A New Bridge between the Global South and Europe: An Economic and Political Analysis of the Indonesia–EU Free Trade Agreement - Asst.Prof.Dr. **Murat OZTURK** - Student **Arina KHAIRUNISA**
SESSION CHAIR: Lec. PhD. Niculescu LILIANA		
14.00 - 15.30	Online Session 3	Reforming From within: Aligning the Hellenic Court of Audit with International Standards and Public Sector Governance Reforms – **Nikoletta NTEKA -** Student **Elisabeth ZALIMIDOU**
		Marginalization of the Punjabi Language in Pakistani News Media – **Ermir MUBASHER**
		An Analysis of Consumption Pattern of the Habitants of Chawinda, District Sialkot - Student **Moazzam BUTT**
		Green Financial Instruments and Sustainable Investment Models in Capital Markets - Asst.Prof.Dr. **Günay RƏSULOVA**
		Assessing Fiscal Strength: Tax Potential as a Factor in Azerbaijan's Macrofinancial System – Ph.D. **Leyli MELIKOVA**
		The Human Right to the Environment, A Recognized Fundamental Right - Lec. PhD. **Niculescu LILIANA**
		Leadership and Psychological Research – PhD. **Azadxan VELIZADE**

SESSION CHAIR: Prof.Dr. Amiraslanova DILARA		
14.45 - 16.15	Online Session 4	Shock Asymmetry and Risk Transmission in Pension Navs: Evidence from Romania'S Private System - Student **Daniel GUSE** - Prof. Dr. **Cristiana TUDOR** - Student **Aura GIRLOVAN** - Student **Gabriel SAIU**
		Unveiling the Economic and Financial Drivers of Sustainability in Bangladeshi Banks: Insights Using Panel Data Analysis - Assoc. Prof. Dr. **Rejaul KARIM**
		Directions for the Formation of Economic Complexes in the Process of Integration into the World Economy - Assoc. Prof. Dr. **Galandarova UMMUHABIBA**
		Analysis of the State of the Banking System and Bank Lending in Ukraine - Prof.Dr. **Vadym SHVED** - Prof.Dr. **Hanna DAVYDENKO** - Prof.Dr. **Olena OMELCHENKO** – Student **Bohdan VAPELNYK**
		Models of Management of Financial Resources in Inclusive Economic Development - Prof.Dr. **Amiraslanova DILARA**
		Governance Sustainability and Green Innovation in West Africa - Lec. PhD. **Gbenga Festus BABARINDE –** PhD. **Jimoh Charles ADEFIKAYO –** PhD. **Tajudeen Idera ABDULMAJEED - Bashir Mohammed ABDULLAHI**
		Structural Features and Dynamics of Kazakhstan's External Trade (2004–2024) - Assoc.Prof.Dr. **Mehri Khasanovna VOKHIDOVA** - Asst.Prof.Dr. **Irtaza NAWAZ**

SESSION CHAIR: Assoc. Prof.Dr. Yıldırım Beyazıt ÇIÇEN		
15.15 - 16.45	Online Session 5	Asymmetric Relationship between External Debt and Inflation in Türkiye: A Nardl Approach- Asst. Prof. Dr.**Hatice ALTINOK**
		Examining the Possibilities of a Common Fiscal Model within the Organization of Turkic States in the Light of İsmail Gaspıralı's Principle "Unity in Language, Thought, and Action" - Student **Ahmet TAŞKIN** - Assoc. Prof. Dr. **Mustafa Alpin GÜLŞEN**
		Water Governance from a Global Public Goods Perspective: Theoretical Framework, Global Issues, and Assessment of Turkey – PhD. **Özcan KARATAY**
		The Relationship Between Positional Perception and Tax Morale - Asst. Prof. Dr. **Tuğçe KAYAGIL**
		The Course of Regional Development Disparities in Türkiye Over Time: Analysis Based on 1985–2017 Sege Data - Asst. Prof. Dr. **Ümit ACAR**
		Optimal Hydroelectric Capacity and the Environmental–Fiscal Time Inconsistency: An Institutional Inference from the Barro–Gordon Model - Assoc. Prof.Dr. **Yıldırım Beyazıt ÇIÇEN**
		Income Distribution and Financial Inclusion: A Systematic Review - Asst. Prof. Dr. **Gözde NALBANT EFE**

SESSION CHAIR: Prof. Dr. Cemal ELITAŞ		
15.45 - 17.15	Online Session 6	Rural Human Capital and Social Capital in Economic Development: Teacher Mentoring as a Quadruple Helix Mechanism – PhD. **İrem GÜNEŞ**
		An Empirical Analysis of the Relationship between Bitcoin and Alternate Means of Investment: An Ardl Bounds Testing Approach – PhD. **Yusuf YILDIRIM –** PhD. **Erhan VICIL**
		Financial Instruments for Green Finance - Student **Arif Ali CAN-** Prof. Dr. **Cemal ELITAŞ**
		Analysis of Causality between Domestic Credit Volume and Employment Rate in D-8 Nations: Evidence from Konya Panel Causality Tests - Lec. PhD. **Ömer KESKİN**
		Artificial Intelligence and the Energy Sector - Prof. Dr. **Cemal ELITAŞ**
		Same Risk, Different Narrative: Comparing Key Audit Matters (Kams) and Critical Audit Matters (Cams) - Assoc. Prof. Dr. **Neriman YALÇIN**
		Potential Impacts of Türkiye's First Climate Law on the Agricultural Sector – Assoc. Prof. Dr. **Resül YAZICI**

SESSION CHAIR: Prof.Dr. İsa İPÇİOĞLU		
16.30 - 18.00	Online Session 7	Content Analysis of Theses on Organizational Ambidexterity in Turkey - Asst.Prof.Dr. **Esra ULUKÖK -** Student **Nur Nida YILMAZ TEMIZ**
		Culture in Digital Enterprises: A Conceptual Study on Data-Driven, Innovative, and Agile Organizations - Student **Kader ARMAĞAN -** Prof.Dr**. İsa İPÇİOĞLU -** Res.Asst. **Tolga ALTINTAŞ**
		The Role of Green Human Resource Management in Fostering Sustainable Development and Employee Motivation: Insights from Bulgarian Practice - Prof.Dr. **Valentin VASILEV -** Prof.Dr. **Priya SOLOMON**
		The Particularities of the Reparation o Damage Caused to The Animal Kingdom in Criminal and Contravention Proceedings – Lec. PhD. **Gugulan EVGHENIA**
		The Transformation of Migrant Education Policies in Turkey: The Implementation Process and Sustainability Dimension of the PIKTES Project – Asst. Prof. Dr. **Figen YILDIRIM**
		Evaluation of the Externalities of Last-Mile Logistics – Prof. Dr. **Hakan ÇELİKKOL** – Prof. **Aydın KAYABAŞI** – Assoc. Prof. Dr. **Hakan KİRACI**
		Animating Seci: Implicit Knowledge Connections and the Rise of AI-Driven, Self-Learning Knowledge Ecosystems - PhD. **Serif Onur YILMAZ**

SESSION CHAIR: Prof.Dr. Amiraslanova DILARA		
17.00 - 18.30	Online Session 8	Shock Asymmetry and Risk Transmission in Pension Navs: Evidence from Romania's Private System - Student **Daniel GUSE** - Prof. Dr. **Cristiana TUDOR** - Student **Aura GIRLOVAN** - Student **Gabriel SAIU**
		Unveiling the Economic and Financial Drivers of Sustainability in Bangladeshi Banks: Insights Using Panel Data Analysis - Assoc. Prof. Dr. **Rejaul KARIM**
		Directions for the Formation of Economic Complexes in the Process of Integration into the World Economy - Assoc.Prof.Dr. **Galandarova UMMUHABIBA**
		Analysis of the State of the Banking System and Bank Lending in Ukraine - Prof.Dr. **Vadym SHVED** - Prof.Dr. **Hanna DAVYDENKO** - Prof.Dr. **Olena OMELCHENKO** – Student **Bohdan VAPELNYK**
		Models of Management of Financial Resources in Inclusive Economic Development - Prof.Dr. **Amiraslanova DILARA**
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		Structural Features and Dynamics of Kazakhstan's External Trade (2004–2024) - Assoc.Prof.Dr. **Mehri Khasanovna VOKHIDOVA** - Asst.Prof.Dr. **Irtaza NAWAZ**

SESSION CHAIR: Prof.Dr. Inga COTOROS		
17.30 - 19.00	Online Session 9	Economic Growth and the Middle-Income Trap: The Critical Role of Human Capital – Prof. Dr. **Dimitar EFTIMOSKI**
		The Development of the Accounting Profession in the Republic of Moldova Through the Prism of Digitalization, Sustainability, and European Integration - Prof.Dr. **Inga COTOROS**
		Unpacking the Savings Puzzle in the Western Balkans: Remittances, Financial Depth, and Macroeconomic Stability - Asst. Prof. Dr. **Ardita BYLO**
		Shifting Shocks and Business Cycle Asymmetries – Res. Asst.Dr. **Yacouba OUATTARA** - Prof.Dr. **Jean-François ROUILLARD**
		Digital Transformation in Mena Banking: Unlocking Efficiency, Innovation, and Sustainable Sectoral Growth - Prof.Dr. **Sufian ABDEL-GADIR**
		The Chinese Debt Trap Diplomacy and Its Implications for African Economies - Asst. Prof. Dr. **Boutkhil GUEMIDE**
		The Relationship between Ethnic Fragmentation and State Weakness: A Case Study on Somalia - Asst. Prof. Dr. **Boutkhil GUEMIDE**
		Demographic Change and Economic Growth in Egypt - Asst.Prof. Dr. **Manar MOHAMED**
		The Role of Territorial Economic Intelligence in Boosting Investment in Developing Countries: A Conceptual Framework - Asst. Prof. Dr. **Oumama BOUABDI**

SESSION CHAIR: Assoc. Prof. Dr. Ezgi DEMIR		
18.15 - 19.45	Online Session 10	Analysis of Marketing Focus in Sustainability Reports: A Content Analysis on the Bist Food Sector - Asst. Prof. Dr. **Ali Erhan ZALLUHOĞLU**
		Leadership and Organizational Flexibility in the Age of Digital Transformation: A Theoretical Evaluation Via Literature Review – PhD. **Kemal HEYBET**
		Analysis of Financial Satisfaction in the Context of Social Position - Asst. Prof. Dr. **Tuğçe KAYAGIL**
		The Relationship between Green Finance, Renewable Energy, and Global Warming: Evidence from Selected G20 Countries - Student **Emine POLAT**
		Digital Leadership in Action: The Interplay of Digital Literacy and Creative Work Climate on Innovative Work Behavior - Student **Saiful ISLAM** - Prof.Dr. **Tarik RAIHAN** - Student **Md. TAREK**
		Inclusive Tourism: Accessibility for People with Disabilities - Student **Marjona AMONOVA** - Asst.Prof.Dr. **Irtaza NAWAZ**
		Cyber Threat Detection and Incident Response Automation with Open Source Tools (Implementation) - Student **İslam YENER** - Assoc. Prof. Dr. **Ezgi DEMIR**
		Enhancing Sustainable Religious Tourism Through Smart Tourism Technologies: Evidence from Heritage Sites in Pakistan - Asst.Prof.Dr. **Irtaza NAWAZ**

14 NOVEMBER 2025, FRIDAY

SESSION CHAIR: Prof. Dr. Cemal ELITAŞ		
10.00 - 11.30	Online Session 11	Greenwashing - Prof. Dr. **Cemal ELITAŞ**
		Detection and Prevention of Cryptocurrency Frauds Using Artificial Intelligence - Assoc. Prof. Dr. **Burhan GÜNAY**
		Mixed Curvature Utility: Concavity for Some Commodities and Convexity for Others - Asst. Prof. Dr. **Umut KESKİN**
		Firm-Level Factors Affecting Stock Prices: The Brics-T Case - Asst. Prof. Dr. **Mehmet AKARÇAY**
		The Effects of Social, Economic, and Institutional Factors on Net Migration: A VAR Analysis Approach – The Case of Turkey - Asst. Prof. Dr. **Zeki YILMAZ** – PhD. **Taleh MAMMADOV**
		Auditing 5.0 - Prof. Dr. **Cemal ELITAŞ** – Student **Zehra DEMIRDAŞ**
		Operating, Financial, and Combined Leverage: A Study on the Bist Automotive Sector - Lec. PhD. **Nazif AYYILDIZ**
		Corporate Water Management and Disclosures: Findings From Cdp Data in Turkey - Lec. PhD. **Rıdvan SEZGİN**

SESSION CHAIR: Prof.Dr. İdil Özlem KOÇ		
10.30 - 12.00	Online Session 12	Estimating Esg Scores of Companies in the Bist Sustainability Index Using Machine Learning Methods – PhD. **Mehmet ATEŞ** - Prof.Dr. **İdil Özlem KOÇ**
		Exploring Corporate Esg Transformation in the Türkiye Insurance Sector - Asst. Prof. Dr.**Yunus BÖLÜKBAŞI**
		Research on Regional Economic Theory and Realistic Transformation Under the Digital Economy - Assoc. Prof. Dr. **Peng XINGE** - Assoc. Prof. Dr. **Zulaykho KADIROVA** - Assoc. Prof. Dr. **Sulkhiya GAZIEVA**
		The Effect of Money Supply on Inflation: Examples From Developing Countries – Lec. **Mehmet Veli KOYUNÇU**
		The Relationship between Green Finance, Renewable Energy, and Global Warming: Evidence From Selected G20 Countries - Student **Emine POLAT** - Assoc. Prof. Dr. **Erkan ALSU**
		Analysis of Cash Flow Profiles of the Businesses in the Scope of the Cash Flow Operations Model: An Application in Borsa Istanbul - Prof.Dr. **Şakir SAKARYA** - Expert **Kazım BOZTAŞ**
		Evaluation of the Green Sukuk Market in Türkiye as a New Debt Instrument - Prof.Dr. **Şakir SAKARYA** - Expert **Bekir ABACI**
		Determinants of the Capital Adequacy Ratio: A Toda–Yamamoto Causality Analysis for the Turkish Banking Sector - Asst. Prof. Dr. **Halit YALÇIN**

Special Session	
	"TURK DUNYASI OZEL OTURUMU"
11.00-13.00	**Assoc. Prof. Dr. Sezer BOZKUŞ KAHYAOĞLU, Asst. PhD. Nurzhan ABISHOV, Prof. Dr. Bobur SOBIROV, Prof. Dr. Jabrayıl VELIYEV, Prof. Dr. Junus GANIEV, Prof. Dr. Razia ABDIEVA, Asst. Prof. Dr. Aynura TURDALIYEVA, Prof. Dr. Hasan Fehmi BAKLACI, Asst. Prof. Dastan ASEINOV** **https://meet.google.com/irk-uixv-idf**

SESSION CHAIR: Prof.Dr. Jaouad RIAD		
11.00 - 12.30	Online Session 13	Ahidous Beyond Folklore: Reclaiming Amazigh Artistic Agency – PhD. **Mbarek Oukhouya ALI**
		The Language of Signs: How Do Ancient Symbols Survive Today Via Media? - Lec. PhD. **Başak ÖZKER**
		Artificial Intelligence Use in Moroccan Academic Writing: A Comparative Study of English Department MA Students at Mohammed V and Hassan II Universities - Prof.Dr. **Abdelkrim MOUAZIZ**
		To Cheat or Not to Cheat: Ensuring Academic Integrity in the Era of Chatgpt - Prof.Dr. **Jaouad RIAD**
		Thematic Evolution Analysis of System Dynamics Studies in the Research Fields of Operations Research, Management Science, and Business Economics - Res. Asst. PhD. **Gülper BASMACI AKTUNA**
		Global Warming? Global Cooling? How Should Countries Prepare for This Process? - Prof.Dr. **Ahmet OĞUZ –** Assoc. Prof. Dr. **Gülçin GÜREŞÇİ**
		Impacts of Artificial Intelligence Applications on Health Systems and Nursing Services from a Health Economics Perspective – Student **Emine Buse KURNAZ** – Asst. Prof. Dr. **Deniz YİĞİT** – Assoc. Prof. Dr. **Emel SEZİCİ**
		A Constructivist Approach to Enhancing Vocabulary Learning and Interaction Through Blooket In Moroccan Efl Classes – PhD. **Ismail ELBYAD**
		University Students' Attitudes Toward Artificial Intelligence: Strategic Approaches in the Digital Transformation Process - Asst. Prof. Dr. **Seda GÖKDEMIR EKICI -** Asst. Prof. Dr. **Mustafa Abdül Metin DINÇER**
SESSION CHAIR: Prof. Dr. Sandeep KUMAR		
11.45 - 13.15	Online Session 14	Technology, Labor, and Growth: An Analysis of Ict-Driven Employment Trends in South Asia - Lec. **Mubasher ALI**
		Influence of Social Media Marketing on Consumer Decision-Making - Prof. Dr. **Sandeep KUMAR**
		AI-Driven Marketing Analytics for Predicting Consumer Trends - Asst. Prof. Dr. **Sweta BAKSHI**
		Overcoming Energy Disequilibrium: A Review of Some Experiences - Prof.Dr. **Saeed RASEKH**I - PhD. **Seyyedeh Soheila Miri LEDARI**
		Lost Added Value of Industries Due to Energy Imbalance in Mazandaran Province, Iran - Prof.Dr. **Saeed RASEKH**I - Student **Roya SAEDI**
		The Role of Organizational Culture in Enhancing Institutional Performance – Asst. Prof. Dr. **Samyiah HANI**
		Examining the Relationship between Psychological Distress, Aggression, Shyness, and Well-Being in Adolescents - **Lec. Metanet ALIEVA**
SESSION CHAIR: Prof. Dr. Yeliz MERT KANTAR		
12.15 - 13.45	Online Session 15	Analyzing Spatial Heterogeneity in Turkish Unemployment Rates: A Geographically Weighted Regression Approach - Asst. Prof. Dr. **İbrahim ARIK** - Prof. Dr. **Yeliz MERT KANTAR**
		Gender and Justice in Supplier–Buyer Relationships - Asst. Prof. Dr. **Nihan ÖZKAN**
		Thematic Evolution in Disassembly Line Balancing Research: Co-Word Analysis - Res. Asst.Dr. **Serkan GENÇ**
		How Much Weight Can A Young Body Carry? Decent Work and Chain Market Workers in Turkey - Assoc. Prof. Dr. **Suzan URGAN** - Assoc. Prof. Dr. **Aysel ÇETİNDERE FİLİZ**
		Animating Seci: Implicit Knowledge Connections and the Rise of Ai-Driven, Self-Learning Knowledge Ecosystems – PhD. **Serif Onur YILMAZ**
		Employment and Career in Tourism - Asst.Prof.Dr. **Hümeyra TAŞÇIOĞLU**
		The Load on the Entrepreneur's Shoulders: Entrepreunerial Loneliness – PhD. **Burcu YİĞİT**
SESSION CHAIR: Assoc. Prof. Dr. Mehmet Vahit EREN		
12.45 - 14.15	Online Session 16	The Relationship between Food Inflation and Renewable Energy Consumption: An Econometric Analysis of the Turkish Economy - Assoc. Prof. Dr. **Mehmet Vahit EREN -** Student **Fatma KARTAL**
		Evaluation of Recreational Hot Water Use in Thermal Hotels in Kütahya in Terms of Sustainability and Economy – Student **Mert TESTERE**
		The Effect of Income Sources on Inequality and Measurement Scales: An Empirical Study Based on Turkish Income and Living Conditions Survey Microdata - Asst. Prof. Dr. **Taylan AKGÜL**
		Examining the Savings, Expenditures and Investments of Individuals in Terms of Sustainability During the Covid-19 Period - Prof. Dr. **Doğan KUTUKIZ** - Assoc. Prof. Dr. **Yakup ÜLKER** - Student **Ebru OKÇU** - Student **Beyaz Simge ÇALIK**
		Assessing Economic Growth Dynamics Through Green Finance and Institutional Quality: A Novel Mmqr Analysis – PhD. **Peter Oluwasegun IGUNNU -** Asst. Prof. Dr**.Mumtaz ALI -** Prof.Dr. **Mehdi SERAJ**
		Econometric Analysis of Human Flight and Brain Drain Determinants: Evidence from the Fragile States Index, 2006–2023 - Asst. Prof. Dr. **Irtaza NAWAZ**
		Economic Fluctuations and Sales Growth: The Role of Foreign Ownership Structure - Asst. Prof. Dr. **Özcan ÖZKAN**
		The Trans-Caspian International Transport Route (Tcitr) in the Context of the Development of the Middle Trade Corridor- Assoc. Prof. Dr. **Afet SEFEROVA**
SESSION CHAIR: Prof. Dr.Hakan ÇELİKKOL		
13.30 - 15.00	Online Session 17	Green Investments and Green Financing – Prof. Dr.**Hakan ÇELİKKOL** – Student **Novia Sari SYAHRİAL**
		Humanitarian and Economic Assessment of Enhancing the Disaster Resilience of Individuals with Special Needs - Assoc. Prof. Dr. **Gülçin GÜREŞÇİ –** Prof.Dr. **Ahmet OĞUZ**
		Financial Inclusion: Introduction and Overview - Asst. Prof. Dr.**Ramzi Abdullah Ahmed HASSAN**
		Causal Relationships between Global Supply Chain Pressure, Bist Transportation Index, and Cds Spreads - PhD. **Dilber DOĞAN** - Lec. **Şenol DOĞAN**
		Order Cost Method in Cost Accounting: Theoretical and Literature Review - Student **Edip İĞDE** - Assoc. Prof. Dr. **Murat KARAHAN**
		Effects Of Exchange Rate Movements on Manufacturing Exports in Relation to Trade Direction and Technology Intensity of Sectors – PhD. **Saharnaz DAMIROVA - Assoc. Prof. Dr. Duygu YOLCU KARADAM**
		The Dynamic Relationship between the Logistics Confidence Index and Firm Performance: An Analysis on Bist 100 - Lec. **Şenol DOĞAN –** Ph. D. **Dilber DOĞAN**
		Optimal Portfolio Selection Using the Social Spider Optimization Algorithm: An Example with Bist30 - Lec. **Safiye TOP**

SESSION CHAIR: Prof. Dr. Arzu AL		
14.00 - 15.30	Online Session 18	Conceptual Stalemate in International Relations: Understanding the Transformation of the Global Order through Traditional Theoretical Perspectives – Prof. Dr. **Arzu AL** – PhD. **Yusuf Girayalp ATAN**
		Online Accountability in Metropolitan Municipalities: An Analytical Assessment - Student **Tuğba AKSAKAL**
		Sustainability and Environmental Audit - Assoc.Prof.Dr. **Ali KESTANE –** PhD. **Luminita DIACONU**
		The Role of Direct and Indirect Carbon Emissions on Business Strategies - **Aramish Altaf - Minza Mudassar**
		Digital Resilience And Economic Losses During Covid-19: Evidence From Transition Economies - Assoc. Prof. Dr. **Junus GANIEV** - Asst. Prof. Dr. **Dastan ASEINOV**
		Role of Municipalities in Solving Housing Problem among Slovakia's Marginalized Roma Communities – Transitional Housing As A Viable Option? – Asst. Prof. Dr. **Leon RICHVALSKY**
		The Development of Public Corruption at Macroeconomic Level in Eastern European Countries – Ph. D. **Georgios TAVELLARIS** - Assoc. Prof. Dr. **Vasileios VLACHOS**
		The Struggle of South Azerbaijani Turks from the Perspective of Social Movement Theory - Assoc. Prof. Dr. **Seçil ÖZDEMIR**

SESSION CHAIR: Prof. Dr. Lachin ABISHLI		
14.30 - 16.00	Online Session 19	Economic Opportunities and Risks of Building A Nuclear Power Plant in Kazakhstan - Assoc.Prof.Dr. **Ainur SAPAROVA** - Student **Albina IMANBAY**
		The Monetary Aspect in the Foreign Policy of Modern States - Assoc. Prof. Dr. **Mehriban BABAZADE**
		The Role of Direct and Indirect Carbon Emissions on Business Strategies - Lec. **Aramish Altaf ALVI**
		The Nexus between Corporate Governance Attributes, Financial Performance, and Earnings Managemnet: Emperical Evidence from Private Banks in Ethiopia - Asst.Prof.Dr. **Belesti WODAJE**
		Sustainability-Driven Marketing and Financial Dynamics in Consumer Decision-Making for Organic Products - Student **Filip TASKOVSKI** - Student **Teodora Siljanoska TASKOVSKA** - Prof.Dr. **Julijana SILJANOSKA**
		Harnessing the Power of AI to Enhance Risk Monitoring and Default Prediction in the Financial System - Prof. Dr. **Alexandru MONAHOV**
		Reforming Institutions for Fiscal Resilience: Global Insights into Debt Sustainability - Student **Qurat ul AIN**
		Cyclical Nature of Economic Development: From Classical Concepts to Modern Models – Lec. **Elmar DADASHOV** - Prof.Dr. **Lachin ABISHLI**

SESSION CHAIR: Assoc. Prof. Dr. Sezer Bozkuş KAHYAOĞLU		
15.15 - 16.45	Online Session 20	An Examination of the Relationship between Framing Effect and Source Credibility – Assoc. Prof. Dr. **Serpil SUMER ADIN**
		Readability Level of Law No. 6183 from the Perspective of Tax Complexity - Assoc. Prof. Dr. **Cem Barlas ARSLAN**
		The Impact of Not Applying Inflation Adjustment in Interim Periods on Defered Tax Measurement: An Evaluation of Entities with Non-Tl Functional Currencies – Ph.D. **Süleyman Özkan KAYAGIL**
		Quality of Life in Eskişehir: Spatial Analysis and Development of A New Index - Student **Eray KOÇ -** Prof. Dr. **Yeliz MERT KANTAR**
		The Web 2.5 Economy – PhD. **Nikos ASTROULAKIS**
		Examining The Relationship between Digitalization and Inflation: The Case of the Turkish Banking Sector - Res. Asst. **İlknur KÜLEKÇI -** Assoc. Prof. Dr. **Ayşegül ERTUĞRUL**
		Digital Financial Inclusion and the Ease of Doing Business: Evidence from Kyrgyzstan - Asst. Prof. Dr. **Ainura TURDALIEVA -** Assoc. Prof. Dr. **Sezer Bozkuş KAHYAOĞLU**

SESSION CHAIR: Prof. Dr. Ayyub KERIMOV		
15.45 - 17.15	Online Session 21	Assessing the Interplay of Financial Development, Human Capital, Democracy, and Industry 5.0 In Environmental Dynamics – Student **Mahvish MUZAFFAR**
		Analyzing the Role of Management Accounting in Advancing Production Development and Enhancing the Economic Competitiveness of Azerbaijan - Assoc. Prof. Dr. **Payam Pirayesh SHIRAZI**
		Social Justice and Ethical Responsibility: Modern Interpretation of Philosophical Concepts - Prof. Dr. **Ayyub KERIMOV**
		The Ukrainian Pension System Reconstruction after the War – PhD. **Olga TOFANIUK**
		Cost Management Framework for Railway Construction Projects in Kazakhstan: An Integrated Analytic Hierarchy Process and Regression Analysis Approach - Student **Nurzhan MURATBEK**
		National and European Public Strategies and Policies on Active Aging - Lec. **Mihaela-Corina BUCUR**
		The Impact of Territorial Integrity Policy on the Development of Geopolitics - Assoc. Prof. Dr. **Nergiz MEMMEDZADE**
		The Monetary Aspect in the Foreign Policy of Modern States - Assoc.Prof.Dr. **Mehriban BABAZADE**

SESSION CHAIR: Assoc. Prof. Dr. Neriman YALÇIN		
16.15 - 17.45	Online Session 22	Evaluation of Priority Sustainability Issues in Eco Countries from an Accounting Perspective – Student **Merve VAYSAL**
		Understanding Generational Perceptions of Netflix'S Content Recommendation System: Transparency, Trust, and Brand Attachment - Asst. Prof. Dr. **Burçak BAŞAK YİĞİT** - Assoc. Prof. Dr. **Semih OKUTAN**
		The Role of Technology in Improving Tax Administration in Nigeria - **Iyke-Nzeh Bibian Ifeyinwa Nee MBAH**
		From Authenticity to Loyalty: How Consumers Perceive AI-Generated Brand Posts and Their Impact on Ewom Intentions – Asst. Prof. Dr. **Burçak BAŞAK YİĞİT –** Assoc. Prof. Dr. **Semih OKUTAN**
		Government Accounting Standards: Review of the Financial Statement Presentation Standard (Gas 1) - Student **Uğur İBİŞ**
		Accessing the Cyber Safety Concerns and E-Commerce Adoption in Developing Nations: Cultural Dynamics Shaping Technology Adoption - Prof.Dr. **Najabat ALI** - Asst. Prof. Dr. **Shahbaz TARIQ** - Lec. PhD. **Muhammad Nauman SADIQ**
		The Transformation of the Accounting Information: Costs and Next-Generation Information Dynamics - Asst. Prof. Dr. **İlker GÜLENÇER**
		The Relationship between External Debt and Economic Freedom: An Empirical Analysis on Asian Countries - Res. Asst. Dr. **Ali Fuat URUŞ –** PhD. **Fadime Ayça CEYLAN**

SESSION CHAIR: Asst. Prof. Dr. Aribah ASLAM - Assoc. Prof. Dr. Dr. Ghulam GHOUSE		
17.00 - 18.30	Online Session 23	Exploring the Mediation of Firm Size and Moderation By Analyst Coverage and Institutional Ownership on Business Strategy Decisions - Asst. Prof. Dr. **Aribah ASLAM** - Lec. **Mubasher ALI** - Assoc. Prof. Dr. **Ghulam GHOUSE**
		Economic Growth Through Public Health Investments: South Asia's Perspective - Lec. **Mubasher ALI -** Asst. Prof. Dr. **Aribah ASLAM -** Assoc. Prof. Dr. **Ghulam GHOUSE**
		Technology, Labor, and Growth: An Analysis of ICT-Driven Employment Trends in South Asia - Lec. **Mubasher ALI -** Asst. Prof. Dr. **Aribah ASLAM**
		Do Unconditional Cash Transfers Motivate Women to Become More Financially Included? - Lec. **Nafees EJAZ** - Asst. Prof. Dr. **Aribah ASLAM -** Assoc. Prof. Dr. **Ghulam GHOUSE**
		The Dual Impact of Artificial Intelligence: Stressor or Support? - Assoc. Prof. Dr. **Ghulam GHOUSE -** Asst. Prof. Dr. **Aribah ASLAM**
		Reforming Institutions for Fiscal Resilience: Global Insights into Debt Sustainability - **Qurat-Ul AIN - Zunaira KHALID** - Asst. Prof. Dr. **Aribah ASLAM**
		Understanding AI-Induced Anxiety: The Role of Peer Influence and Mental Well-being - **Roheena Abid BAIG -** Asst. Prof. Dr. **Aribah ASLAM**
		The Impact of Institutional Quality on Public Debt Sustainability in the Digital Era - **Qurat-Ul AIN - Zunaira KHALID** - Asst. Prof. Dr. **Aribah ASLAM**
		Examining the Interrelationship between Artificial Intelligence Adoption, Mental Health, and Academic Performance among Students: Evidence From a Structural Equation Modelling Approach - Lec. **Nafees EJAZ -** Res. Asst. **Rohina Abid BAIG -** Asst. Prof. Dr. **Aribah ASLAM**

SESSION CHAIR : Assoc. Prof. Dr. Rejaul KARIM		
17.30 - 19.00	Online Session 24	Ecological Expertise and Environmental Impact Assessment (EIA) in Contemporary Environmental Law – PhD. **Luminita DIACONU**
		The Role of Culture in Shaping Trade Dynamics in South Asia – Student **Hamaad YOUSUF**
		"Does Green Lending Really Matter to Profitability and Default Probability in Bangladeshi Banks?" - Assoc. Prof. Dr. **Rakibul ISLAM** - Student **Md. Mehedi HASAN** - Assoc. Prof. Dr. **Rejaul KARIM**
		Identifying Critical Success Factors for Adopting Sustainable Tourism in Emerging Economies - Lec. **Md. Soleman MOLLIK** - Assoc. Prof. Dr. **Rejaul KARIM -** Res. Asst. **Sumon MAHMUD**
		A Systematic Review of the Literature on Corporate Income Tax Avoidance and the Fiscal Implications of Base Erosion and Profit Shifting: Insights from Country-Level Data Estimates - Asst. Prof. Dr. **Vasileios VLACHOS** - Res. Asst. **Athanasios VASILAKIS**
		Structural Inequalities and the Single Agricultural Policy of Agricultural Aid in the European Union: A Comparative Analysis of the Control Mechanisms of Eurozone Countries with Emphasis on Greece - Student **Matthioudakis MICHAIL**
		Shock Resilience of Ukraine'S Banking Sector: A Bayesian Dynamic Modeling Approach - Prof. Dr. **Marianna KICHURCHAK** - Prof. Dr. **Iryna PASLAVSKA**
		An Analysis of Consumption Pattern of the Habitants of Chawinda, District Sialkot - Student **Moazzam BUTT**

SESSION CHAIR: Assoc. Prof. Dr. İsmail AKTAR		
18.00 - 19.30	Online Session 25	Psychological Violence in the Workplace: The Meaning and Effects of Mobbing – PhD. **Burak Efe BAHADIR**
		The Role of Innovation Clusters in International Value Chains – PhD. **Aghasif ABDULLAYEV**
		Assessment of Students' Leadership Skills and Development Perspectives - Lec.PhD. **Tunzala MUSAYEVA**
		Thriving in Academia: Psychological Capital and Psychological Distress in Malaysian Universities - Student **Nur Amalyna RADZALI** - Assoc.Prof.Dr. **R Zirwatul Aida R IBRAHIM**
		The Trans-Caspian International Transport Route (Tcitr) in the Context of the Development of the Middle Trade Corridor - Assoc. Prof. Dr. **Afet SEFEROVA**
		Energy and Foreign Policy Opportunities between Türkiye and the Shanghai Cooperation Organization – Assoc. Prof. Dr. **İsmail AKTAR**
		Dual-Mode Approach in Employee Competency Management: Adaptive Task Assignment Based on Learning and Production Goals – Res. Asst. **Buğra AYAN –** Res. Asst. **Sinem SINANGIL**
		Psychodermatology and Mindfulness: A Review of Bidirectional Links between Skin and Mental Health - Res. Asst. PhD. **Vanshika KOHLI**

SESSION CHAIR: Assoc. Prof. Dr. Nüket KIRCI ÇEVİK		
18.45 - 20.15	Online Session 26	Fairness, Sharing, and Institutional Learning among Public Finance Students: An Experimental Ultimatum Game Analysis - Assoc. Prof. Dr. **Yıldırım Beyazıt ÇIÇEN**
		Employers' New Generation Unionism Approach in Digitalized Labor Relations - PhD. **Elif Özge GÜRDAL -** Asst. Prof. Dr. **Yavuz Selim Kaymaz**
		An Empirical Evaluation of the Purchasing Power Parity: The Case of Scandinavian Countries - Asst. Prof. Dr. **Süreyya KOVACI**
		The Relationship between Geopolitical Risk and Airline Stock Prices - Assoc. Prof. Dr. **Nüket KIRCI ÇEVİK** - Asst. Prof. Dr. **Buket KIRCI ALTINKESKİ**
		Comparing the Authoritarian Regimes of Egypt and Belarus - Asst. Prof. Dr. **Çağdaş ZARPLI -** Student **Dilara GÜNDUĞ**
		The Impact of Oil Prices on Airline Stock Prices - Asst. Prof. Dr. **Buket KIRCI ALTINKESKİ**
		The Relationship between Energy Consumption and Economic Growth in OIC Member Countries - Student **Aigerim GAIBULLAYEVA** - Assoc. Prof. Dr. **Füsun ÇELEBI BOZ**
		Universal Basic Income and the Restructuring of the Social Security System in Turkey: A Conceptual Framework - Lec. PhD. **Ubeydullah ŞENER**

SESSION CHAIR: PhD. Luminita DIACONU		
19.15 - 20.45	Online Session 27	Ecological Expertise and Environmental Impact Assessment (EIA) in Contemporary Environmental Law – PhD. **Luminita DIACONU**
		When Government Becomes Smart: Opportunities and Risks of Artificial Intelligence in Public Administration – Student **Tiago SANTOS**
		The Role of Culture in Shaping Trade Dynamics in South Asia – Student **Hamaad YOUSUF**
		Strategic Importance of the Organization of Turkish States in the Multipolar World Order - PhD. **Faiqa Nabiyeva**
		Bridging Digital Innovation and Growth: Global Evidence on Oss and Fintech Adoption- Student **Amjad HASSAN**
		The Value Relevance Of R&D And Intangible Assets in Technology Companies in the New Economy Era - Student **Bertrando MATTHEW** - Prof.Dr. **Dedhy SULISTIAWAN** - Prof. Dr. **Felizia Arni RUDIAWARNI** - Prof.Dr. Dan **Ioan TOPOR**
		Psychological Capital and Psychological Well-Being in Academic Staff at Public Universities - Student **Nur Amalyna RADZALI** - Assoc.Prof.Dr. **R Zirwatul Aida R IBRAHIM**
		Quality Costs in Higher Education Institutions: The Case of Kilis 7 Aralık University – Assoc. Dr. **Ali KESTANE** – Prof. Dr. **Mehmet Ali YILDIRIM**
		The Role of Youth Leadership in Management and Organization Processes: A Perspective on Participatory Sustainability and Regional Transformation – Student **Hatice Tuğçe YESIL**

SESSION CHAIR: Assoc. Prof. Dr. Hakan ARIDEMIR		
20.00 - 21.30	Online Session 28	Comparative Perspectives on Financial Reporting Standards for Nonprofit Organizations and Small and Micro Enterprises -**PhD Ümran Bulut SU**
		A Strategic Corridor from The Adriatic to The Black Sea: Corridor Viii and Balkan Geopolitics-**Assoc. Prof. Dr. Hakan ARIDEMIR**
		The Legal Status of Israeli Settlers Under International Humanitarian Law-**Asst. Prof. Dr. Ramazan GÜREŞCI**
		The Impact of Digital Transformation in Higher Education: A Comparative Analysis between Turkey and Oecd Countries – Lec. PhD. **Eren AKDAĞ KURNAZ**
		The Use of Artificial Intelligence in Preventing Financial Information Manipulation: An Application in the Banking Sector – Assoc. Prof. Dr. **Ali KESTANE** – Student **Gürkan CAN**
		The Analysis of the Relationship between Inflation and Interest Rates – Prof. Dr. **Adil AKINCI**

Number	Names of Participants from Türkiye	Number	Names of Participants from Türkiye
1	Prof.Dr. Adil AKINCI	79	Asst.Prof.Dr. Tuğçe KAYAGİL
2	Prof.Dr. Ahmet OĞUZ	80	Asst.Prof.Dr. Umut KESKİN
3	Prof.Dr. Arzu AL	81	Asst.Prof.Dr. Ümit ACAR
4	Prof.Dr. Aydın KAYABAŞI	82	Asst.Prof.Dr. Yavuz Selim KAYMAZ
5	Prof.Dr. Bahar ERDAL	83	Asst.Prof.Dr. Yunus BÖLÜKBAŞI
6	Prof.Dr. Cemal ELİTAŞ	84	Asst.Prof.Dr. Zeki YILMAZ
7	Prof.Dr. DOĞAN KUTUKIZ	85	Expert Bekir ABACI
8	Prof.Dr. Gülnur KEÇEK	86	Expert İbrahim Halil ER
9	Prof.Dr. Hakan ÇELİKKOL	87	Expert Kazım BOZTAŞ
10	Prof.Dr. İdil Özlem KOÇ	88	Expert Sıddık BADILLI
11	Prof.Dr. İsa İPÇİOĞLU	89	Lec. Mehmet Veli KOYUNÇU
12	Prof. Dr. Niyazi KURNAZ	90	Lec. Safiye TOP
13	Prof.Dr. Şakir SAKARYA	91	Lec. Şenol DOĞAN
14	Prof.Dr. Yeliz MERT KANTAR	92	Lec.PhD. Başak ÖZKER
15	Prof.Dr. Yusuf GÜMÜŞ	93	Lec.PhD. Eren AKDAĞ KURNAZ
16	Assoc.Prof.Dr. Ali KESTANE	94	Lec.PhD. Nazif AYYILDIZ
17	Assoc.Prof.Dr. Aysel ÇETİNDERE FİLİZ	95	Lec.PhD. Ömer KESKİN
18	Assoc.Prof.Dr. Ayşegül ERTUĞRUL	96	Lec.PhD. Rıdvan SEZGİN
19	Assoc.Prof.Dr. BURHAN GÜNAY	97	Lec.PhD. Zeliha OKÇU
20	Assoc.Prof.Dr. CEM BARLAS ARSLAN	98	PhD. Burak Efe BAHADIR
21	Assoc.Prof.Dr. Duygu YOLCU KARADAM	99	PhD. Çağdaş ZARPLI
22	Assoc.Prof.Dr. Emel SEZİCİ	100	PhD. Dilber DOĞAN
23	Assoc.Prof.Dr. ERKAN ALSU	101	PhD. Elif Özge GÜRDAL
24	Assoc.Prof.Dr. Ezgi DEMİR	102	PhD. Erhan VICIL
25	Assoc.Prof.Dr. Fatih VAROL	103	PhD. Fadime Ayca CEYLAN
26	Assoc.Prof.Dr. Füsun ÇELEBİ BOZ	104	PhD. Hamit CAN
27	Assoc.Prof.Dr. Gülçin GÜREŞÇİ	105	PhD. İrem GÜNEŞ
28	Assoc.Prof.Dr. Hakan KİRACI	106	PhD. Mehmet ATEŞ
29	Assoc.Prof.Dr. İsmail AKTAR	107	PhD. Özcan KARATAY
30	Assoc.Prof.Dr. Kader AYDIN	108	PhD. Saharnaz DAMIROVA
31	Assoc.Prof.Dr. Mediha Mine ÇELİKKOL	109	PhD. Süleyman Özkan KAYAGİL
32	Assoc.Prof.Dr. Mehmet Vahit EREN	110	PhD. Taleh MAMMADOV
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34	Assoc.Prof.Dr. Murat KARAHAN	112	PhD. Yusuf YILDIRIM
35	Assoc.Prof.Dr. Mustafa Alpin GÜLŞEN	113	Res.Asst. Buğra AYAN
36	Assoc.Prof.Dr. Neriman YALÇIN	114	Res.Asst. İlknur KÜLEKÇİ
37	Assoc.Prof.Dr. Nüket KIRCI ÇEVİK	115	Res.Asst. Sinem SİNANGİL
38	Assoc.Prof.Dr. Resül YAZICI	116	Res.Asst. Tolga ALTINTAŞ
39	Assoc.Prof.Dr. Seçil ÖZDEMİR	117	Res.Asst. Ümit GEZİCİ
40	Assoc.Prof.Dr. Semih OKUTAN	118	Res.Asst.PhD. Ali Fuat URUŞ
41	Assoc.Prof.Dr. Semra ALTINGÖZ ZARPLI	119	Res.Asst.PhD. Gülper BASMACI AKTUNA
42	Assoc.Prof.Dr. Serpil SUMER ADİN	120	Res.Asst.PhD. Serkan GENÇ
43	Assoc.Prof.Dr. Sezer Bozkuş KAHYAOĞLU	121	Student Ahmet TAŞKIN
44	Assoc.Prof.Dr. Suzan URGAN	122	Student Aigerim GAİBULLAYEVA
45	Assoc.Prof.Dr. YAKUP ÜLKER	123	Student Arif Ali CAN
46	Assoc.Prof.Dr. Yıldırım Beyazıt ÇİÇEN	124	Student Ayşe SANCAR
47	Assoc.Prof.Dr. Yunus DÜGER	125	Student Beyaz Simge ÇALIK
48	Asst.Prof.Dr. Deniz YİĞİT	126	Student Dilara GÜNDUĞ
49	Asst.Prof.Dr. Ali Erhan ZALLUHOĞLU	127	Student Ebru OKÇU
50	Asst.Prof.Dr. Ali ÖZBEK	128	Student Ecrin ŞARK
51	Asst.Prof.Dr. Ali ÜNAL	129	Student EDİP İĞDE
52	Asst.Prof.Dr. Ayşe TAŞ	130	Student Elif Gökçe DEMEZ
53	Asst.Prof.Dr. Buket KIRCI ALTINKESKİ	131	Student Emine Buse KURNAZ
54	Asst.Prof.Dr. Burçak BAŞAK YİĞİT	132	Student Emine POLAT
55	Asst.Prof.Dr. Esra ULUKÖK	133	Student Eray KOÇ
56	Asst.Prof.Dr. Ferit KARAHAN	134	Student Fatma KARTAL
57	Asst.Prof.Dr. Figen YILDIRIM	135	Student Gürkan CAN
58	Asst.Prof.Dr. Halit YALÇIN	136	Student Hatice Tuğçe YESİL
59	Asst.Prof.Dr. Hatice ALTINOK	137	Student İslam YENER
60	Asst.Prof.Dr. Hümeyra TAŞÇIOĞLU	138	Student Kader ARMAĞAN
61	Asst.Prof.Dr. İbrahim ARIK	139	Student Mert TESTERE
62	Asst.Prof.Dr. İbrahim OLGUN	140	Student Merve VAYSAL
63	Asst.Prof.Dr. İLKER GÜLENÇER	141	Student Nazrin OĞUZ
64	Asst.Prof.Dr. Kadir Kürşat YILMAZ	142	Student Nur Nida YILMAZ TEMİZ
65	Asst.Prof.Dr. Mehmet AKARÇAY	143	Student TUGBA AKSAKAL
66	Asst.Prof.Dr. Mehmet Murat AKTAŞ	144	Student Tuhfe ÇELİKKOL
67	Asst.Prof.Dr. Meryem USLU	145	Student UĞUR İBİŞ
68	Asst.Prof.Dr. Metin ALLAHVERDİ	146	Student Zehra DEMİRDAŞ
69	Asst.Prof.Dr. Mustafa Abdül Metin DİNÇER	147	Hakan ARIDEMİR
70	Asst.Prof.Dr. Nihan ÖZKAN	148	Ramazan GÜREŞÇİ
71	Asst.Prof.Dr. Nurgül ERDAL	149	Ümran Bulut SU
72	Asst.Prof.Dr. Özcan ÖZKAN		
73	Asst.Prof.Dr. Özgül UYAN		
74	Asst.Prof.Dr. Sabiha OLTULULAR		
75	Asst.Prof.Dr. Seda Gökdemir EKİCİ		
76	Asst.Prof.Dr. Selin Zengin TAŞDEMİR		
77	Asst.Prof.Dr. Süreyya KOVACI		
78	Asst.Prof.Dr. Taylan AKGÜL		

Number	Names of Participants from Outside of Türkiye	Number	Names of Participants from Outside of Türkiye
1	Prof. Dr. Azhar Neama ABUGNUM	101	Lec. Ali BABAYEV
2	Prof.Dr. Abdelkrim MOUAZIZ	102	Lec. Aramish Altaf ALVI
3	Prof.Dr. Elçin ABISHLI	103	Lec. Aytan GURBANOVA
4	Prof.Dr. Alexandru MONAHOV	104	Lec. Azar MURADZADA
5	Prof.Dr. Amiraslanova DILARA	105	Lec. Bahtiyor ISMOYILOV
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8	Prof.Dr. Dan Ioan TOPOR	108	Lec. Gulgun QULIYEVA
9	Prof.Dr. Dedhy SULISTIAWAN	109	Lec. Khadija ZEYNALLI
10	Prof.Dr. Denys ILNYTSKYY	110	Lec. Mahliyo ISMOYILOVA
11	Prof.Dr. Dimitar EFTIMOSKI	111	Lec. Md. Soleman MOLLIK
12	Prof.Dr. Dinmukhamed KELESBAYEV	112	Lec. Metanet ALIEVA
13	Prof.Dr. Felizia Arni RUDIAWARNI	113	Lec. Mihaela-CorIna BUCUR
14	Prof.Dr. Hanna DAVYDENKO	114	Lec. Mubasher ALI
15	Prof.Dr. Inga COTOROS	115	Lec.Dr. Esmira AHMADOVA
16	Prof.Dr. Iryna PASLAVSKA	116	Lec.Dr. Muhammad Nauman SADIQ
17	Prof.Dr. Jaouad RIAD	117	Lec.Dr. Sevinc ALIYEVA
18	Prof.Dr. Jean-François ROUILLARD	118	Lec.Leyli MELIKOVA
19	Prof.Dr. Julijana SILJANOSKA	119	Lec.PhD. Elshan ORUJOV
20	Prof.Dr. Marianna KICHURCHAK	120	Lec.PhD. Gugulan EVGHENIA
21	Prof.Dr. Mehdi SERAJ	121	Lec.PhD. Niculescu LILIANA
22	Prof.Dr. Najabat ALI	122	Lec.PhD. Nilüfer MURADOVA
23	Prof.Dr. Olena OMELCHENKO	123	Lec.PhD. Tunzala MUSAYEVA
24	Prof.Dr. Saeed RASEKHI	124	Lec.PhD. Ubeydullah ŞENER
25	Prof.Dr. Sandeep KUMAR	125	Nur Azah RAZALI
26	Prof.Dr. Sərvər ABBASOV	126	Nurul Aimi RAZALI
27	Prof.Dr. Sufian ABDEL-GADIR	127	Other Aytaj MAMMADOV
28	Prof.Dr. Vadym SHVED	128	Other Emilya SHUKUROVA
29	Prof.Dr. Vahid ABBASOV	129	Other Nadir MIRZALIZADE
30	Assoc.Prof.Dr. Afet SEFEROVA	130	PhD. Aghasif ABDULLAYEV
31	Assoc.Prof.Dr. Aslanov HABIL	131	PhD. Azadxan VELIZADE
32	Assoc.Prof.Dr. Aygün XƏLILQIZI	132	PhD. Farkhad BATIROV
33	Assoc.Prof.Dr. Galandarova UMMUHABIBA	133	PhD. Kemal HEYBET
34	Assoc.Prof.Dr. Ikram JABRAILOV	134	PhD. Luminita DIACONU
35	Assoc.Prof.Dr. Junus GANIEV	135	PhD. Mbarek Oukhouya ALI
36	Assoc.Prof.Dr. Lalə VƏLIYEVA	136	PhD. Faiqa NABIYEVA
37	Assoc.Prof.Dr. Mehri Khasanovna VOKHIDOVA	137	PhD. Nikos ASTROULAKIS
38	Assoc.Prof.Dr. Mehriban BABAZADE	138	PhD. Olga DROBOTIUK
39	Assoc.Prof.Dr. Mouloud BELGACEMI	139	PhD. Peter Oluwasegun IGUNNU
40	Assoc.Prof.Dr. Nargiz NAGIYEVA	140	PhD. Serif Onur YILMAZ
41	Assoc.Prof.Dr. Nazim IBADOV	141	PhD. Seyyedeh Soheila Miri LEDARI
42	Assoc.Prof.Dr. Nergiz MEMMEDZADE	142	PhD. Vilayet RAMAZANOV
43	Assoc.Prof.Dr. Payam Pirayesh SHIRAZI	143	Priya SOLOMON
44	Assoc.Prof.Dr. Peng XINGE	144	Qurat-UL AIN
45	Assoc.Prof.Dr. Qalib QAFARLI	145	R Zirwatul Aida R IBRAHIM
46	Assoc.Prof.Dr. R Zirwatul Aida R IBRAHIM	146	Ravshanjon RISKULOV
47	Assoc.Prof.Dr. Raja IBRAHIM	147	Res.Asst. AthanasIos VASILAKIS
48	Assoc.Prof.Dr. Rakibul ISLAM	148	Res.Asst. Sumon MAHMUD
49	Assoc.Prof.Dr. Rejaul KARIM	149	Res.Asst.Dr. Aysel NAGIYEVA
50	Assoc.Prof.Dr. Rezarta TAHIRAJ	150	Res.Asst.Dr. Vanshika KOHLI
51	Assoc.Prof.Dr. Sabina GARASHOVA	151	Res.Asst.PhD. Manar MOHAMED
52	Assoc.Prof.Dr. Shafag AHMADOVA	152	Res.Asst.PhD. Yacouba OUATTARA
53	Assoc.Prof.Dr. Siti Sarawati JOHAR	153	Roheena Abid BAIG
54	Assoc.Prof.Dr. Sulkhiya GAZIEVA	154	Rysbekova Aynur MUSAKIZI
55	Assoc.Prof.Dr. Vasileios VLACHOS	155	Shabnam SAFAROVA
56	Assoc.Prof.Dr. Zemfira AKHMADOVA	156	Student Adela ZGURA
57	Assoc.Prof.Dr. Zulaykho KADIROVA	157	Student Amalyna RADZALI
58	Asst.Prof.Dr. Mohammed Saleh MAHDI	158	Student Amjad HASSAN
59	Asst.Prof.Dr. Samyiah HANI	159	Student Arina KHAIRUNISA
60	Asst.Prof.Dr. Ainura TURDALIEVA	160	Student Aura GIRLOVAN
61	Asst.Prof.Dr. Alptekin Cihangir IŞBILIR	161	Student Bertrando MATTHEW
62	Asst.Prof.Dr. Ardita BYLO	162	Student Bohdan VAPELNYK
63	Asst.Prof.Dr. Belesti WODAJE	163	Student Daniel GUSE
64	Asst.Prof.Dr. Boutkhil GUEMIDE	164	Student Filip TASKOVSKI
65	Asst.Prof.Dr. Dastan ASEINOV	165	Student Gabriel SAIU
66	Asst.Prof.Dr. Günay RƏSULOVA	166	Student Hamaad YOUSUF
67	Asst.Prof.Dr. Irtaza NAWAZ	167	Student Javid IBAYEV
68	Asst.Prof.Dr. León RICHVALSKÝ	168	Student Khayala AHMADOVA
69	Asst.Prof.Dr. Mumtaz ALI	169	Student Mahvish MUZAFFAR
70	Asst.Prof.Dr. Murat OZTURK	170	Student Mamedova Shams ALIGULUEVNA
71	Asst.Prof.Dr. NasImI AHMADOV	171	Student Marjona AMONOVA
72	Asst.Prof.Dr. Oumama BOUABDI	172	Student Matthioudakis MICHAIL
73	Asst.Prof.Dr. RamziAbdullah Ahmed HASSAN	173	Student Moazzam BUTT
74	Asst.Prof.Dr. Shahbaz TARIQ	174	Student Nihad GASIMOV
75	Asst.Prof.Dr. Sweta BAKSHI	175	Student NovIa Sari SYAHRIAL
76	Yke-Nzeh Bıbıan Ifeyınwa Nee MBAH	176	Student Nur Amalyna RADZALI
77	Zunaıra KHALID	177	Student Nurzhan MURATBEK

78	Abdullahı Bashir MOHAMMED	178	Student Qurat ul AIN
79	Aramish ALTAF	179	Student Raazia NADEEM
80	Däuletbek Asılbek ERKINBEKOĞLU	180	Student Roya SAEDI
81	Other Mubasher	181	Student Sara SHAHSUROVA
82	Other Sadiq NAGIZADA	182	Student Sunay ALIYEVA
83	PhD. Arlbah ASLAM	183	Student Teodora Siljanoska TASKOVSKA
84	PhD. Georgios TAVELLARIS	184	Student Tiago SANTOS
85	PhD. Sanubar BABASHOVA	185	Student Ulvi HASANOV
86	Elisabeth ZALIMIDOU	186	Student Vladyslav ANDRUSYK
87	Expert PhD. Tahir BEHBUDOV	187	Student Vuqar DAVIDOV
88	Expert Ravil TAGIYEV	188	Student Yusif ƏLƏKBƏRLI
89	Expert Svetlana NAJAFLI	189	Tajudeen Idera ABDULMAJEED
90	Gbenga Festus BABARINDE	190	Tural MEMMEDOV
91	Ghulam GHOUSE	191	PhD. Nikoletta NTEKA
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Algeria	1
Bangladesh	5
Bulgaria	1
China	1
Canada	2
Ethiopia	1
Egypt	1
Georgia	1
Greece	7
India	5
Indonesia	3
Iraq	4
Ireland	1
Iran	4
Kazakhstan	4
Kyrgyzstan	4
Malaysia	11
Moldova	4
Morocco	4
Nigeria	6
North Macedonia	4
Pakistan	19
Portugal	1
Romania	7
Slovakia	1
Sudan	1
Spain	1
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NAXÇIVAN MUXTAR RESPUBLIKASININ TURIZM POTENSIALININ

THE ANALYSIS OF THE RELATIONSHIP BETWEEN INFLATION AND INTEREST RATES

Adil AKINCI

Prof. Dr., Bilecik Şeyh Edebali University
E-mail: adil.akinci@bilecik.edu.tr
ORCID ID: 0000-0002-2181-6952

Başbuğ Alparslan GÜNAL

Master Student, Bilecik Şeyh Edebali University
E-mail: alparslangunal7@gmail.com
ORCID ID: 0009-0005-0409-044X

Abstract
In the 21st century, many studies have explained monetary policy rules based on interest rates. The most significant factors that affect the spending decisions of businesses and households are interest rates and inflation. The effectiveness of monetary policy largely depends on how accurately this relationship is understood and managed. The aim of this study is to examine the theoretical foundations of the relationship between inflation and interest rates and to analyze how this relationship is interpreted within different economic schools of thought. The study examines the Fisher effect, the Keynesian approach, and the monetarist view. The interest rates determined by the Central Bank's currency board also affect inflation through the transmission mechanism. The study concludes that the relationship between inflation and interest rates is neither linear nor stable; rather, it varies depending on inflation expectations, economic structure, and the credibility of monetary policy.

Keywords: Inflation, Interest Rate

Enflasyon ve Faiz Oranı Arasındaki İlişkinin Analizi

Öz
21. yüzyılla birlikte faiz oranlarına dayalı para politikası kurallarını açıklayan çok sayıda çalışma yapılmıştır. İşletme ve hane halklarının harcama kararlarını etkileyen faktörlerden en önemlileri faiz oranları ve enflasyondur. Özellikle para politikası uygulamalarının etkinliği, bu iki değişken arasındaki etkileşimin doğru analiz edilmesine bağlıdır. Bu çalışmanın amacı, enflasyon ile faiz oranı arasındaki ilişkinin teorik temellerini açıklamak ve farklı iktisadi yaklaşımlar çerçevesinde bu ilişkinin nasıl yorumlandığını ortaya koymaktır. Çalışmada Fisher etkisi, Keynesyen yaklaşım ve parasalcı görüş ele alınmaktadır. Merkez Bankası para kurulu tarafından belirlenen faiz oranları aktarım mekanizması aracılığı ile enflasyonu da etkilemektedir. Enflasyon ve faiz oranı arasındaki ilişkinin tek yönlü ve sabit olmadığı, ekonomik yapı, beklentiler ve para politikası güvenilirliği gibi faktörlere bağlı olarak değişkenlik gösterdiği sonucuna ulaşılmaktadır..

Anahtar Kelimeler: Enflasyon, Faiz Oranı

GİRİŞ
Enflasyon, genel fiyat düzeyinde sürekli artış olarak tanımlanırken; faiz oranı, tasarruf ve yatırımlar arasında denge sağlayan temel finansal değişkenlerden biridir. Bu iki kavram arasındaki ilişki, hem teorik iktisat hem de ekonomi politikası açısından uzun süredir tartışılmaktadır (Mankiw, 2021). Faiz artışının enflasyon oranını yükselttiği tezini savunanlar olduğu gibi, yüksek enflasyonun faizin yükselmesine yol açtığı tezini savunanların da var olduğu görülmektedir (Akgül & Özdemir, 2018: 153). Genel olarak ekonomilere bakıldığında yüksek düzeyli enflasyon oranları faiz oranlarının da yüksek seviyelerde belirlenmesine neden olmaktadır. Bunun sebebi ise yüksek enflasyonun olduğu dönemlerde mal ve hizmet fiyatlarında meydana gelen fiyat değişmelerinin kontrol altına alınmasının zor olmasıdır.

Böyle dönemlerde yatırımcılar kârlarını hesaplamakta zor durumda olacakları için kendilerine güvenli bir ortam bulmak isterler ve risk altında kalmamak için yüksek bir getiri aracına yönelirler ve dolayısıyla faizler artış gösterir (Doğan vd., 2016: 406). Merkez bankalarının temel amaçlarından biri fiyat istikrarını sağlamak olduğundan, faiz oranları enflasyonla mücadelede en önemli para politikası araçlarından biri olarak kullanılmaktadır (Mishkin, 2019). Özellikle yüksek enflasyon dönemlerinde faiz oranlarının enflasyona nasıl tepki verdiği, ekonomik karar birimleri açısından belirleyici olmaktadır. Bu bağlamda enflasyon–faiz ilişkisi, yalnızca teorik bir tartışma alanı değil; aynı zamanda büyüme, tasarruf ve yatırım kararları üzerinde doğrudan etkisi olan bir konudur. Bu çalışmada, faiz ve enflasyon arasındaki ilişkiyi inceleyen teorik yaklaşımlar incelenmiştir.

TEORİK ÇERÇEVE

Fisher Etkisi

Irvıng Fisher 1930 yılında yayınladığı "The Theory of Interest" adlı eserinde ilk kez nominal faiz oranı ile beklenen enflasyon arasındaki ilişkiyi ortaya koymuştur. Fisher (1930), nominal faiz oranının, reel faiz oranı ile beklenen enflasyon oranının toplamından oluştuğunu ileri sürmüştür. Bu durum Fisher Etkisi ya da Fisher Hipotezi olarak adlandırılmaktadır. Bu çerçevede, enflasyon oranındaki artışların nominal faiz oranlarına aynı yönde yansıması beklenmektedir. Dolayısıyla Fisher etkisi, enflasyon ile nominal faiz oranı arasında uzun dönemde pozitif bir ilişki olduğunu öngörmektedir (Fisher, 1930). Fisher teorik olarak enflasyon ile faiz oranı arasında birebir ilişkiyi ileri sürmesine rağmen bazı ülkelerde bu ilişkinin varlığı çok fazla gözlenmemektedir. Ülke yapısı, ekonominin dinamikleri ve tarihsel gelişimi bu ilişkiyi ortadan kaldırabilir (Öruç, 2016: 299).

Keynesyen Yaklaşım

Keynesyen iktisadi yaklaşım, faiz oranını tasarruf–yatırım dengesi yerine likidite tercihi teorisi kapsamında ele almaktadır. Keynes'e (1936) göre faiz oranı, para arzı ile para talebinin kesiştiği noktada belirlenmektedir. Keynesyen iktisatta faiz oranı para arzı tarafından belirlenmektedir. Likidite tercihi teorisinde olduğu gibi eğer ekonomi likidite tuzağında değil ise para arzındaki artış faiz oranlarını azaltacaktır. Dolayısıyla enflasyonun temel nedenlerinden biri olan para arzı artışı, faizleri etkilemektedir (Öruç, 2016:299). Bu yaklaşımda genişletici para politikaları faiz oranlarını düşürerek yatırımları ve toplam talebi artırmakta; bu süreç ise zamanla enflasyonist baskılara yol açabilmektedir. Dolayısıyla Keynesyen çerçevede düşük faiz oranları ile yüksek enflasyon arasında dolaylı bir ilişki bulunmaktadır (Keynes, 1936).

Monetarist (Parasalcı) Görüş

Parasalcı yaklaşım, enflasyonu temelde parasal bir olgu olarak ele almakta ve uzun dönemde para arzındaki artışların yalnızca fiyatlar genel düzeyini etkilediğini savunmaktadır (Friedman, 1968). Parasalcılara göre genişletici para politikaları kısa vadede faiz oranlarını düşürebilir; ancak artan enflasyon beklentileri nedeniyle uzun vadede nominal faiz oranları yükselir. Bu görüş, Fisher etkisiyle büyük ölçüde uyumludur ve enflasyon ile faiz oranı arasında uzun dönemli pozitif ilişkiye işaret etmektedir (Friedman, 1968).

ENFLASYON VE FAİZ ORANLARI ARASINDAKİ İLİŞKİ

Modern makroekonomik analizlerde enflasyon beklentileri, enflasyon ile faiz oranları arasındaki ilişkinin açıklanmasında belirleyici bir unsur olarak kabul edilmektedir. Rasyonel beklentiler yaklaşımına göre ekonomik birimler, mevcut tüm bilgileri ve politika sinyallerini dikkate alarak gelecekteki enflasyon oranına ilişkin öngörülerde bulunmakta; tüketim, tasarruf ve yatırım kararlarını

bu beklentiler doğrultusunda şekillendirmektedir (Lucas, 1972). Bu çerçevede beklentiler, yalnızca bireysel kararları değil, aynı zamanda finansal piyasalardaki fiyatlama davranışlarını da doğrudan etkilemektedir.

Beklenen enflasyon oranının yükselmesi durumunda, yatırımcılar ve tasarruf sahipleri reel getirilerinin aşınmasını telafi edebilmek amacıyla daha yüksek nominal faiz oranları talep etmektedir. Fisher hipoteziyle uyumlu olan bu süreç, nominal faiz oranlarının beklenen enflasyona duyarlılığını ortaya koymaktadır (Fisher, 1930). Bu mekanizma sonucunda, merkez bankasının politika faizinde herhangi bir değişikliğe gitmediği durumlarda dahi piyasa faiz oranları yukarı yönlü hareket edebilmektedir. Dolayısıyla faiz oranları, yalnızca cari para politikası kararlarının değil, aynı zamanda geleceğe yönelik enflasyon algılarının ve beklenti oluşum süreçlerinin bir yansıması hâline gelmektedir (Mishkin, 2019).

Bu bağlamda, para politikasının güvenilirliği ve merkez bankasının uyguladığı enflasyon hedeflemesi rejiminin inandırıcılığı, faiz oranlarının enflasyona verdiği tepkinin büyüklüğünü ve hızını doğrudan etkilemektedir. Güçlü kurumsal yapı, şeffaf iletişim ve tutarlı politika uygulamaları, enflasyon beklentilerinin çıpalanmasını sağlayarak faiz oranlarındaki oynaklığı sınırlamaktadır (Woodford, 2003; Svensson, 1997). Buna karşılık, politika güvenilirliğinin zayıf olduğu ekonomilerde beklentiler kanalı daha baskın hâle gelmekte; bu durum enflasyon–faiz ilişkisini daha kırılgan, öngörülemez ve maliyetli bir yapıya dönüştürmektedir (Clarida, Galí, & Gertler, 1999).

SONUÇ

Bu çalışma, enflasyon ve faiz oranı arasındaki ilişkinin farklı iktisadi yaklaşımlar çerçevesinde nasıl ele alındığını kapsamlı biçimde ortaya koymuştur. Fisher etkisi ve parasalcı yaklaşım, uzun dönemde enflasyon ile nominal faiz oranları arasında pozitif ve sistematik bir ilişki bulunduğunu savunurken; Keynesyen yaklaşım, bu ilişkiyi para politikası uygulamaları ve toplam talep kanalı üzerinden açıklamakta ve kısa dönem dinamiklerine vurgu yapmaktadır. Bu teorik farklılıklar, enflasyon–faiz ilişkisine ilişkin tek tip ve evrensel bir mekanizmanın varlığını sorgulamaya açmaktadır.

Çalışmanın genel değerlendirmesi, enflasyon ile faiz oranları arasındaki ilişkinin tek yönlü, doğrusal ve zamandan bağımsız bir yapı sergilemediğini göstermektedir. Aksine bu ilişki; enflasyon beklentilerinin oluşum süreci, para politikasının güvenilirliği, merkez bankasının kurumsal bağımsızlığı ve ülkeye özgü yapısal özellikler tarafından şekillendirilen çok boyutlu bir nitelik taşımaktadır. Özellikle beklentiler kanalının güçlü olduğu ekonomilerde, faiz oranlarının enflasyona tepkisi yalnızca cari politika kararlarına değil, geleceğe yönelik politika algılarına da bağlı hâle gelmektedir.

Bu çerçevede, politika yapıcıların faiz oranlarını enflasyonla mücadelede etkin bir araç olarak kullanabilmeleri, yalnızca teorik modellerin öngörülerine değil, aynı zamanda uygulamadaki kurumsal ve yapısal sınırlılıkların doğru biçimde değerlendirilmesine bağlıdır. Para politikasının öngörülebilirliği, şeffaflığı ve tutarlılığı, enflasyon beklentilerinin çıpalanması açısından kritik öneme sahiptir. Aksi hâlde, yüksek faiz politikaları kısa vadede enflasyonu kontrol altına almayı amaçlasa dahi, uzun vadede büyüme ve finansal istikrar üzerinde olumsuz etkiler yaratabilmektedir.

Son olarak, gelecekte yapılacak çalışmaların, enflasyon–faiz ilişkisini doğrusal olmayan modeller, rejim değişimlerini dikkate alan yaklaşımlar ve ülke bazlı ampirik analizler aracılığıyla incelemesi, literatüre önemli katkılar sağlayacaktır. Bu tür çalışmalar, para politikası tasarımında daha esnek, bağlama duyarlı ve sürdürülebilir stratejilerin geliştirilmesine olanak tanıyacaktır.

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DEMOGRAPHIC CHANGE AND ECONOMIC GROWTH IN EGYPT

Dr.Manar Mohamed Mohamed

Assistant professor, Ahram Canadian University
E-mail: manar.mohamed2012@feps.edu.eg
ORCID ID: 0009-0008-2298-8853

ABSTRACT

This study examines the relationship between population age structure and economic growth in Egypt using time series data, with a focus on providing actionable policy recommendations to capitalize on the country's demographic window of opportunity. Utilizing co-integration and Vector Error Correction (VEC) models, the findings reveal that the working-age population (ages 15–64) has a significant positive impact on long-run economic growth, while the elderly population (65+) exerts a negative influence. The positive contribution of the 15–64 age group is attributed to higher income levels, greater savings, and increased investment potential, which collectively promote job creation and economic expansion. Conversely, the growing elderly population reduces national savings, thereby constraining growth. In the short run, however, the impact of the working-age population on economic performance is limited, largely due to structural rigidities and inefficiencies in the Egyptian labor market. The study underscores the urgent need for policies that enhance labor absorption and investment in human capital to fully leverage the demographic dividend. As Egypt undergoes a major demographic shift, the timely exploitation of this opportunity is critical. Failure to do so may transform a potential demographic asset into a socioeconomic burden, impeding sustainable development.

Keywords: Age structure, demographic dividend, human capital.

INTRODUCTION

Egypt's population has increased by approximately 38% since 2006, reaching around 116.5 million in 2024 (CAPMAS, 2024). The population growth and the population change have important impact on the country's economic growth. Population growth is putting pressure on Egypt's environment and is threatening economic growth, employment opportunities, poverty reduction efforts, and the management of physical assets (human-built infrastructure related to economic activity, natural assets (natural resources and the services they provide), including waste material and energy cycling, and human as- sets (health and educational status of citizens). Despite the potential negative impact of population growth on economic growth, this increase in population could be exploited by looking at the age structure of the population and exploring the population dividend to enhance economic growth (Durr Nayab, 2008).

The relationship between population growth and economic growth remains a subject of debate among economists and demographers, they continue to dis- agree about whether population growth restricts, promotes or is independent of economic growth. The utility of this debate has been humped by its exclusive focus on size and growth, little attention has been paid to the age structure of the population, so economists have recently begun to focus on the impact of the changing age structure of the population on economic growth.

This study is motivated by the demographic transition taking place in developing countries, including Egypt. Transition occurs when fertility and mortality rates tend to decline, creating windows of opportunities that boost economic growth, as the working age population grows larger than the dependent and elderly population. Thus, Egypt is going into a demographic dividend stage where youth bulges increase significantly compared to any other age group. This age cohort could be a driving force for development and change. Investment in Egyptian youth bulges gives unprecedented opportunity to pro- mote growth and reduces poverty (Population Council, 2010).

The main contribution of this paper is to investigate whether demographic magnitude and growth have a significant impact on economic growth in Egypt from 1966 t0 2024. In addition, the paper attempts to pinpoint the policies and institutional frame- work needed to capitalize on demographic dividend in areas of education, labor market flexibility and providing incentives for saving. Otherwise, the in- appropriate and unplanned policies could convert demographic transition to a threat, leading to unemployment and unexpected strain over old age dependency and social services.

Our particular interest in Egypt is due to three main reasons. First, Egypt is the largest country with respect to population size in the MENA region. Egypt's population reached 116.5 million inhabitants in 2024 (CAPMAS, 2024) Second, Egypt's population growth rate is projected to continue its gradual decline, reaching approximately 1.65% in 2024, and is expected to fall further to around 0.69% by the period 2045–2050 (UN, 2022). In addition, both fertility and mortality rates are projected to continue their downward trends over the coming decades. Specifically, Egypt's total fertility rate is estimated at approximately **3.06 in 2024**, with further declines anticipated in the years ahead. Third, the share of youth aged 15–64 reached about 18.5% in 2024, and the dependency ratio has decreased from over 65% in 2005 to approximately 54% in 2023. This demographic transformation indicates that Egypt is currently within a demographic dividend window—a period in which the proportion of the working-age population increases relative to dependents, offering a unique opportunity for accelerated economic growth if matched with sound policies and investments (CAPMAS, 2024).

The structure of this study is organized as follows: The second section presents a review of the relevant theoretical and empirical literature on the relationship between demographic change and economic growth, with a focus on the role of age structure and the concept of the demographic dividend. The third section outlines the data sources, defines the variables, and explains the econometric methodology used to assess both the short-run and long-run dynamics of the relationship. The fourth section discusses the empirical results in the context of Egypt's demographic and economic characteristics. Finally, the fifth section provides concluding remarks and offers policy Implications aimed at effectively leveraging demographic trends to support sustainable economic growth in Egypt.

LITERATURE REVIEW:

The relationship between population growth and economic growth has long been a topic of debate among economists and demographers. Several classical and modern theories attempt to explain this relationship, each offering distinct perspectives. Broadly, these theories can be categorized into three main schools of thought: pessimistic (Malthusian), optimistic, and neutralist. However, a common limitation across these early theories is their insufficient attention to the age structure of the population, which has emerged as a critical determinant of economic outcomes in the recent research.

Originating from the work of Thomas Malthus, the pessimistic view asserts that population growth tends

to surpass the rate of increase in food supply, leading to inevitable shortages and economic stagnation. Malthus argued that while population expands geometrically, food production increases only arithmetically. In the absence of mitigating factors such as famine, disease, or voluntary restraint, this imbalance would ultimately result in declining living standards (Malthus, 1798).

In contrast, some economists, such as Simon Kuznets (1967), advocate for a more optimistic interpretation, viewing population growth as a potential engine of economic development. This perspective suggests that a growing population can stimulate innovation, enlarge markets, and take advantage of economies of scale, thereby promoting sustained economic progress. Within this framework, human capital development and technological advancement are seen as critical drivers of growth.

A more context-sensitive interpretation is provided by the neutralist approach, developed by scholars including Bloom and Freeman (1986), which posits that the economic effects of population growth vary depending on a range of mediating factors. Empirical research under this paradigm has found no consistent causal relationship between population growth and economic performance. Instead, the outcomes are shaped by variables such as educational levels, savings behavior, institutional capacity, and governance quality.

Moving beyond total population size, contemporary demographic theories focus on age structure as a key determinant of economic impact. Demographic Transition Theory, first proposed by Blacker (1947), outlines a four-stage model of population change associated with economic development. In the initial pre-transition stage, high birth and death rates result in minimal population growth, as large families are necessary due to high infant mortality and labor demands. In the early transition phase, mortality rates decline due to improvements in health and sanitation, while fertility remains high, leading to rapid population expansion. The late transition stage is marked by falling fertility rates, driven by urbanization, female education, economic changes, and access to contraception, which gradually slows population growth. In the post-transition stage, both birth and death rates are low and stable, resulting in a relatively steady population size. This demographic evolution alters the age distribution, often increasing the proportion of working-age individuals relative to dependents—a phenomenon known as the demographic dividend, which can contribute to economic growth under favorable conditions.

Complementing this view, the life-cycle consumption and production model underscores how individuals at different ages contribute differently to the economy. Young people require substantial investment in education and health, working-age adults are primary contributors to income and savings, while older populations depend more on pensions and healthcare. Consequently, a demographic shift toward a larger working-age population can enhance overall productivity and national savings, provided that labor markets and institutional frameworks are equipped to absorb and support this change (Lee and Manson, 2011).

Empirical research into the link between demographic change and economic growth has undergone a significant transformation over time. Initially, the focus was on simple correlations between population growth and economic output. However, more recent studies have shifted toward deeper analyses that consider the structure of the population, the timing of demographic transitions, and the role of institutional capacity. Central to this shift is the understanding that demographic change—especially fluctuations in the size of the working-age population—is neither inherently positive nor negative. Instead, it represents an underlying potential that can only be realized through appropriate policy responses and institutional frameworks.

Early influential studies, such as Bloom and Williamson (1998), emphasized the role of demographic transition in supporting East Asia’s economic boom, highlighting how an increasing share of the

working-age population relative to dependents contributed to productivity gains. Similarly, Galor and Weil (2000) framed demographic change as a staged process, where declining fertility and rising life expectancy foster investment in human capital and improvements in total factor productivity.

As the field developed, research began to adopt more country-specific and long-term approaches. For instance, Andersson and Liu (2001) concluded that Sweden's demographic evolution during 1961–2000 reflects a modernized family system characterized by gender equality, extensive social welfare support, and flexible family forms. They argue that proactive social policies can mitigate the negative economic and social effects of demographic shifts, sustaining fertility and labor force participation simultaneously. In Southeast Asia, Navaneetham (2002) also demonstrated that when demographic shifts align with development strategies, they can lead to improved economic outcomes—though institutional weaknesses, as in the case of the Philippines, may hinder these benefits.

By the 2000s, scholars increasingly emphasized the importance of policy in harnessing demographic opportunities. Bloom, Canning, and Sevilla (2003) argued that declining fertility rates open a temporary "window of opportunity" that must be supported by investments in education, health, and employment to yield economic dividends. This argument was echoed in South Asia by Navaneetham and Dharmalingam (2009), who stressed the need for institutional readiness to translate demographic transitions into sustained growth. Dabla-Norris et al. (2020) explored how institutional quality shapes the relationship between demographic change and economic performance. Their findings underscore the importance of strong governance, effective fiscal management, and investment in human capital as key enablers of demographic-driven growth. Moreover, the United Nations (2023) warned that demographic transitions are occurring much faster in today's developing economies than they did in regions like East Asia. Without timely reforms in labor markets, education, and healthcare, many of these countries may forfeit the chance to benefit from their demographic dividend.

Recent empirical work has broadened the range of demographic indicators under consideration. Studies such as those by Kelley and Schmidt (2005) and Bloom, Canning, and Finlay (2010) incorporated variables such as age-specific population shares, dependency ratios, and population density, moving beyond mere population growth rates to examine the deeper structural dimensions of demographic change. Newer studies have also incorporated simulation models and intergenerational accounting frameworks. For example, Maestas, Mullen, and Powell (2016) used simulations to demonstrate how aging populations could slow GDP growth unless offset by increases in productivity. Lee and Mason (2017) applied the National Transfer Accounts (NTA) framework to assess how economic flows between generations evolve during demographic transitions, emphasizing the critical role of age-based consumption and saving behavior.

In conclusion, the empirical literature has evolved from basic models linking population size to growth, to complex, multidimensional analyses that recognize the importance of demographic structure and institutional context. The prevailing view is that demographic change offers an opportunity for accelerated growth—but only when accompanied by strategic planning and robust institutions. The demographic dividend is not automatic; it is a potential that must be actively pursued.

MATERIALS AND METHODS

This section investigates the relationship between economic growth and changes in the working-age population in Egypt over the period 1966–2024. This timeframe is chosen for several reasons. Notably, Egypt's fertility rate began to decline starting in 1966, reaching 35.1 births per 1,000 people by 1970 (World Bank, 2024), while the mortality rate continued its downward trend. These demographic shifts mark the beginning of significant changes in population structure, potentially giving rise to a **demographic dividend**. Prior to this period, demographic indicators remained relatively stable, making 1966 a natural starting point for analysis.

Model Specification

The analysis adopts a model informed by previous empirical studies, specified as follows:

$G = f(INV, GC, TR, PA15, PA65)$ (1)

G = Real Gross Domestic Product growth rate *(Barro, 1991)*,
INV = Gross domestic investment (% of GDP) *(Solow, 1956; Mankiw, Romer, & Weil, 1992)*,
GC = Government consumption expenditure (% of GDP) *(Barro, 1990)*,
TR = Trade openness *(Frankel & Romer, 1999; Edwards, 1998)*,
PA15 = Working-age population (ages 15–64 years, % of total) *(Bloom, Canning, & Sevilla, 2003)*,
PA65 = Elderly population (ages 65 and above, % of total) *(Lee & Mason, 2011).*

Data Description and Variable Expectations

All variables in the model are sourced from the **World Bank** database. Below is a description of each variable and its expected relationship with economic growth:

- **Real GDP Growth Rate (G)**: Measures the annual percentage change in GDP at constant market prices. It serves as the dependent variable in the model.
- **Gross Capital Formation (INV)**: Represents investment in fixed assets plus inventory changes, expressed as a percentage of GDP. This variable is expected to have a **positive** effect on economic growth by increasing productive capacity.
- **Government Consumption Expenditure (GC)**: Includes all current government spending on goods and services, including employee compensation, as a percentage of GDP. It is generally expected to have a **positive** impact on economic growth by stimulating demand.
- **Working-Age Population (PA15)**: Defined as individuals aged 15 to 64 as a percentage of the total population. This is a key explanatory variable in the study and is anticipated to influence economic growth **positively**, as it represents the labor force that drives productivity and output.
- **Elderly Population (PA65)**: Refers to individuals aged 65 and above as a share of the total population. This variable is expected to have a **negative** impact on economic growth, reflecting potential burdens on pensions, healthcare, and reduced labor force participation.
- **Trade openness (TR)**: Measured as the sum of exports and imports of goods and services relative to GDP. Trade openness is generally associated with increased efficiency and technology

transfer, and is thus expected to have a **positive** effect on growth.

We begin our empirical analysis by presenting the summary statistics for the key variables used in the model as showed in Table 1. This provides an overview of the central tendencies and variability of each variable, helping to better understand the data before proceeding with further econometric analysis.

Table 1: **Summary statistics for our key variables**

Variable	S.D	Mean	Minimum	Maximum
Real GDP growth	2.909557	4.868178	0.625935	14.62725
Government consumption (% of GDP)	5.3439903	4.5956172	10.285714	28.221636
Gross domestic Investment (% of GDP)	6.340616	21.47981	12.3396	34.91937
Age group 15-64	3.286499	57.08252	54.11475	63.16178
Age group 65	0.257898	4.758884	4.233624	5.170902
Trade	13.1507	50.28342	30.19084	82.17668

Source: Constructed by the author.

From the summary statistics table, we can draw several key observations. The working-age population (age group 15–64) represents approximately 57% of the total population, with moderate variability, suggesting a relatively stable labor force over time. In contrast, the elderly population (age group 65 and above) accounts for about 5% of the population, with low variability, reflecting the gradual nature of demographic aging in Egypt.

The average real GDP growth rate is around 5%, and its variability is also moderate, indicating some fluctuations over the study period. Other explanatory variables in the model, such as investment, government consumption, and trade, show considerable variability, suggesting they may play a significant role in driving real GDP growth.

Taken together, the moderate variability in the working-age population and the low variability in the elderly population may still have meaningful implications for real economic growth, particularly when interacting with more volatile economic indicators.

Econometric Procedure

To analyze the impact of population age structure on economic growth in Egypt, the study follows a multi-step econometric approach:

1. **Unit Root Testing**:
Each variable is first tested for stationarity using the **Augmented Dickey-Fuller (ADF) test** to determine its order of integration.

2. **Unrestricted VAR Estimation**:
An unrestricted **Vector Autoregressive (VAR)** model is estimated in levels. The optimal lag length is selected based on the **Schwarz Information Criterion (SIC)**.

3. **Cointegration Testing**:
The existence of a long-run relationship among the variables is examined using **Johansen's multiple cointegration test**.

4. **Dynamic Analysis**:
If cointegration is confirmed—indicating a long-run equilibrium relationship among the variables—a **Vector Error Correction Model (VECM)** is estimated to capture both the short-run dynamics and the speed of adjustment to long-run equilibrium. Additionally, **Impulse Response Functions (IRFs)** and **Variance Decomposition** are used to assess how shocks to demographic and economic variables affect real GDP growth in the short run (Enders, 2014; Gujarati & Porter, 2009).

FINDINGS

Co-integration analysis

Before testing for the existence of a long-run relationship among the variables, the ADF test is carried out on the time series in levels and first differences. The results are presented in table (2).

Table 2: **ADF results**

Variable	Series in level (ADF- no of lags)	Series in first difference (ADF- no of lags)
GDP growth rate	-3.868669*(0)	
Government consumption(%GDP)	-1.599483 (4)	-3.384435*(3)
Gross domestic investment(% GDP)	-2.457688 (1)	-5.797518*(0)
PA15	-4.106577*(3)	
PA65	-3.424560 (7)	-6.068463*(10)
Trade	-1.914845 (0)	-6.125244*(0)

Source: Constructed by the author.

Note:(*) indicates rejection of the null hypothesis of non–stationarity at the 5 per cent level of significance using Mackinnon critical values. ADF (p) is the Augmented Dickey–Fuller test; it gives the t–statistics from a specification that includes a constant, trend and p lagged changes in the dependent variable.

The previous results show that the variables GDP growth rate (G), age group15 to 64 (PA15) are stationary at levels. While gross domestic investment (INV), age group 65 and above (PA65) and trade (TR) are not stationary at level. They are integrated of order 1. Given the previous univariate time series analysis results, we start the multivariate analysis by running the unrestricted VAR in levels in order to specify the appropriate lag length. The results are presented in table (3).

Table 3: **Lag length selection**

Lag	Schwartz criteria
1	16.91
2	14.58
3	15.9

Source: Constructed by the author.

The appropriate lag length is found to be 2, according to Schwartz criterion. Statistical results of the Johansen test for co-integration are summarized in table (4). After that, we can proceed with carrying out Johansen co-integration test to investigate the presence of a long-run relationship among the variables.

Table 4: **Johansen test results**

Null hypothesis	Alternative hypothesis	Eigen value	Trace statistics	0.05 critical value
r = 0	r = 1	0.684107	152.3377	95.75366
r <,= 1	r = 2	0.604136	99.32958	69.81889
r <,= 2	r = 3	0.463254	56.70214	47.85613
r <,= 3	r = 4	0.326779	28.07952	29.79707

Source: Constructed by the author.

Note: r represents the number of co-integrating vectors. The numbers in parenthesis are the standard

errors.

Table (4) indicates the presence of three co-integrating equations at 5% significance level (the value of Trace test statistic is less than the 5% critical value, thus accepting the null hypothesis of having three co-integrating relationship). This implies the existence of some equilibrium relation between demographics and economic growth in the long run. The estimated long-run relationship between demographics and economic growth is given as follows:

$$G = 0.457191PA15 - 13.09949PA65 + 0.043909TR \quad (2)$$

(0.02835) (2.50795) (0.18775)

At the 10% significance level, the coefficients for PA15 and PA65 are statistically significant, while the coefficient for trade is not. This suggests that the working-age population has a significant positive impact on Egypt's economic growth. In the long run, a 1% increase in the working-age population corresponds to a 45% increase in economic growth. The positive and significant impact of the working-age population on Egypt's economic growth reflects the demographic dividend effect, where a larger labor force boosts productivity, savings, and investment. The insignificant trade variable suggests that internal demographic factors currently outweigh external trade dynamics. Thus, Egypt's growth appears primarily driven by age-structure advantages rather than openness alone.

People over the age of 65 have a notable negative impact on economic growth. Specifically, a 1% increase in the population aged 65 and above is associated with a 13% decline in real economic growth. This is because an aging population leads to a larger share of individuals receiving pension benefits, which raises government spending on healthcare and pensions, further slowing economic growth.

VAR analysis

To analyze the short-run dynamics of the model, a Vector Autoregression (VAR) analysis is employed. Prior to estimation, non-stationary variables are differenced to achieve stationarity. The GDP growth rate (G) and the working-age population (PA15) are stationary at level and thus do not require differencing. In contrast, government consumption expenditure (GC), gross capital formation (INV), and trade (TR) are non-stationary at level—i.e., integrated of order one—and are differenced once. The VAR model is estimated with a lag length of two.

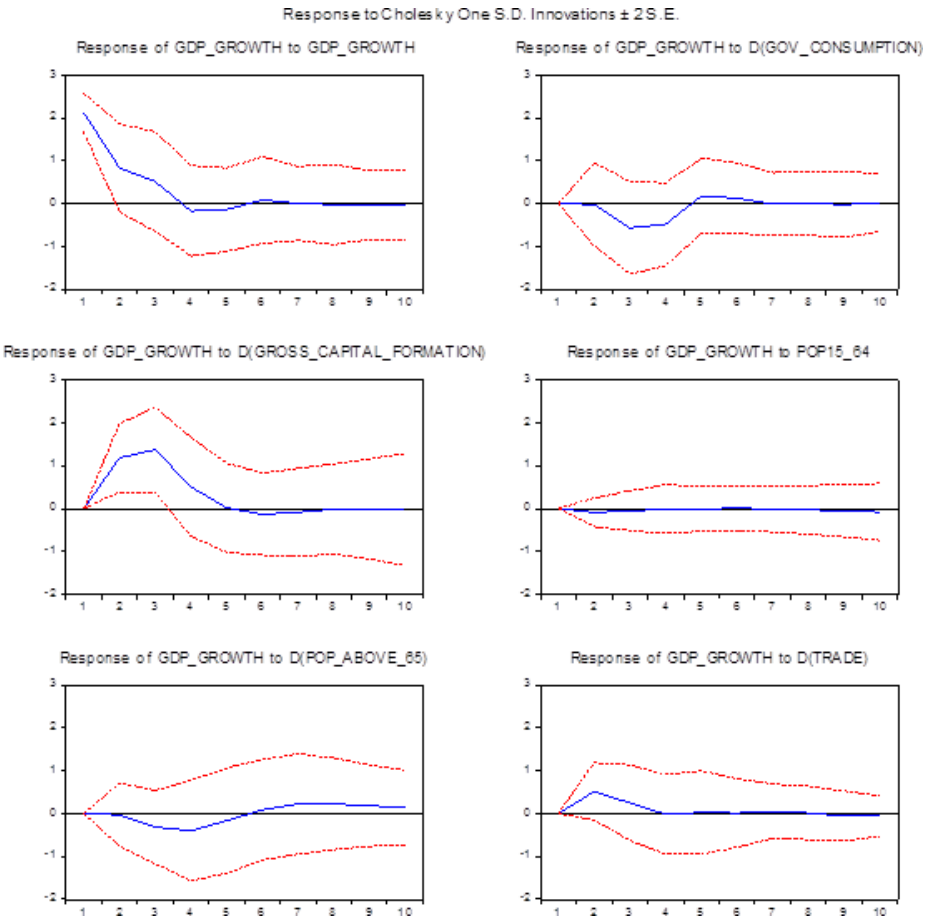
Table 5: **Variance decomposition of the economic growth rate in the unrestricted VAR**

Period	S. E	GDP growth	D(GC)	D(INV)	PA15	D(PA65)	D(TR)
1	2.125383	100.0000	0.000000	0.000000	0.000000	0.000000	0.000000
2	2.626187	75.57957	0.005330	20.39515	0.111205	0.010933	3.897813
3	3.089910	57.38470	3.380226	34.59514	0.107153	1.063990	3.468794
4	3.197946	53.85550	5.438343	34.80579	0.102506	2.556164	3.241702
5	3.210530	53.62983	5.702322	34.53614	0.102190	2.807408	3.222112

6	3.218092	53.44701	5.830802	34.53982	0.102632	2.871067	3.208666
7	3.227579	53.13342	5.797374	34.40628	0.102518	3.339318	3.221093
8	3.235784	52.86790	5.768082	34.23326	0.111091	3.813686	3.205983
9	3.242264	52.66829	5.749270	34.09717	0.137119	4.124591	3.223561
10	3.247431	52.52112	5.734528	33.99328	0.196055	4.306117	3.248895

Source: Constructed by the author.

Figure 1**: The impulse response functions in the unrestricted VAR**



Source: Constructed by the author.

An analysis of the impulse response functions and variance decomposition reveals key insights into the short-run dynamics of GDP growth. At period 2, the variance decomposition of the forecast error for GDP growth shows that approximately 75% of the variation is explained by its own innovation, around 0.11% by changes in the working-age population, and about 15% by other variables in the model. By period 5, about 53.6% of the forecast error is attributed to its own innovation, 0.102% to changes in the working-age population, and 46.23% to other variables. The results remain relatively stable by period 10. Overall, both the impulse response functions and the variance decomposition indicate that changes in the working-age population have only a marginal effect on economic growth in the short run. This limited impact is largely due to rigidities in the Egyptian labor market and the market's inability to generate sufficient employment opportunities for those willing to work.

VECM analysis

The Vector Error Correction Model (VECM) is widely used when both long-run economic relationships and short-run disequilibrium dynamics are to be captured. In this analysis, a lag length of 2 is applied, as previously specified. The estimated VECM equation is as follows:

$$\Delta G = -2.042443 + 0.036354\Delta G_{t-1} + 0.071562\Delta G_{t-2} + 0.282627\Delta GC_{t-1} + 0.234348\Delta GC_{t-2} + 0.056833\Delta INV_{t-1} + 0.143784\Delta INV_{t-2} + 0.279689\Delta PA15_{t-1} + 5.630195\Delta PA15_{t-2} - 21.84851\Delta PA65_{t-1} + 81.70000\Delta PA65_{t-2} + 0.032486\Delta TR_{t-1} + 0.014231\Delta TR_{t-2} - 0.924767EC_{t-1}$$

Here, EC_{t-1} is the lagged error correction term derived from the long-run cointegration relationship between GDP growth and the explanatory variables. The error correction coefficient (-0.924767) is negative and statistically significant at the 10% level, indicating that approximately 92.4% of any short-run disequilibrium is corrected in the subsequent period.

DISCUSSION AND CONCLUSION

This study examined the relationship between population age structure and economic growth in Egypt using time series data spanning from 1966 to 2024. By employing co-integration and Vector Error Correction (VEC) models, the analysis captured both the long-run and short-run dynamics of demographic influence on economic performance. The findings confirm that the working-age population (ages 15–64) has a significant and positive impact on long-term economic growth, whereas the elderly population (65 years and above) exerts a negative effect.

The positive contribution of the working-age group arises from their active role in the labor force, higher income levels, and greater capacity to save and invest. These savings can, in turn, finance productive investment, generate employment, and stimulate economic activity. On the other hand, an expanding elderly population tends to lower national savings and increase fiscal burdens through pension and healthcare demands, thus dampening growth.

However, the analysis also reveals that the short-run effect of the working-age population on growth is limited. This is primarily attributed to labor market rigidities in Egypt and the inability of the economy to create sufficient job opportunities for new labor market entrants. Without labor absorption, the potential benefits of a favorable age structure cannot be realized.

The demographic transition presents Egypt with a time-sensitive opportunity known as the demographic dividend, expected to persist until around 2045. Yet, much of the early potential has been underutilized due to lack of strategic planning and institutional readiness. If the increasing share of the working-age population remains underemployed, the demographic dividend could easily turn into a demographic burden.

Policy Recommendations

To fully harness the economic benefits of demographic change, Egypt must adopt an integrated and forward-looking policy agenda. In this regard, the following policy recommendations are essential:

1. **Promote Job-Creating Growth**: Adopting structural reforms aimed at reducing labor market rigidity—such as simplifying hiring regulations and improving business competitiveness—are vital to absorb the growing workforce. In addition, macroeconomic policies that support private-sector development, industrial diversification, and entrepreneurship is also necessary for job creation and economic growth.

2. **Boost Savings and Investment:** Create a stable economic environment that encourages household savings by controlling inflation, reducing corruption, and maintaining political stability. Also, public confidence in the financial system should be restored to reverse declining saving rates and enable domestic investment.

3. **Invest in Human Capital**: Expand access to high-quality education and vocational training that align with labor market demands. Health investments are also crucial, as a healthier workforce contributes more productively to economic growth.

4. **Empower Women Economically**: Close the gender gap in education, employment, and earnings. Policies that support women's participation in the labor force—such as affordable childcare, legal protection, and reproductive health services—will enhance the productive potential of half the population (i.e; women).

5. **Enhance Family Planning and Reproductive Health Services**: Although fertility rates have declined, continued efforts are needed to promote voluntary contraceptive use, especially as the number of women in reproductive age remains high. Raising awareness and expanding access to family planning services can help sustain this trend.

6. **Strengthen Institutional Capacity**: Demographic advantages can only be transformed into economic gains through effective governance. Strengthening institutions that manage education, labor, health, and finance is critical to ensure coherent and coordinated policy responses.

In conclusion, Egypt's demographic profile still offers a strategic window of opportunity, but the dividend is not automatic—it must be earned. Timely and inclusive policies that focus on employment, education, gender equity, and institutional reform are essential to convert this potential into sustainable long-term economic growth. Failure to act decisively may result in this demographic advantage turning into a long-term socio-economic challenge.

Future Research Directions:

Future research could extend this analysis by incorporating institutional quality, governance indicators, and investments in human capital to better capture how Egypt can translate demographic changes into sustained growth. Comparative studies across countries with similar demographic transitions could also provide insights into the conditions under which the working-age population most effectively contributes to economic development. Additionally, examining sector-specific labor absorption and productivity effects would help identify targeted policy interventions to maximize the demographic dividend.

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THE CHINESE DEBT- TRAP DIPLOMACY AND ITS IMPLICATIONS FOR AFRICAN ECONOMIES

BOUTKHIL GUEMIDE

UNIVERSITY MOHAMMED BOUDIAF, MSILA (Algeria)

boutkhil.ghemid@univ-msila.dz

https://orcid.org/0000-0002-3415-2059

Abstract:

China's growing presence in Africa through its massive infrastructure investments and lending has raised concerns about the risks of debt- trap diplomacy. This research article examines the nature of China's debt-financing model and its potential consequences for African economies. The article discusses how debt- trap diplomacy manifests in the form of strategic asset acquisition, the erosion of democratic institutions, and the distortion of trade relationships that favor China's interests. The disproportionate burden placed on African governments to service these debts diverts critical resources away from vital public investments, hindering sustainable development. The findings suggest that China's lending practices, characterized by opaque terms, collateralization of assets, and the bundling of commercial and sovereign debts, have created a growing debt burden for many African nations. This debt overhang undermines the long-term economic stability and sovereignty of African countries, leading to a cycle of debt dependence and compromised policy autonomy. The research concludes by emphasizing the urgent need for greater transparency in China's lending activities, comprehensive debt relief, and the strengthening of African economic and political resilience. Addressing the challenges posed by China's debt trap diplomacy is essential for ensuring the long-term prosperity and self-determination of African economies.

Keywords: China, Debt Trap Diplomacy, Investments, African Economies.

1. INTRODUCTION:

Following the Renaissance, Europe's understanding of the world expanded significantly through exploration, scientific advancements, and the revival of classical learning. This period, which is often known as the Age of Discovery, witnessed explorations and discoveries of many continents in the globe, Asia, America, and Africa. As a result, the Europeans ventured into these new continents, establishing trade routes, and encountering diverse cultures. Also, European powers sought to expand their influence and control over new territories, and Africa, with its rich resources and strategic location, became a prime target for colonization. Motivated by economic gain, strategic competition, and a belief in their own racial and cultural superiority, European nations carved up the continent into colonial possessions.

After World War II, most African countries gained their independence as a result of the wave of liberation that swept through the Third World. During the Cold War, the Eastern and Western blocs divided the African continent in search of spheres of influence for both. However, after 9/11, Africa

began to attract the attention of major powers due to its economic potential and natural resources, with China being the first country to strengthen its economic and trade relations with African countries.

Although Chinese- African relations date back to the Ming Dynasty (1368-1644) when Admiral Zheng reached Eastern Africa through several expeditions, official relations between China and the African continent were formally established following the founding of the People's Republic of China in 1949. As African countries started fighting for their independence since the 1950's, China became an important diplomatic partner for African countries in their liberation process against Western colonial powers.

As a part of its pragmatic 'Open Door Policy', which allowed China to access geographic regions through foreign investments, China started strengthening its economic relations with most African countries. In pursuing a win-win strategy cooperation with Africa, Chinese economic policy with Africa relies on building business partnerships through foreign relations. It ensures that Chinese companies get lucrative deals in Africa and, in return; African countries receive infrastructure, jobs, skills, and technological transfer. Therefore, Chinese-African cooperation will give tangible benefits and successes to both peoples.

Since 2000 Sino-African relations have witnessed a significant upheaval, as the Chinese started to venture into the African arena. China, the economic superpower, has strengthened its relations with African countries through trade, investment, infrastructure financing, and foreign aid. It is worth mentioning that China invested US$23 billion in infrastructure projects in Africa in the period (2007-2020), exceeding the world lenders, namely the World Bank, the African Development Bank, US and EU banks.

This rapid expansion of China's economic presence in Africa represents one of the most significant shifts in global development finance of the 21st century. Through initiatives such as the Forum on China-Africa Cooperation (FOCAC) established in 2000 and the Belt and Road Initiative (BRI) launched in 2013, China has emerged as Africa's largest trading partner and a major source of development finance. Chinese state-owned enterprises and policy banks have financed and constructed thousands of infrastructure projects across the continent, from railways in Kenya and Ethiopia to ports in Djibouti and power plants in Ghana. This engagement has filled a critical infrastructure financing gap that traditional Western donors and multilateral institutions had largely left unaddressed.

However, this unprecedented flow of Chinese capital to Africa has generated intense debate among policymakers, academics, and development practitioners. Critics argue that China's lending practices constitute a form of 'debt trap diplomacy' designed to ensnare African nations in unsustainable debt relationships that ultimately compromise their economic sovereignty and political autonomy. They point to opaque loan terms, tied aid conditions requiring Chinese contractors and workers, and the use of natural resources or strategic assets as collateral as evidence of predatory lending practices. The concern is that when African countries inevitably struggle to repay these loans, China gains leverage over critical infrastructure and natural resources, effectively establishing spheres of economic and political influence across the continent.

Conversely, proponents of China-Africa cooperation argue that this narrative fundamentally mischaracterizes both Chinese intentions and African agency. They contend that Chinese investment has provided essential development capital that Western donors failed to deliver, enabling African countries to build critical infrastructure that supports economic growth and poverty reduction. From this perspective, African governments are not passive victims but active participants who have strategically engaged with China to advance their development objectives. Furthermore, they argue that the debt trap narrative lacks empirical support, noting that instances of actual asset seizure remain rare and that China has demonstrated willingness to restructure or forgive loans when borrowers face difficulties.

The stakes of this debate extend far beyond academic discourse. With several African countries experiencing debt distress and others approaching unsustainable debt levels, understanding the true nature and implications of Chinese lending has become critical for policymakers across the continent. The COVID-19 pandemic has exacerbated fiscal pressures on African governments, making debt sustainability an even more pressing concern. Meanwhile, great power competition between China and Western nations has intensified, with African debt relationships becoming a focal point of geopolitical rivalry.

Despite the significance of this issue, existing research remains fragmented and often ideologically polarized. Much of the debate has been conducted through competing narratives rather than systematic empirical analysis. While some studies have examined aggregate debt statistics or analyzed specific projects, few have attempted comprehensive assessments that consider both the benefits and risks of Chinese lending across multiple African contexts. Moreover, much of the existing literature focuses on Chinese intentions and strategies while paying insufficient attention to African perspectives and agency in these relationships.

This study seeks to address these gaps by providing a balanced, empirically grounded analysis of Chinese debt- trap diplomacy and its implications for African economies. Rather than accepting or rejecting the debt trap narrative wholesale, this research examines the conditions under which Chinese lending may create unsustainable debt burdens and compromise economic sovereignty, while also considering the development benefits and African agency in these relationships. Through detailed case studies of Chinese lending to Kenya, Zambia, and Ethiopia, combined with broader statistical analysis of debt sustainability indicators across the continent, this study aims to move beyond polarized debates toward a more nuanced understanding of China-Africa economic relations.

The central research question guiding this analysis is: To what extent does Chinese lending create unsustainable debt burdens that compromise African economic sovereignty?

This question is addressed through several subsidiary inquiries:

- To what extent does China's debt-trap diplomacy exacerbate debt sustainability challenges in African countries, and what are the primary mechanisms through which this occurs?
- How do Chinese loans and investments under the BRI influence economic growth, industrialization, and fiscal policies in African economies?
- What are the long-term implications of debt-trap diplomacy for Africa's trade relationships, regional integration, and dependency on external powers?

This research argues that while Chinese infrastructure investment has provided essential development capital that has supported economic growth across Africa, certain lending practices and project characteristics have indeed created debt sustainability concerns that require careful analysis and appropriate policy responses. The evidence suggests that the debt trap narrative, while containing elements of truth, oversimplifies complex economic relationships and underestimates African agency. However, legitimate concerns about transparency, debt sustainability, and governance standards in Chinese lending require attention from both Chinese institutions and African governments.

This research contributes to scholarship on China-Africa relations, development finance, and debt sustainability while providing practical insights for policymakers grappling with these complex relationships. By moving beyond simplistic narratives toward evidence-based analysis, this study aims to inform more effective policies that can harness the benefits of Chinese investment while mitigating potential risks to African economic development and sovereignty.

2. History of Chinese-African Relations:

Sino-African relations have evolved significantly throughout history, transitioning from early trade and ideological solidarity to a comprehensive partnership. Understanding contemporary debates about Chinese debt trap diplomacy requires examining the historical evolution of Chinese-African relations, which have transformed from limited ideological solidarity in the 1950s to comprehensive economic partnership today. This relationship has progressed through distinct phases: early anti-imperialist cooperation (1949-1978), gradual economic engagement during China's reform period (1978-2000), institutionalized partnership through FOCAC (2000-2012), and strategic cooperation under the BRI (2013-present). Each phase has established patterns and precedents that continue to shape current economic relationships and inform debates about debt sustainability and African economic sovereignty.

2.1. The Foundation Years: Ideological Solidarity and Limited Engagement (1949-1978):

The modern history of Chinese-African relations began in the immediate post-colonial period, rooted in shared experiences of struggle against imperialism and colonial domination. Following the establishment of the People's Republic of China in 1949, Chinese leaders under Mao Zedong identified with African liberation movements and newly independent African states as fellow victims of Western imperialism. This ideological affinity formed the cornerstone of early Chinese engagement with Africa, characterized by political solidarity rather than substantial economic interaction (Bart, 2011, p. 193).

China's initial involvement in Africa was primarily diplomatic and military, aimed at countering both Western influence and Soviet expansion on the continent. Beijing provided support to various African liberation movements, including Algerian Revolutionary War (1954-1962), the African National Congress in South Africa, FRELIMO in Mozambique, and the MPLA in Angola. This support took the form of military training, weapons supplies, and financial assistance, reflecting China's commitment to anti-imperialist solidarity and its competition with the Soviet Union for influence in the developing world. China found in the liberation movement that started after the end of World War II a solid framework for Chinese policymakers to (1) strengthen its relations with Africa, and (2) a basis for China’s foreign policy with Africa (Bouzanda, 2012, pp. 2-5).

The most significant early Chinese engagement with Africa was the construction of the Tanzania-Zambia Railway Authority (TAZARA), also known as the Uhuru Railway, between 1970 and 1975. This 1,860-kilometer railway connecting the port of Dar es Salaam in Tanzania to the copper mines of Zambia represented China's largest foreign aid project at the time. The railway was built with an interest-free loan of approximately $400 million, accompanied by 50,000 Chinese workers who constructed the line under challenging conditions. The TAZARA project established several precedents for future Chinese engagement in Africa: the use of Chinese labor and materials, focus on infrastructure development, and the provision of concessional financing for strategically important projects. (Yu, 1971, as cited in Bailey, 1976, pp. 80-1).

Despite these high-profile projects, economic relations between China and Africa remained limited during this period. Trade volumes were minimal, with China-Africa trade totaling less than $1 billion annually throughout the 1970s. Chinese economic engagement was constrained by the country's own economic limitations, its focus on domestic development under the planned economy system, and the limited complementarity between Chinese and African economies at the time (Obuah, 2012, p. 76).

2.2. Reform and Gradual Expansion (1978-2000):

The launch of China's economic reforms in 1978 under Deng Xiaoping marked a gradual shift in Chinese-African relations from purely ideological engagement toward more pragmatic economic cooperation. However, this transition was slow and cautious, as China prioritized domestic economic

development and integration with developed country markets over South-South cooperation during the initial reform period.

The 1980s and early 1990s saw modest increases in Chinese-African economic interaction, primarily through small-scale trade and limited investment in extractive industries. Chinese state-owned enterprises began exploring opportunities in African mining and petroleum sectors, while Chinese construction companies started undertaking small infrastructure projects. However, these activities remained relatively marginal compared to China's growing economic engagement with developed countries and other Asian economies (Yan, 1988, p. 2; Dahman-Saïdi, 2013).

A significant shift occurred following the Tiananmen Square protests in 1989, when Western sanctions and diplomatic isolation prompted China to strengthen its relationships with developing countries, including African nations. African countries' support for China during this period of international isolation was not forgotten by Chinese leaders and contributed to a renewed appreciation for the strategic value of African partnerships (Harding, 1990, para. 4-5).

The 1990s witnessed gradual institutionalization of Chinese-African relations through various mechanisms. China began participating more actively in United Nations (UN) peacekeeping operations in Africa, established the China-Africa Development Fund for small-scale projects, and started providing debt relief to heavily indebted African countries. Chinese medical teams expanded their presence across the continent, building on programs initiated in the 1960s but with greater scale and sophistication (De Coning and Osland, 2020, p. 6).

Trade relations began showing signs of acceleration in the late 1990s, reaching approximately $10 billion by 2000. This growth was driven primarily by China's increasing demand for raw materials to fuel its economic expansion, combined with African countries' search for new markets and sources of investment. Chinese textile and consumer goods also found growing markets in Africa, while African countries began exporting oil, minerals, and agricultural products to China (Global Times, 2011, para. 3).

2.3. The FOCAC Era: Institutionalized Partnership (2000-2012):

The establishment of the Forum on China-Africa Cooperation (FOCAC) in Beijing in October 2000 marked a watershed moment in Chinese-African relations, transitioning from ad hoc engagement to systematic, institutionalized partnership. FOCAC brought together 44 African countries and China in a multilateral framework designed to promote comprehensive cooperation across political, economic, and social dimensions. The forum's creation reflected China's growing confidence in its economic capabilities and its recognition of Africa's strategic importance for sustained economic growth (‘The First Ministerial Conference of FOCAC’, 2004, para. 1-2).

The first FOCAC summit established several key principles that would guide Chinese-African relations for the following decades: equality and mutual respect, mutual benefit and reciprocity, diversified cooperation, and common development. These principles were presented as alternatives to Western conditional aid and structural adjustment programs, emphasizing sovereignty and non-interference in domestic affairs. The summit also established specific targets for increased trade, investment, and development assistance (‘Beijing Declaration of the Forum on China-Africa Cooperation’, 2009, para. 1-4).

The period following FOCAC's establishment witnessed unprecedented growth in Chinese-African economic relations. Trade volumes increased from $10 billion in 2000 to over $160 billion by 2011, making China Africa's largest trading partner by 2009. This explosive growth was driven by China's rapid economic expansion, its voracious appetite for natural resources, and its competitive

manufacturing sector that found ready markets in Africa (Sun, 2024, para. 3-4; Wenping, 2013, para. 2-3).

Chinese foreign direct investment in Africa also accelerated dramatically during this period. Chinese companies, both state-owned and private, established operations across various African countries, particularly in extractive industries, infrastructure construction, and manufacturing. Major Chinese investments included oil and gas projects in Sudan, Angola, and Nigeria; mining operations in Zambia, the Democratic Republic of Congo, and Ghana; and infrastructure projects spanning telecommunications, transportation, and power generation across the continent ('Chinese Investment in Africa 2022', 2022, p. 73).

The 2006 FOCAC summit in Beijing demonstrated the elevated status of Chinese-African relations, with 48 African heads of state and government attending what was then the largest diplomatic gathering ever hosted by China. At this summit, China announced a comprehensive package of support measures including $5 billion in loans and credits, debt cancellation for heavily indebted poor countries, the establishment of a China-Africa Development Fund, and commitments to build schools, hospitals, and other social infrastructure across Africa (Sun, 2024, para. 5-6).

Infrastructure development emerged as a central pillar of Chinese engagement during this period. Chinese construction companies, supported by financing from Chinese policy banks, undertook numerous large-scale projects including roads, railways, ports, airports, and power plants. These projects were often financed through concessional loans tied to the use of Chinese contractors, equipment, and workers, establishing the model that would later attract criticism as potentially problematic.

2.4. The BRI Era: Strategic Partnership and Growing Scrutiny (2013-Present)

The launch of President Xi Jinping's BRI in 2013 elevated Chinese-African relations to new heights while simultaneously intensifying international scrutiny of Chinese lending practices. The BRI, with its emphasis on connectivity and infrastructure development, found natural resonance in Africa, where infrastructure deficits had long constrained economic development. African countries were among the earliest and most enthusiastic participants in the BRI, viewing it as an opportunity to accelerate infrastructure development and economic transformation Dollar, 2019, pp.1- 2).

The 2015 FOCAC summit in Johannesburg marked a significant escalation in Chinese commitments to Africa, with President Xi announcing $60 billion in financing for African development over the following three years. This package included concessional loans, commercial loans, export credits, grants, and equity investments channeled through various Chinese institutions. The summit also established the China-Africa Production Capacity Cooperation Fund and announced plans for industrial parks, economic zones, and technology transfer initiatives (Sun, 2018, para. 1).

Chinese-African trade continued growing, reaching a peak of $220 billion in 2014 before declining due to falling commodity prices and subsequently recovering to over $200 billion by 2019. The composition of trade remained heavily skewed toward Chinese imports of African raw materials and African imports of Chinese manufactured goods, despite repeated commitments to promote trade diversification and value addition in Africa ('China-Africa Economic Bulletin, 2024 Edition', 2024, para. 6; Chen, Fornino, and Rawlings, 2024 p. 3).

Infrastructure investment accelerated under the BRI framework, with signature projects including the Standard Gauge Railway in Kenya, the Addis Ababa-Djibouti Railway in Ethiopia, and various port developments across East and West Africa. These projects represented unprecedented scale and ambition, promising to transform African connectivity and economic integration. However, they also generated increasing concerns about debt sustainability, environmental impact, and governance standards (Nyabiage, 2024, para. 7; Muller, 2019, para. 1-3).

The period from 2015 onwards witnessed growing international attention to Chinese lending practices in Africa, with critics raising concerns about 'debt- trap diplomacy' and unsustainable borrowing. High-profile cases such as Sri Lanka's Hambantota Port, while not in Africa, raised questions about Chinese intentions and African debt sustainability. Several African countries, including Zambia, Ghana, and Kenya, experienced significant increases in debt-to-GDP ratios, much of it owed to Chinese creditors (Weerakoon, and Jayasuriya, 2019, pp. 9–12; ('International Debt Statistics', 2024, pp. 42–5).

The COVID-19 pandemic in 2020 introduced new challenges to Chinese-African relations, disrupting trade flows, suspending infrastructure projects, and exacerbating debt sustainability concerns across Africa (World Bank, 2021, pp. 23–26). China's response included medical supplies, vaccines, and participation in the G20 Debt Service Suspension Initiative, while also beginning to acknowledge the need for greater attention to debt sustainability in its lending practices (Brautigam, 2020, pp. 6–8).

Throughout this historical evolution, Chinese-African relations have been supported by an increasingly sophisticated institutional architecture. Key institutions include the China Development Bank and the Export-Import Bank of China, which provide the bulk of financing for infrastructure projects; the China-Africa Development Fund, focused on equity investments; and various government agencies coordinating different aspects of engagement (Dollar, 2018, pp. 6–9). On the African side, the African Union has played an increasingly important role in coordinating African positions toward China, particularly through initiatives such as the AU's Agenda 2063 and the Continental Free Trade Area (AU, 2015, pp. 2–6; AU, 2018, pp. 1–3). Individual African countries have also established various mechanisms for managing Chinese relationships, from joint commissions to dedicated agencies for Chinese investment (Brautigam, 2009, pp. 189–194). The Forum on China-Africa Cooperation has evolved into the primary multilateral mechanism for Chinese-African engagement, convening every three years alternately in China and Africa ('Beijing Declaration—Toward an even stronger China–Africa community with a shared future', 2018, paras 2-4). FOCAC summits have become major international events, with Chinese leaders using them to announce substantial financial commitments and policy initiatives for Africa (Sun, 2014, pp. 45–48).

Understanding this historical context is essential for evaluating contemporary concerns about debt-trap diplomacy. Chinese engagement with Africa has deep roots in shared anti-imperialist ideology and genuine development cooperation, even as it has evolved to serve China's growing economic interests. African countries have been active participants in this relationship, not passive recipients of Chinese initiatives, though their capacity to negotiate favorable terms has varied considerably.

3. The Debt- Trap Diplomacy: An Overview:

As an economic term which is used in Political Economy and International Relations, Debt- Trap Diplomacy refers to a strategy where a creditor country (often a global power like China) extends excessive loans to a weaker borrower country, forcing political, economic, or strategic concessions. The term gained prominence with the launching of Chinese BRI in 2013, by which China financed infrastructure projects across Africa, Asia, and Latin America. The term describes a situation where a creditor nation extends loans to a debtor nation under terms that make repayment challenging, potentially leading to economic dependency, political leverage, or control over strategic assets.

Brahma Chellaney, a prominent geopolitical analyst, coined the term 'debt trap diplomacy' in the context of China's BRI. He defined it as a strategy where 'China intentionally extends excessive credit to a smaller nation with the aim of extracting economic or political concessions when the debtor country becomes unable to meet its repayment obligations' (Chellaney, 2017, p. 1).

As clearly defined by Chellaney, 'Debt-trap diplomacy' describes a strategy in which a lending country or institution extends credit on terms that are likely to become hard to service, then uses the borrower's financial distress to extract non-financial concessions. Those concessions can include control

over infrastructure, military access, resource rights, or policy alignments the borrower would not otherwise grant. The author argued that this approach allows China to gain strategic influence, citing illustrated examples of Sri Lanka's Hambantota Port, where China assumed control after Sri Lanka defaulted on loans.

In their report published by the Center for Global Development, Hurley, Morris, and Portelance (2018) describe debt trap diplomacy as a situation where 'China's infrastructure financing creates unsustainable debt burdens for recipient countries, potentially leading to strategic concessions or asset seizures' (p. 3). They emphasize that while not always intentional, the structure of Chinese loans—often with high interest rates, short repayment periods, and collateral requirements—can trap countries in cycles of dependency, particularly in vulnerable economies like those in Africa and South Asia.

Scholars Lee Jones and Shahar Hameiri (2020) challenged the intentionality of debt trap diplomacy, defining it as a narrative rather than a deliberate strategy. They argued it refers to 'a perception that China uses predatory lending to ensnare developing nations, though evidence suggests outcomes are often driven by local elite decisions and mismanagement rather than a coordinated Chinese policy' (p. 5). Their analysis highlights cases like Malaysia's East Coast Rail Link, where local political choices exacerbated debt issues, suggesting the term may overstate China's agency.

Brautigam, an expert on China-Africa relations, offered a critical perspective, defining debt trap diplomacy as 'a contested narrative alleging that China deliberately burdens developing countries with debt to gain strategic advantages, such as control over infrastructure or geopolitical alignment'. (Brautigam, 2020, p. 2). She argued that empirical data, particularly from African nations, shows little evidence of deliberate entrapment, with debt distress often resulting from broader economic vulnerabilities rather than Chinese intent. Brautigam cited Angola's oil-backed loans as an example where terms were negotiated by both parties.

Scholarly glossaries, such as those in international relations textbooks, define debt trap diplomacy as 'a form of economic statecraft where a lending nation provides loans to a borrower nation under conditions that may lead to default, enabling the lender to extract concessions, such as control over strategic assets or policy influence' (Goldstein and Pevehouse, 2021, p. 389). This definition emphasizes the power asymmetry between creditor and debtor, often applied to China's financing in regions like Southeast Asia and the Pacific.

The abovementioned definitions listed the key characteristics of debt-trap diplomacy, which are:

- ***Economic Leverage:*** Debt trap diplomacy involves loans that create financial obligations difficult for the debtor to meet, potentially leading to economic dependency.
- ***Strategic Intent (Debated):*** Some scholars (e.g., Chellaney) argue it is a deliberate strategy, while others (e.g., Brautigam, Jones) suggest it results from economic mismanagement or mutual agreements.
- ***Geopolitical Outcomes:*** The outcome often includes the creditor gaining influence, such as through asset seizures (e.g., ports, mines) or policy concessions.
- ***Context:*** The term is most frequently associated with China's BRI, though similar dynamics have been noted historically with other creditors (e.g., Western institutions in the 1980s debt crises).

The dept-trap is illustrated in the fact that beneficiary countries face risks and dangers to be entrapped by large amounts of debts with complicated repayment terms. Thus, the recipient country will be unable to pay its debts whether in short or long terms. This; in fact, empowers the debt actor to enact policies that govern the borrowing actor.

Bajo and Roelants (2011) explained that the debt trap leads to increased inequalities between lending and borrowing countries. The authors argued that unequal power dynamics in debt relationships worsen

inequality by (1) reinforcing dependency, (2) favoring leaders, and (3) deepening global divides. The situation often leads to financial trouble faced by borrowing countries because of specific regulations and agreements (pp. 71-4). Therefore, the rule goes as follows: when the financial vulnerability of a borrowing country directly increases, both the likelihood and severity of it falls into a dept trap set by a more powerful lending country.

The Chinese debt-trap diplomacy includes the following mechanisms:

- ***Unsustainable Lending:*** Creditors provide large loans for infrastructure at high interest rates, or with opaque terms. For instance, Chinese loans often carry between 4% to 6% interest rates. Also, opaque contract terms insist that many BRI agreements include confidentiality clauses, preventing public scrutiny. Another aspect in Chinese strategy is resource-backed finance in which China, the lending country, pledges natural resources (oil and minerals) as collateral;
- ***Strategic Asset Seizures:*** When countries default, China demands (1) equity in critical infrastructure, (2) control over mines and energy products, and (3) political alignment;
- ***Geopolitical Leverage:*** This tool includes:
  - **Military access:** China's first overseas military base in Djibouti followed by massive BRI loans,
  - **Trade dependency:** Countries like Pakistan rely on China for Chinese- Pakistani Economic Corridor (CPEC), deepening economic ties.

4. China's Debt- Trap Diplomacy in Africa: A Structural Power Perspective:

As clearly explained in Pustovitovskij and Kremer's framework, China's use of structural power in providing massive loans to African countries has often been often criticized as 'debt-trap diplomacy'. By controlling key resources and limiting alternatives, China gains long-term influence over borrowing nations. Understanding Pustovitovskij and Kremer's concept of structural power is important to explain the mutually influencing lender/ borrower relationship at different levels (Pustovitovskij and Kremer, 2011, p. 5).

To deal with, structural power refers to the ability of an actor, such as a state, organization, or individual, to shape relationships and influence others based on their underlying strengths and conditions. Unlike direct coercion or force, structural power works through indirect means—such as controlling resources, setting rules, or shaping dependencies—so that other actors naturally align with the more powerful one's interests. It is 'mutually influencing' and multi-level: states, firms, and other actors co-create the structure through their endowments, policies, and relationships, and the structure in turn conditions each actor's behavior.

Structural power depends on two key factors:

- **Internal Potentials (Resources & Goods):** A country or actor must have valuable resources (e.g., natural resources, economic strength, military power, technology). These resources must be in demand by others, meaning they can be turned into 'goods' that other actors need or want. For example, a country with vast oil reserves (a material good) can use this to influence energy-dependent nations;

- **Outside Options:** The more alternatives an actor has (e.g., trade partners, alliances, or strategies), the stronger its position. For instance, if a country can sell its oil to multiple buyers, it has more leverage than if it depends on just one buyer. (Pustovitovskij and Kremer, 2011, p. 7)

As explained by Pustovitovskij and Kremer (2011), structural power is dynamic and more attached to a state's foundations and conditions. Being abundant with internal potentials, the recipient/borrowing country's available resources become 'goods' that are needed by the lending country and continues with 'outside options'. Therefore, 'goods' refer to (1) material conditions (e.g. capital, economic conditions),

(2) a country's position, and (3) natural conditions. Once the foundation is set, mapping of goods in terms of type and availability can be carried out to provide initial considerations in collaborative relationships with other actors. When the two actors interact, they try to influence each other through two key mechanisms, namely:

- **Operationalize:** One actor successfully makes its resources or rules the standard that others must follow. For example, the US dollar's dominance in global trade forces other countries to use it, giving the US economic leverage;

- **Relativize:** One actor reduces the other's alternatives, making them more dependent. For example, if a powerful country imposes sanctions, it limits the weaker country's trade options, forcing compliance. (Pustovitovskij and Kremer, 2011, pp. 8-9)

If an actor succeeds in either operationalizing or relativizing, it gains leverage—meaning it can pull others into its preferred way of doing things or make them act in its interest. Thus, controlling structural power and 'bringing others into your game' leads directly to a debt trap. Under structural power, the lender and borrower are in opposing and unbalanced positions: the lender wields power and control, leaving the borrower with little choice but to follow and obey the rules of the game (debt trap) devised by the lender. Countries, such as global powers, which provide debts will have far more opportunities to regulate and determine their position using the power that the state has over the variables of goods and needs.

As part of this power dynamic, goods are defined as something that can meet needs, or be exchanged for value with other goods. The goods are classified into:

- **Material goods:** Potentials such as money, natural resources, manufactured goods;
- **Positional goods:** Strategic positions in the form of geographical conditions, such as transportation routes, geopolitical locations, or conditions that strengthen negotiations with other countries, such as roles/positions in international organizations such as in the IMF, UN Security Council, WTO;
- **Ideational goods:** These are more concerned with values, arrangements, and arrangements, the existence of which is linked to the need for these values and arrangements. (Pustovitovskij and Kremer, 2011, p. 11)

Additionally, the needs are the various groups throughout the country (social, economic, etc.). The greater a country's goods, the greater its regulatory power. On the other hand, the greater a country's needs, the greater its reliance on other countries with ownership of the goods (Schirm, 2009, p. 512).

Through the lens of structural power, China's extensive investments and loans to African nations exemplify debt trap diplomacy, a strategy that enhances China's bargaining power over borrower countries. By providing loans that often exceed the repayment capacity of recipient nations, China positions itself as a dominant lender, fostering economic dependency and securing strategic influence. This dynamic creates a cycle where borrowing nations, unable to meet repayment obligations, become reliant on China, complying with loan terms that may include concessions in strategic sectors or policy alignment. Consequently, China leverages this dependency to shape economic and political outcomes, reinforcing its structural power within the debtor-creditor relationship (Chellaney, 2017, p. 1).

This pattern is evident in China's capital penetration in countries such as Cameroon, Djibouti, Uganda, Zambia, and Zimbabwe, where three key mechanisms of debt trap diplomacy emerge:

1. **Excessive Lending**: China extends aid and loans that surpass the repayment capabilities of these nations, creating unsustainable debt burdens (Hurley et al., 2018, p. 3).

2. **Control Over Strategic Infrastructure**: China secures influence over critical sectors, including ports, railways, roads, and waterways, fostering long-term dependency. For example, Djibouti's Doraleh Port illustrates China's strategic control following debt distress (Brautigam, 2020, p. 3).

3. **Financial System Influence**: China promotes the adoption of the Yuan as a transactional currency, enhancing its control over regional financial systems and deepening economic reliance.

These mechanisms amplify China's structural power, as borrower nations, constrained by debt, must adhere to agreements that prioritize China's interests, perpetuating an imbalanced power relationship.

5. The Chinese Debt-Trap Diplomacy in Africa: Illustrated Examples:

China's expanding economic presence in Africa, primarily through the BRI, has transformed the continent's infrastructure landscape, financing projects like railways, ports, and energy facilities in countries such as Cameroon, Djibouti, Ethiopia, Kenya, Uganda, Zambia, and Zimbabwe. As China has emerged as Africa's largest creditor since the launch of the BRI in 2013, concerns have mounted about whether Chinese financing practices constitute a deliberate strategy to ensnare African nations in unsustainable debt relationships that ultimately compromise their economic sovereignty. With Chinese loans to African governments reaching over $170 billion by 2022, and several African countries experiencing significant debt distress, the debt trap diplomacy framework has become central to understanding contemporary China-Africa relations. However, this influx of Chinese loans has raised alarms about 'debt trap diplomacy,' a strategy where China allegedly extends loans with terms that may lead to unsustainable debt, fostering economic dependency and strategic leverage. This section examines the mechanisms of Chinese debt trap diplomacy, its economic, political, and social impacts on African nations, with illustrated examples from some African countries, and the strategies required to balance its benefits and challenges, drawing on case studies to highlight the dynamics of this complex relationship.

5.1. The Cameroon's Kribi Port Project:

China's BRI has been accused of employing debt trap diplomacy as a geopolitical strategy, with Cameroon's Kribi Port project serving as a compelling case study of how infrastructure financing can evolve into strategic asset control. Launched in 2011 with a $1.5 billion loan from China's Export-Import Bank, the deep-water port project was marketed as a transformative infrastructure development that would modernize Cameroon's maritime capabilities and boost regional trade. However, the project's financing structure exemplified classic debt trap mechanics: opaque loan terms, inflated construction costs dominated by Chinese contractors and workers, and repayment schedules that proved unsustainable for Cameroon's economy. As the country struggled to service the mounting debt burden, which consumed an increasing share of its national budget, China positioned itself to assume greater control over port operations and strategic decision-making. The Kribi Port case illustrates how debt trap diplomacy operates on a sovereign level, where developing nations seeking crucial infrastructure improvements find themselves increasingly dependent on their creditor's political and economic interests, potentially compromising their long-term sovereignty in exchange for short-term development gains.

For China's foreign policy, Cameroon is an important country within its BRI, though its strategic significance is more nuanced compared to other African nations like Djibouti or Kenya. Cameroon's importance stems from its geographic position, economic potential, and alignment with China's broader geopolitical and economic objectives in Africa.

Cameroon's location in Central Africa, with access to the Gulf of Guinea, makes it a critical gateway for maritime trade and regional connectivity. The Kribi Deepwater Port, a flagship BRI project financed by a $1.2 billion loan from China's Export-Import Bank (Exim Bank), enhances China's access to Central African markets and resources (Al-Fadhat & Prasetio, 2022, p. 5). The port's strategic position near the Atlantic shipping routes complements China's maritime ambitions, particularly in securing trade corridors for oil and mineral exports (Mvondo et al., 2025, p. 2). In addition, Cameroon's role as a regional hub facilitates connectivity with landlocked neighbors like Chad and the Central African Republic, aligning with the BRI's goal of integrating African economies into global trade networks (Hurley et al., 2018, p. 4).

Cameroon's participation in the BRI, particularly through the Kribi Port Project, exemplifies China's use of structural power to create economic dependency. The $1.2 billion loan, with a 2% interest rate and collateral tied to port revenues, contributes to Cameroon's 50% debt-to-GDP ratio, increasing its reliance on Chinese financing (World Bank, 2023, p. 12). This aligns with the debt- trap diplomacy mechanisms where excessive lending fosters leverage (Chellaney, 2017, p. 1).

China's investments in Cameroon, including roads, dams, and the Kribi Port, enhance its soft power by showcasing development partnerships, though local criticisms of environmental and social impacts persist (Mvondo et al., 2025, p. 4).

The Kribi Deepwater Port, located in Cameroon's South Region, is a flagship BRI project designed to enhance trade and economic development. Financed primarily by a $1.2 billion loan from China's Export-Import Bank (Exim Bank) in 2011, the project includes port construction, ancillary infrastructure, and a special economic zone. The loan, covering approximately 85% of the project's cost, carries a 2% interest rate with a 20-year repayment period, including a five-year grace period (Brautigam, 2020, p. 4). The port, operational since 2018, aims to position Cameroon as a regional trade hub, handling containerized cargo, bulk goods, and mineral exports. However, concerns about debt sustainability and China's influence over strategic assets have raised questions about the project's long-term implications.

Structural power, defined as the ability to shape the economic and political options of others through control over resources and institutions, underpins China's approach to the Kribi Port Project (Strange, 1988, p. 24). Three key mechanisms of debt trap diplomacy are evident:

- **Excessive Lending Beyond Repayment Capacity**: Cameroon's loan for the Kribi Port exceeds its fiscal capacity to repay, given its GDP of approximately $45 billion in 2023 and a debt-to-GDP ratio approaching 50% (World Bank, 2023, p. 12). The Exim Bank loan, combined with other Chinese-financed projects like the Memve'ele Dam, contributes to Cameroon's high risk of debt distress, as noted by the IMF (2023, p. 8). This aligns with scholarly critiques that China extends loans disproportionate to borrowers' economic capabilities, creating dependency (Hurley et al., 2018, p. 3);

- **Control Over Strategic Infrastructure**: The Kribi Port is operated by a consortium led by China Harbour Engineering Company (CHEC), which holds a 20% stake in the port's management company. This arrangement grants China significant influence over a critical trade gateway, raising concerns about strategic control in the event of loan default (Al-Fadhat & Prasetio, 2022, p. 5). Similar patterns are observed in cases like Sri Lanka's Hambantota Port, where China assumed a 99-year lease after debt repayment challenges (Chellaney, 2017, p. 1);

- **Financial and Economic Dependency**: The loan terms, including collateral requirements tied to port revenues, bind Cameroon to China's financial ecosystem. While the Yuan has not been adopted as an official currency in Cameroon, China's promotion of Yuan-based transactions in BRI projects globally suggests potential future pressures (Jones & Hameiri, 2020, p. 6). This dependency is compounded by Cameroon's reliance on Chinese contractors for maintenance and expansion, limiting local agency and economic diversification.

The Kribi Port Project has yielded mixed outcomes. On one hand, it has created jobs and improved trade infrastructure, with the port handling over 300,000 TEUs (twenty-foot equivalent units) annually by 2023 (Mvondo et al., 2025, p. 2). On the other hand, local communities, particularly in Lolabé, face displacement and environmental degradation. A 2025 report by Youth for Promotion of Development (YPD) highlights risks such as water contamination in the Lobé and Likodo rivers and deforestation affecting Campo Ma'an National Park (Mvondo et al., 2025, p. 3). Community consultations were criticized as superficial, with dissenting voices silenced, raising questions about transparency and local benefits (Mvondo et al., 2025, p. 4).

Scholars like Deborah Brautigam argued that debt trap diplomacy may overstate China's intentionality, emphasizing that Cameroon's debt challenges stem partly from domestic mismanagement and global economic conditions (Brautigam, 2020, p. 2). For instance, Cameroon's pre-existing debt vulnerabilities and reliance on oil exports exacerbate its fiscal constraints. Conversely, critics like Chellaney (2017, p. 1) asserted that China's loan terms are designed to maximize leverage, citing the Kribi Port's strategic importance. This debate underscores the need to balance China's role with local agency in assessing debt trap dynamics.

In conclusion, the Kribi Port Project illustrates China's use of structural power to advance debt trap diplomacy in Cameroon. Excessive lending, control over strategic infrastructure, and financial dependency align with patterns observed in other African nations, reinforcing China's economic and geopolitical influence. While the project has spurred infrastructure development, its socioeconomic and environmental costs highlight the risks of unsustainable debt. Policymakers in Cameroon and other African nations must prioritize transparent loan agreements, robust debt management, and local stakeholder engagement to mitigate these risks. Future research should explore comparative case studies to assess the broader implications of China's BRI financing in Africa.

5.2. The Djibouti-Ethiopia Railway Project:

China's BRI, launched in 2013, has significantly expanded its economic and geopolitical influence in Africa through infrastructure investments and loans. The concept of *debt trap diplomacy*—where a creditor nation extends loans under terms that foster dependency or strategic leverage—has been a focal point in analyzing China's engagements (Chellaney, 2017, p. 1).

It is worth mentioning that since China launched its 'Going Out' policy in 2000 it focused on the African continent for its economic potentials and investment opportunities. Being a top destination for Chinese loans, Ethiopia and Djibouti have been among China's top strategic for economic investment in Africa, driven by their geopolitical significance, infrastructure potential, and alignment with China's BRI.

As for Ethiopia, it constitutes a BRI centerpiece. It is one of Africa's largest BRI's recipients, with $14billion Chinese loans (2010-2022) for railways, dams, and industrial parks. Strategically, Ethiopia is (1) an important manufacturing base, with cheap labor and tax incentives which attract Chinese factories, and (2) China's gateway to Africa: landlocked Ethiopia relies on Djibouti's ports, making Sino-Ethiopian ties critical for regional trade.

On the other hand, Djibouti is China's 'Gateway to Africa'. Due to its strategic importance, Djibouti is China's military footprint in Africa, particularly in the Red Sea. The country hosts China's overseas military base, established in 2017, securing maritime routes near Bab el-Mandeb Strait. Also, Djibouti allows China's port dominance: Chinese firms control major infrastructure, including Doraleh multipurpose port and Djibouti International Free Zone. As China has provided 70% of loans to Djibouti, it has invested heavily in the country to (1) ensure logistics over a key trade-military corridor (Red Sea

Suez Canal), and (2) encounter US/French influence in Djibouti (both US and France have military bases).

The Djibouti-Ethiopia Railway Project, a key BRI initiative, exemplifies this dynamic, raising concerns about debt sustainability and China's influence over strategic infrastructure. Through the lens of structural power, the aforementioned project is a case study which illustrates how China's financing of the railway has shaped economic and political outcomes in Djibouti and Ethiopia, highlighting mechanisms of debt trap diplomacy, including excessive lending, control over critical assets, and financial dependency (Al-Fadhat & Prasetio, 2022, p. 3).

The Addis Ababa-Djibouti Railway, a 759-km standard-gauge railway connecting Ethiopia's capital to the Port of Djibouti, is a flagship BRI project aimed at enhancing trade and regional connectivity. Financed primarily by a $3.4 billion loan from China's Export-Import Bank (Exim Bank) in 2012, the project covers approximately 70% of its total cost, with Ethiopia and Djibouti splitting the debt (Ethiopia: $2.5 billion; Djibouti: $0.9 billion) (O'Keefe, 2025, p. 12). The loan carries a 3.25% interest rate with a 20-year repayment period, including a six-year grace period (Brautigam, 2020, p. 4). Operational since 2018, the railway has reduced transport times from three days by road to under 20 hours, boosting Ethiopia's access to global markets via Djibouti's port (Sunny & Kumar, 2024, p. 2). However, high debt levels and operational challenges have fueled debates about its long-term sustainability.

Within this context, structural power underpins China's approach to the railway project (Strange, 1988, p. 24). Three mechanisms of Chinese debt- trap diplomacy are evident:

- **Excessive Lending Beyond Repayment Capacity**: The railway loans exceed the fiscal capacity of Djibouti and Ethiopia. Djibouti's external debt reached 80% of its $3.5 billion GDP by 2023, with 60% owed to China, while Ethiopia's debt-to-GDP ratio hovered at 45%, with significant Chinese obligations (World Bank, 2023, p. 15; IMF, 2023, p. 10). The IMF classifies both nations as at high risk of debt distress, with the railway's high capital costs straining budgets (Hurley et al., 2018, p. 3);

- **Control Over Strategic Infrastructure**: The railway, constructed and partially operated by China Railway Construction Corporation (CRCC), enhances China's influence over a critical trade corridor. Djibouti's strategic location near the Bab el-Mandeb Strait amplifies China's control, as the railway integrates with the Chinese-financed Doraleh Port, where China holds a 23.5% stake (Al-Fadhat & Prasetio, 2022, p. 5). This mirrors patterns in Sri Lanka's Hambantota Port, where China secured a 99-year lease after debt default (Chellaney, 2017, p. 1);

- **Financial and Economic Dependency**: Loan terms tie Ethiopia and Djibouti to China's financial ecosystem, with repayments linked to railway revenues. China's push for Yuan-based transactions in BRI projects globally suggests potential future pressures, though not yet implemented here (Jones & Hameiri, 2020, p. 6). Dependency is further entrenched by reliance on Chinese contractors for maintenance and upgrades, limiting local capacity-building.

The railway has delivered economic benefits, including reduced transport costs and increased trade efficiency, with freight capacity projected to rise from 2 million tons to 6.2 million tons by 2027 (desert____lion, 2025, August 9). However, socioeconomic challenges persist. In Ethiopia, high maintenance costs and low passenger revenue have strained operations, with only 30% of capacity utilized by 2023 (O'Keefe, 2025, p. 14). In Djibouti, local employment has been limited, with Chinese firms prioritizing their workers, raising concerns about economic exclusion (Sunny & Kumar, 2024, p. 3). Environmental impacts include deforestation and habitat disruption along the railway corridor, though specific studies remain limited.

In his criticism of debt- trap diplomacy, Deborah Brautigam (2020) argued that the debt trap narrative oversimplifies China's role, emphasizing that Djibouti and Ethiopia's debt distress stems partly from domestic governance issues and global economic pressures, such as commodity price fluctuations (p. 2). For instance, Ethiopia's reliance on coffee exports and Djibouti's dependence on port revenues exacerbate fiscal vulnerabilities. Conversely, critics like Chellaney (2017, p. 1) assert that China's loan structures, with high interest rates and short repayment periods, are designed to maximize leverage, particularly in geopolitically strategic Djibouti. Logan O'Keefe's analysis suggests that while Ethiopia and Djibouti exhibit agency through debt renegotiations, Djibouti's heavy reliance on Chinese loans heightens its vulnerability (O'Keefe, 2025, p. 16).

The Djibouti-Ethiopia Railway Project illustrates China's use of structural power to advance debt trap diplomacy, leveraging excessive lending, control over strategic infrastructure, and financial dependency to enhance its influence. While the railway has improved trade connectivity, its unsustainable debt burden and limited local benefits underscore the risks of China's financing model. Djibouti and Ethiopia must pursue transparent loan agreements, robust debt management, and diversified partnerships to mitigate dependency. Further research should compare this case with other BRI projects to assess the broader implications of China's economic statecraft in Africa.

5.3. The Entebbe International Airport Expansion, Uganda:

Uganda's $207 million expansion of Entebbe International Airport represents another emblematic example of China's debt trap diplomacy, demonstrating how critical infrastructure projects can become vehicles for strategic economic leverage and potential asset seizure. Financed by China's Export-Import Bank in 2015, the airport modernization project promised to transform Uganda's aviation sector and position the country as a regional hub for East African air travel. However, the loan agreement contained particularly controversial clauses that effectively waived Uganda's sovereign immunity and stipulated that disputes would be resolved under Chinese jurisdiction, creating unprecedented legal vulnerabilities for the borrowing nation. The project's inflated costs, dominated by Chinese contractors and materials, combined with stringent repayment terms that included provisions allowing China to potentially seize the airport and other Ugandan assets in case of default, sparked intense domestic and international controversy. This case study reveals how debt trap diplomacy can extend beyond mere financial dependency to include explicit contractual mechanisms for asset appropriation, where strategic national infrastructure becomes collateral that can be claimed by the creditor nation, effectively transforming development assistance into a pathway for acquiring control over critical sovereign assets.

Uganda holds moderate strategic importance for China's Belt and Road Initiative, serving as a key gateway to landlocked East and Central Africa while offering valuable resource extraction opportunities that align with China's long-term economic and geopolitical objectives. Uganda was purposefully selected among five African countries for BRI analysis due to its strategic location and long-term relationship with China, joining the initiative in 2018. The country's significance extends beyond its geographical position as a regional hub; Uganda represents substantial investment opportunities in oil development projects, with China providing crucial financing for infrastructure like the controversial East African Crude Oil Pipeline worth $5 billion, especially as Western financiers have turned away. For China, Uganda exemplifies the BRI's dual function of securing resource access and expanding diplomatic influence in Africa, with President Museveni praising China's willingness to fund projects with "no strings attached," allowing him to undertake numerous development projects during his three-decade tenure. While Uganda may not be as strategically critical as some other BRI partners, it represents China's broader African strategy of building comprehensive partnerships that combine infrastructure development, resource extraction, and diplomatic alignment to create long-term spheres of influence across the continent.

The Entebbe International Airport, Uganda's primary international gateway, underwent an upgrading and expansion project to modernize its facilities, including new passenger and cargo terminals, runway rehabilitation, and improved connectivity to Kampala. Financed by a $200 million loan from China's Export-Import Bank in 2015, the project carries a 2% interest rate, a 20-year repayment period, and a seven-year grace period ending in 2022 (Parks et al., 2022, p. 2). Operational since 2021, the project aims to boost Uganda's tourism and trade sectors, critical to its $45 billion GDP economy (World Bank, 2023, p. 14). However, the loan's terms and Uganda's debt vulnerabilities have sparked concerns about potential Chinese influence, particularly following media reports alleging risks of asset seizure, later clarified as exaggerated (Globely News, 2022, p. 3).

As a strong political and economic tool, structural power clearly supports China's approach to the Entebbe Airport project (Strange, 1988, p. 24). Three key mechanisms of debt- trap diplomacy are clearly used:

- **Excessive Lending Beyond Repayment Capacity**: The $200 million loan, while concessional, contributes to Uganda's external debt, which reached 48% of GDP by 2023, with China as a major creditor (IMF, 2023, p. 9). Combined with other Chinese loans (e.g., for the Karuma Hydropower Project), Uganda faces a high risk of debt distress, as noted by the IMF. The loan's structure, requiring all airport revenues to be deposited into an escrow account controlled by Exim Bank, prioritizes debt repayment over public spending, exacerbating fiscal strain (Parks et al., 2022, p. 3);

- **Control Over Strategic Infrastructure**: The project is executed by Chinese contractors, such as the China Communications Construction Company (CCCC), granting China operational influence over Uganda's key aviation hub. While the contract does not allow direct seizure of the airport, the escrow arrangement ensures China's priority access to airport revenues for 20 years, raising concerns about long-term dependency (Parks et al., 2022, p. 3). This mirrors patterns in Djibouti's Doraleh Port, where China secured significant control (Al-Fadhat & Prasetio, 2022, p. 5);

- **Financial and Economic Dependency**: The loan terms bind Uganda to China's financial ecosystem, with limited local involvement in project execution. Although there is no evidence of China pushing for Yuan adoption in Uganda, the broader BRI strategy of promoting Yuan-based transactions suggests potential future pressures (Jones & Hameiri, 2020, p. 6). Uganda's reliance on Chinese contractors for maintenance further limits economic diversification and local capacity-building.

The Entebbe Airport expansion has enhanced Uganda's tourism infrastructure, supporting attractions like Murchison Falls National Park and contributing to a projected 5% GDP growth in 2023 (World Bank, 2023, p. 15). However, socioeconomic benefits are tempered by challenges. Local employment opportunities have been limited, with Chinese firms prioritizing their workforce (Globely News, 2022, p. 4). Environmental impacts, such as construction-related disruption to Lake Victoria's ecosystem, have been noted, though comprehensive studies are scarce. Community consultations were reportedly minimal, raising concerns about transparency and local engagement (Orfonline, 2021, p. 3).

Scholars like Deborah Brautigam argue that the debt trap narrative may overstate China's intentionality, emphasizing Uganda's agency in negotiating loan terms and its pre-existing economic vulnerabilities, such as low tax-to-GDP ratios (Brautigam, 2020, p. 2). For instance, Uganda successfully renegotiated Exim Bank's initial demand to control the Uganda Civil Aviation Authority's spending, securing a less intrusive monitoring arrangement (Parks et al., 2022, p. 4). Conversely, critics like Chellaney (2017, p. 1) highlight the loan's "toxic" clauses, such as arbitration in Beijing, which favor China in disputes (Globely News, 2022, p. 5). Media reports in 2021 falsely claimed China had seized the airport, a narrative debunked by both Ugandan and Chinese officials, underscoring the need for evidence-based analysis (Orfonline, 2021, p. 2).

The Entebbe International Airport Expansion Project illustrates China's use of structural power to advance debt trap diplomacy in Uganda. Excessive lending, control over strategic infrastructure revenues, and financial dependency align with broader BRI patterns, reinforcing China's economic influence. While the project has bolstered Uganda's tourism and trade capacity, its fiscal and socioeconomic costs highlight the risks of unsustainable debt. Ugandan policymakers must prioritize transparent loan agreements, robust debt management, and local stakeholder engagement to mitigate dependency. Further research should compare this case with other BRI projects to assess the broader implications of China's financing model in Africa.

5.4. The Zambian Copper Mines Acquisition:

Zambia's copper mining sector exemplifies perhaps the most sophisticated and comprehensive form of China's debt trap diplomacy, where resource extraction becomes intertwined with infrastructure financing to create multilayered dependency relationships that extend far beyond traditional loan agreements. Since 2009, Chinese state-owned enterprises and financial institutions have systematically acquired control over Zambia's copper assets through a combination of direct mine purchases, joint ventures, and debt-for-equity swaps that have transformed China from a creditor into a dominant stakeholder in the country's primary economic sector. The China-Zambia relationship demonstrates how debt trap diplomacy can evolve beyond infrastructure projects to encompass comprehensive resource colonization, where Chinese companies like China Nonferrous Metal Mining Corporation (CNMC) have acquired majority stakes in critical mines such as Chambishi and Luanshya through complex financing arrangements that left Zambian partners with diminished control and revenue shares. This case illustrates the most advanced form of economic entrapment, where debt servicing difficulties become opportunities for creditors to convert financial obligations into permanent ownership of strategic natural resources, effectively transforming temporary liquidity crises into long-term transfers of national wealth and undermining the borrowing country's economic sovereignty over its most valuable assets.

Zambia represents one of China's most strategically crucial African partnerships within the Belt and Road Initiative, serving as both a comprehensive testing ground for China's resource extraction model and a critical supply link for copper essential to China's industrial and technological ambitions. China is the global processing hub for copper, and access to resources across the Copperbelt has been the driving force behind engagement with Zambia and the country's inclusion in the BRI, making Zambia indispensable for securing China's mineral supply chains. For two decades, China has entrenched itself as Zambia's largest creditor, holding over $4 billion of its external debt, with Chinese companies now dominating Zambia's mining industry and owning critical extraction and processing facilities in a sector that constitutes 70% of Zambia's export earnings. The relationship goes beyond mere resource extraction; China has developed critical infrastructure including the 2,000-kilometer Zambia-Tanzania rail corridor specifically designed to facilitate mineral exports from the Copperbelt region to Chinese ports, with recent Chinese policy papers revealing a strategic shift toward 'vertical integration from mine to battery plant'. Zambia's extreme dependency is evidenced by its 65.8% Chinese-owned debt ratio, making it a flagship example of how the BRI can transform from development partnership into comprehensive economic control, positioning Zambia as perhaps China's most successful case study in converting infrastructure investment into long-term resource dominance and geopolitical influence.

Zambia is one of Africa's largest copper producers, with the mineral accounting for over 70% of its export revenues. Chinese engagement began in the late 1990s following Zambia's privatization of state-owned mines. The China Nonferrous Metal Mining Group (CNMC) acquired the Chambishi Copper Mine in 1998 for $20 million, marking one of the first major Chinese investments (Pengtao, 2010, p. 5). Subsequent acquisitions include the Luanshya Copper Mine in 2009 and stakes in other operations like the Non-Ferrous Company Africa (NFCA) Chambishi Mine. By 2023, China controlled approximately 20% of Zambia's copper production, with investments exceeding $4 billion (Singh, 2024, para. 2). These

investments are often tied to loans from China's Exim Bank, contributing to Zambia's $32 billion external debt, of which $6.3 billion is owed to Chinese creditors (Corbet, 2023, para. 1).

Used to shape others' economic and political options through control over resources and institutions, structural power illustrates China's approach to Zambia's copper sector (Strange, 1988, p. 24). Three key mechanisms of debt trap diplomacy are evident:

- **Excessive Lending Beyond Repayment Capacity**: China has extended loans totaling $6.3 billion to Zambia, often for mining-related infrastructure, exceeding the country's repayment capabilities amid falling copper prices. Zambia defaulted on its debt in 2020, becoming the first African nation to do so during the COVID-19 era (Gbadamosi, 2022, para. 3). The IMF classifies Zambia at high risk of debt distress, with Chinese loans comprising a significant portion (IMF, 2023);
- **Control Over Strategic Infrastructure**: Chinese firms like CNMC operate key mines, granting China influence over Zambia's copper exports. Loan terms often include resource-backed repayments, where copper revenues service debts, fostering long-term dependency (Velasco, 2024, para. 10-1). This mirrors patterns in Angola's oil-backed loans (Brautigam, 2020, p. 4);
- **Financial and Economic Dependency**: Zambia's reliance on Chinese investment for mining modernization creates economic leverage. While there is no direct Yuan adoption, BRI projects promote Yuan-based transactions, potentially deepening dependency (Jones & Hameiri, 2020, p. 6). Labor abuses in Chinese-owned mines, as documented by Human Rights Watch, further highlight power imbalances (Human Rights Watch, 2011, p. 22).

Chinese investments have revived Zambia's mining sector, creating jobs and increasing copper output from 800,000 tons in 2018 to over 1 million tons by 2023 (Olsson, 2022, pp. 25-6). However, socioeconomic challenges persist, including poor working conditions and community displacements. Environmental degradation from mining operations, such as water pollution in the Kafue River, has affected local communities (Singh, 2024, para. 23). Local consultations are often inadequate, exacerbating tensions.

Scholars like Deborah Brautigam argued that Zambia's debt crisis is co-created, resulting from local mismanagement and falling commodity prices rather than deliberate Chinese entrapment (Brautigam, 2021, p. 3). A 2023 debt restructuring deal with China reduced Zambia's burden, suggesting cooperation (Corbet, 2023, para. 4). Conversely, critics like Chellaney (2017, p. 1) highlight resource-backed loans as predatory, enabling China to extract concessions. The debate underscores the need for evidence-based analysis, as perceptions of debt trap diplomacy may amplify anti-Chinese sentiment (Brautigam, 2020, pp. 9-11; Jones & Hameiri, 2020, pp. 18-21; Parker and Chefitz, 2018, pp. 20-3; Sun, 2017, pp. 175-8).

Zambia's copper mines investments exemplify China's use of structural power to advance debt trap diplomacy, leveraging excessive lending, resource control, and dependency to secure influence. While revitalizing the mining sector, these investments have heightened Zambia's vulnerabilities. Zambian policymakers must prioritize transparent agreements, diversified partnerships, and sustainable debt management. Further research should explore comparative cases to assess BRI's long-term impacts in Africa.

5.5. Zimbabwe's Lithium for Loans:

Zimbabwe's lithium-for-loans arrangements with China represent the most explicit manifestation of resource-backed debt trap diplomacy, where critical minerals essential to the global green energy transition become direct collateral for infrastructure financing in agreements that fundamentally compromise national resource sovereignty. Since 2018, Zimbabwe has entered into multiple bilateral deals with Chinese state-owned enterprises and financial institutions, trading long-term lithium mining

rights and revenue streams for immediate infrastructure development and loan financing, effectively mortgaging the country's strategic mineral wealth to secure short-term economic relief. These arrangements, including major contracts with companies like Sinohydro and China North Industries Corporation (NORINCO), demonstrate how debt trap diplomacy has evolved to explicitly target resources critical to China's technological and industrial supremacy, particularly in electric vehicle battery production and renewable energy storage systems. The Zimbabwe case reveals the most direct form of neo-colonial resource extraction disguised as development cooperation, where financially distressed nations are compelled to surrender control over mineral resources that could potentially generate far greater long-term wealth than the infrastructure projects they receive in exchange. This model represents debt trap diplomacy at its most transparent, bypassing traditional loan structures entirely to establish immediate Chinese control over strategic resources while leaving the borrowing nation permanently dependent on Chinese investment and technology for developing its own mineral wealth.

Zimbabwe holds exceptional strategic importance for China's Belt and Road Initiative, serving as a critical gateway to Africa's largest lithium reserves and representing a key pillar in China's quest to dominate the global electric vehicle battery supply chain. Zimbabwe possesses Africa's largest lithium reserves, making it indispensable for China's green technology ambitions, with Chinese companies securing control of Zimbabwe's largest lithium mine, Bikita Minerals, which holds 11 million tons of lithium– the world's largest-known deposit. The country's significance extends far beyond single investments; Chinese investors have committed $13 billion to construct a ‘mine to energy industrial park’ to produce lithium-ion batteries, while companies like China Natural Resources continue acquiring additional mining rights. Zimbabwe represents an interesting case for China's energy investment within the BRI, transitioning from cancelled coal projects to strong engagement in green energy through agreements on massive solar installations. The Beijing-Harare partnership exemplifies China's strategy of befriending authoritarian leaders to secure access to critical minerals essential for China's population, industries, and economy, making Zimbabwe not just important but absolutely crucial to China's long-term technological sovereignty and its position in the global transition to renewable energy. This relationship transforms Zimbabwe from a peripheral BRI partner into a cornerstone of China's strategic mineral security and green technology dominance.

Zimbabwe possesses Africa’s largest lithium reserves, estimated at 500,000 tons of lithium carbonate equivalent, making it a key player in the global battery supply chain. In December 2022, the government banned raw lithium exports under the Base Minerals Export Control Act to encourage local processing and value addition (Mkodzongi, 2024, pp1-11). Chinese companies have invested over $1 billion in acquiring and developing lithium projects, often framed as ‘lithium-for-loans’ where investments are linked to resource-backed financing or debt relief (Mukeredzi, 2022, para.7-9). Key deals include Zhejiang Huayou Cobalt’s $422 million acquisition of the Arcadia mine and a $300 million processing plant; Chengxin Lithium Group’s Sabi Star mine development; and Sinomine Resource Group’s $180 million purchase of Bikita Minerals with a $300 million plant (‘Chinese investment in Zimbabwean lithium’, 2024, para. 5-6). These investments are intertwined with Zimbabwe’s $17 billion external debt, of which $2 billion is owed to China, often serviced through mineral revenues (Tewari and Raman, 2024, pp. 54-5).

Structural power, defined as the ability to shape others’ economic and political options through control over resources and institutions, underpins China’s approach to Zimbabwe’s lithium sector (Strange, 1988, p. 24). Three key mechanisms of debt- trap diplomacy are evident:

- **Excessive Lending Beyond Repayment Capacity**: China has extended loans totaling $2 billion to Zimbabwe, often resource-backed, exceeding the country’s repayment capabilities amid economic sanctions and falling commodity prices. Zimbabwe’s debt-to-GDP ratio stands at 120%, with lithium revenues increasingly used for servicing Chinese loans (Tewari and Raman, 2024, p. 55);

- **Control Over Strategic Infrastructure**: Chinese firms operate major lithium mines, granting China influence over Zimbabwe's critical mineral exports. Loan terms include resource-backed repayments, where lithium revenues service debts, fostering long-term dependency (Gbadamosi, 2023, para. 4-6). This mirrors patterns in Zambia's copper sector (Al-Fadhat & Prasetio, 2022, p. 5);

- **Financial and Economic Dependency**: Zimbabwe's reliance on Chinese investment for lithium processing creates economic leverage. While there is no direct Yuan adoption, BRI projects promote Yuan-based transactions, potentially deepening dependency. The export ban exceptions for Chinese firms further highlight power imbalances (Jones & Hameiri, 2020, p. 6).

Chinese investments have boosted Zimbabwe's lithium output, creating jobs and increasing export revenues, with production projected to reach 100,000 tons annually by 2025 (Sanchez, 2023, para. 1-3). However, socioeconomic challenges include labor abuses in Chinese-owned mines and community displacements (The International Environmental Law Project at Lewis & Clark Law School, 2013, p. 3). Environmental degradation from mining, such as water pollution and deforestation, has affected local communities (Singh, 2024, para. 6). Local consultations are often inadequate, exacerbating tensions.

Scholars like Deborah Brautigam (2009) argued that Zimbabwe's debt crisis is co-created, resulting from US sanctions (losing $42 billion in revenue) and domestic mismanagement rather than deliberate Chinese entrapment (p. 45). China has rejected deeper debt requests from Zimbabwe (Sundquist, 2021, para. 16). Conversely, critics like Chellaney (2017) highlighted resource-backed loans as predatory, enabling China to extract concessions (p. 1). The debate underscores the need for evidence-based analysis, as perceptions of debt trap diplomacy may amplify anti-Chinese sentiment (Pollard, 2022, para. 1-4).

Zimbabwe's lithium-for-loans deals exemplify China's use of structural power to advance debt trap diplomacy, leveraging excessive lending, resource control, and dependency to secure influence. While revitalizing the lithium sector, these deals have heightened Zimbabwe's vulnerabilities. Zimbabwean policymakers must prioritize transparent agreements, diversified partnerships, and sustainable debt management. Further research should explore comparative cases to assess BRI's long-term impacts in Africa.

6. The Implications of Chinese Debt- Trap Diplomacy in African economies:

The ramifications of China's debt trap diplomacy across the African continent extend far beyond individual project failures, fundamentally restructuring the economic, political, and social fabric of entire nations while creating cascading effects that undermine African sovereignty, democratic governance, and long-term development prospects. These implications manifest across multiple dimensions, including the erosion of fiscal autonomy as African governments find themselves dedicating unsustainable portions of their national budgets to servicing Chinese debt obligations, often at the expense of critical social services such as healthcare, education, and poverty alleviation programs. The strategic transfer of African assets to Chinese control has created a new form of economic colonialism, where ports, mines, airports, and other critical infrastructure become Chinese-controlled enclaves within sovereign African territories, effectively fragmenting national control over strategic resources and trade routes. Furthermore, the dependency relationships fostered through debt trap mechanisms have profound political implications, compelling African leaders to align their foreign policy positions with Chinese interests, suppress criticism of Chinese human rights violations, and limit engagement with Western democratic partners in international forums. The social implications are equally severe, as Chinese-dominated projects often import Chinese labor and exclude local communities from meaningful economic participation, exacerbating inequality and creating resentment that threatens long-term stability and social cohesion across the continent.

6.1. Diminished Sovereignty and Self-Determination:

Sovereignty refers to a nation's ability to exercise independent control over its territory, resources, and decision-making without external interference. Self-determination is the right of a nation to freely shape its political, economic, and social systems. Chinese debt-trap diplomacy, particularly through the BRI, has raised concerns about undermining these principles in African countries. Below, there is an illustration of how these loans impact African sovereignty and self-determination, supported by evidence and specific examples.

6.1.1. Mechanisms of Diminished Sovereignty:

Chinese loans, often for large-scale infrastructure like ports, railways, and power plants, can lead to sovereignty erosion when repayment becomes unsustainable. While no outright asset seizures have been conclusively documented, the following mechanisms illustrate how sovereignty is compromised:

- **Asset Concessions and Control**: When countries struggle to repay loans, China negotiates terms that may include long-term leases, operational control, or revenue-sharing agreements for strategic assets like ports or mines. For example, in Djibouti, loans totaling $1.4 billion (75% of GDP) funded port and railway projects. China's Exim Bank secured significant influence over the Doraleh Container Terminal, and China established its first overseas military base nearby in 2017. This strategic foothold enhances China's control in the Horn of Africa, potentially limiting Djibouti's autonomy over its ports and regional policy. Such arrangements effectively transfer operational sovereignty to Chinese entities, reducing local control over critical infrastructure;(AidData, 2016, para. 3)
- **Resource-Backed Loans**: Loans are often secured against natural resources (e.g., oil, minerals), forcing countries to export raw materials at low prices to service debt, limiting domestic resource governance. The best example to illustrate is Angola which owes China ~$21 billion, much of it backed by oil exports. By 2022, 90% of Angola's oil exports were directed toward debt repayment, constraining its ability to use oil revenue for domestic development. This creates a form of "reverse resource nationalism," where resource control shifts to the creditor, undermining sovereign rights to exploit national assets freely; (Business & Human Rights Resource Centre, 2023, para. 7)
- **Debt Restructuring Leverage**: Defaulting countries face prolonged debt restructuring, during which China can influence economic policies or secure strategic concessions. For instance, Zambia defaulted on $6 billion in Chinese loans in 2020. Restructuring talks gave China significant influence over Zambia's fiscal policies, delaying agreements as China insisted on bilateral terms over multilateral frameworks like the G20's Common Framework. Zambia's ability to independently manage its economy was curtailed, as external creditors dictated terms, eroding fiscal sovereignty; (Cheng, 2018, para. 5)

- **Geopolitical Influence**: Debt burdens push African nations to align with China's geopolitical agenda, such as supporting its positions in international forums or recognizing its claims over Taiwan. Many African nations, including Ethiopia and Kenya, have endorsed China's BRI and avoided criticizing its human rights record, possibly due to debt dependencies ($13.7 billion and $5.3 billion owed, respectively). This compromises territorial and diplomatic sovereignty, as nations prioritize creditor relations over independent foreign policy. (Himmer and Zdněck, 2022, p. 255)

6.1.2. Mechanisms of Diminished Self-Determination:

Self-determination is undermined when African nations lose the freedom to pursue independent economic, political, or social policies due to debt obligations. Key mechanisms include:

- **Policy Coercion**: Heavy debt servicing diverts resources from domestic priorities, while China's influence encourages alignment with its global agenda, limiting policy options. Kenya allocates ~30% of its revenue to service $5.3 billion in loans for the Standard Gauge Railway (SGR). Secretive loan clauses and China's operational role in the railway have sparked fears of policy concessions, such as aligning with China on issues like the South China Sea or Taiwan. Kenya's ability to set independent trade or diplomatic policies is constrained, as debt pressures prioritize China's interests; (Mutai, 2015, para. 4; De Kluiver, 2023, para. 1-2)

- **Economic Dependency**: High debt-service ratios (20-30% of budgets in countries like Kenya and Angola) reduce funds for health, education, or local industries, locking nations into cycles of borrowing and dependency. Ethiopia's $13.7 billion debt to China for dams and railways has forced austerity measures, limiting investments in social services and local economic diversification. This restricts self-determination by prioritizing debt repayment over national development goals, perpetuating economic reliance on external creditors; (Munyati, 2024, para. 1-2; Dollar, 2019, pp. 4-5)

- **Social and Environmental Costs**: Chinese-funded projects often bypass local consultation, leading to displacement, environmental degradation, or labor issues, which weaken internal governance and public trust. In Uganda, the $200 million Entebbe Airport loan reportedly included clauses risking asset control (Parks, Malik, Wooley, 2022, p. 3), while mining projects in Zambia have caused pollution and community displacement, sparking protests. These projects erode self-determination by sidelining local voices, weakening governance, and fostering internal instability that limits policy autonomy; (Musonda, 2020, p. 217)

- **Opaque Contracts**: Non-transparent loan agreements obscure repayment terms or collateral clauses, reducing governments' ability to negotiate or inform citizens, undermining democratic accountability. In Kenya, the SGR loan's confidentiality clauses fueled public suspicion of hidden collateral agreements involving Mombasa port, though officially denied. Lack of transparency limits public oversight, constraining governments' ability to act in the national interest. (Brautigam, Bhalaki, Deron, and Yinxuan, 2022, pp. 15-6)

To illustrate the scale of debt impacting sovereignty and self-determination, we consider the following chart showing the debt-to-GDP ratio for key African countries with significant Chinese loans (data approximate, based on 2022-2024 estimates):

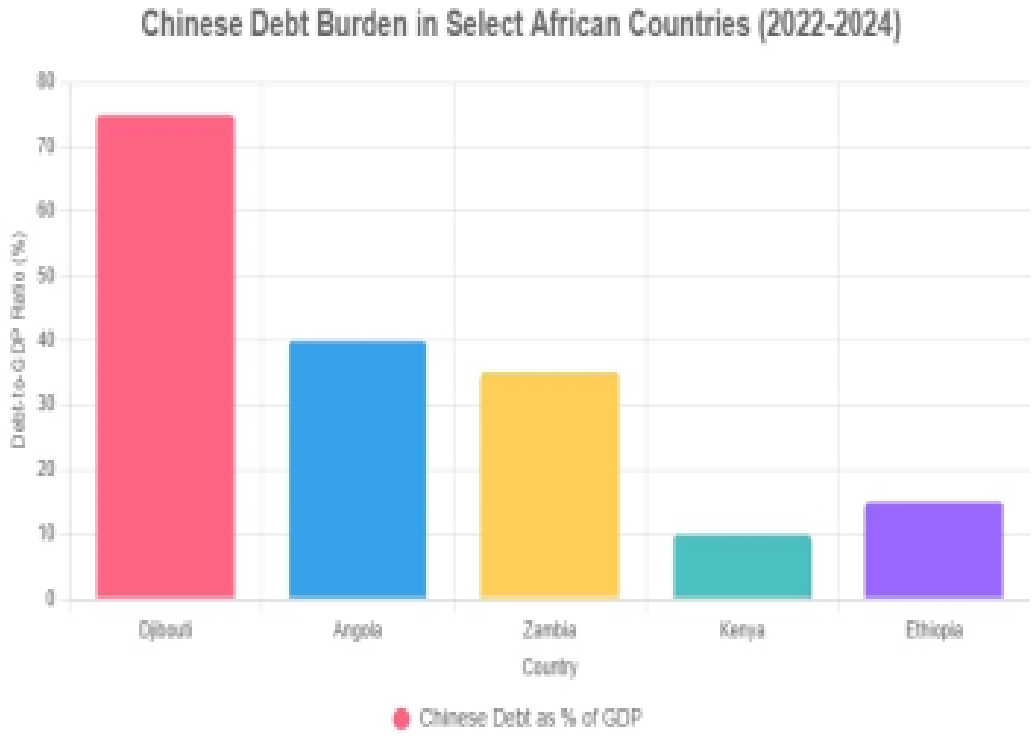

Fig. 1: Chinese Debt Burden in Select African Countries (2022-2024). (Source: Adapted from World Bank, 2023, p. 34).

The graph titled 'Chinese Debt Burden in Select African Countries (2022-2024)' illustrates the percentage of GDP that each country's debt to China represents, highlighting varying levels of financial dependency across five nations: Djibouti, Angola, Zambia, Kenya, and Ethiopia. Djibouti stands out with the highest debt burden, at approximately 70% of its GDP, indicating a significant reliance on Chinese loans, likely tied to infrastructure projects like the Doraleh Port. Angola follows with a debt ratio of around 40%, reflecting its substantial oil-backed borrowing, while Zambia's debt is slightly lower at about 30%, consistent with its 2020 default due to repayment challenges. Kenya and Ethiopia show lower debt levels, with Kenya at around 10% and Ethiopia slightly higher at about 15%, suggesting a more moderate engagement with Chinese financing. This distribution underscores the uneven impact of Chinese lending, with Djibouti and Angola facing the heaviest burdens, potentially influencing their economic and political landscapes more significantly than the others.

Chinese debt-trap diplomacy poses tangible risks to African sovereignty and self-determination through asset control, resource dependency, policy coercion, and economic burdens. Cases like Djibouti's port concessions and Zambia's restructuring highlight how debt can translate into strategic leverage for China. However, the narrative is nuanced: China's loans are a fraction of Africa's total debt, and benefits like infrastructure development cannot be ignored. To preserve sovereignty and self-determination, African nations must prioritize transparent contracts, diversify creditors, and strengthen multilateral negotiations. The global debt landscape, not just China, shapes these challenges, requiring balanced strategies to ensure autonomy in an interconnected world.

6.2. Distorted Trade Relationships:

Chinese debt-trap diplomacy, often linked to the BRI, is argued to distort Africa's trade relationships by creating imbalanced economic dependencies, prioritizing Chinese interests, and undermining local industries.

- **Commodity-for-Manufactures Imbalance:** Africa's trade with China is characterized by exporting raw materials (e.g., oil, minerals, metals) and importing manufactured goods. In 2023, 25% of Africa's exports went to China, while 16% of its imports came from China. This pattern mirrors colonial trade structures, limiting Africa's ability to develop value-added industries. The flood of cheap Chinese manufactured goods, such as textiles and electronics, undercuts local producers, leading to deindustrialization (Brautigama, Xiaoyangb, and Xiac, 2018, pp. 31-2). For example, Nigeria and South Africa's textile industries have faced significant job losses due to Chinese imports. This entrenches Africa's role as a resource supplier, reducing economic diversification. China's zero-tariff policy for African products, expanded in recent years, aims to diversify exports beyond commodities, potentially integrating African countries into global supply chains. Investments in agriculture and manufacturing have created jobs in some regions, with trade deals generating billions in economic activity; (Chen, 2020, pp. 9-10)

- **Control Over Trade Infrastructure:** Chinese loans for infrastructure (e.g., ports, railways) often come with conditions favoring Chinese firms, and debt distress can lead to concessions. China operates or owns 46 African ports, controlling nearly 50 critical harbors and influencing 27% of global container trade. This gives China leverage over trade routes and export priorities (Nantulya, 2025, para. 1-3). In Kenya, the $5 billion Standard Gauge Railway, funded by Chinese loans, represents 20% of GDP. Debt repayment pressures have raised fears of asset handovers, potentially allowing China to control key trade nodes. Similarly, Djibouti's Doraleh Port has been cited as a case where debt led to Chinese operational control. Such control can prioritize Chinese shipping and resource exports (e.g., minerals to China), sidelining intra-African trade or access to other markets, distorting regional trade dynamics (Nantulya, 2025, para. 4-5);

- **Tied Loans and Market Distortion:** Chinese loans often require using Chinese labor, materials, and companies, limiting local economic benefits and technology transfer. This ties African markets to Chinese suppliers, flooding them with subsidized goods (Mekonnen, 2022, pp. 25-8). In Ethiopia, Chinese-funded industrial parks have been criticized for employing Chinese workers over locals, while Chinese textiles dominate markets, harming domestic producers. Local industries struggle to compete, reducing job creation and economic self-sufficiency. Environmental degradation from Chinese projects (e.g., mining) further distorts trade by prioritizing resource extraction over sustainable development (Mekonnen, 2022, pp. 29-30);

- **Geopolitical Influence on Trade Alignment:** Heavy debt burdens can push African nations to align trade policies with China, potentially isolating them from Western markets (Sy, 2025, para. 11). Countries like Angola and Zimbabwe, with significant Chinese debt, may prioritize Chinese trade partnerships (Usman and Xiaoyang, 2024, pp.5-6). This can distort global trade relationships, as African countries may face pressure to favor Chinese firms or markets, limiting diversification and access to alternative partners like the EU or US. (Landry and Portelance, 2021, p. 22)

To illustrate the commodity-for-manufactures trade distortion, the chart below compares Africa's export and import composition with China (based on 2023 data estimates).

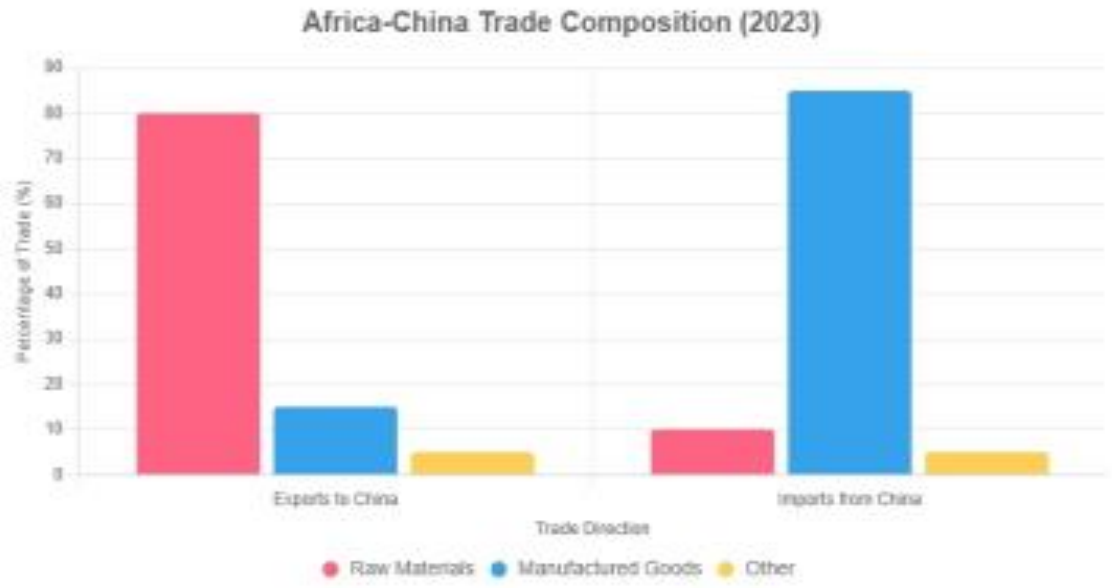

Fig. 2: Africa-China Trade Composition (2023). (Source: Adapted from Freedom House, 2023, p. 22).

The graph titled 'Africa-China Trade Composition (2023)' illustrates the breakdown of trade between Africa and China, highlighting the percentage of trade attributed to raw materials, manufactured goods, and other categories for both exports to China and imports from China. Data is approximated based on sources indicating 80% of Africa's exports to China are raw materials (e.g., fuels, minerals), while 85% of imports are manufactured goods. Africa's exports to China are dominated by raw materials, accounting for approximately 80% of the total, with manufactured goods making up about 15% and other categories around 5%. In contrast, imports from China are predominantly manufactured goods, comprising roughly 85% of the total, while raw materials contribute about 10% and other categories around 5%. This stark asymmetry underscores a trade relationship where Africa primarily supplies raw resources, such as minerals and oil, while relying heavily on Chinese manufactured products, such as electronics and textiles, reinforcing a commodity-for-manufactures dynamic that may limit Africa's industrial development.

Chinese debt-trap diplomacy distorts African trade relationships by reinforcing a commodity-heavy export structure, flooding markets with Chinese goods, and leveraging infrastructure control to prioritize Chinese interests. These dynamics risk perpetuating dependency and undermining local industries. However, counterarguments highlight benefits like infrastructure development, job creation through FDI, and zero-tariff policies that could balance trade. The extent of distortion depends on African governance: strong policies can mitigate risks, while weak oversight exacerbates imbalances. Recent trends toward smaller, sustainable projects suggest a potential shift, but addressing trade distortions requires Africa to prioritize industrialization and negotiate fairer terms.

6.3. Stifled Economic Development:

Chinese debt-trap diplomacy, often linked to the BRI, is argued to stifle Africa's economic development. Critics contend that large-scale Chinese loans for infrastructure projects create debt

burdens, limit local economic benefits, and divert resources from sustainable growth, hindering long-term development.

- **Debt Burdens and Fiscal Strain:** Chinese loans for large infrastructure projects impose significant repayment obligations, consuming fiscal resources that could otherwise fund development priorities like education, healthcare, or industrialization. China holds more African debt than the next 10 bilateral creditors combined, with loans often exceeding borrowers' repayment capacity (Heitzig, Ordu & Senbet, 2021, p. 1). Kenya's $5 billion Standard Gauge Railway, funded by Chinese loans, represents about 20% of GDP. Debt servicing costs have strained public finances, reducing investments in social services and local industries ('Kenya's SGR Drives Up Debt, Falls Short on Profits', 2023, para. 6; Soy, 2023, para. 2). Zambia's $6.3 billion debt to China contributed to its 2020 default, limiting fiscal space for development programs. High debt repayments divert funds from productive investments, slowing economic diversification and poverty reduction ('La Zambie en défaut de paiement', 2020, para. 3). This can trap countries in a cycle of borrowing to service existing debts, stifling growth potential;

- **Limited Local Economic Benefits from Tied Loans**: Chinese loans often require the use of Chinese labor, materials, and contractors, reducing local job creation and technology transfer. This limits the economic multiplier effects of projects, as benefits accrue primarily to Chinese firms. In Ethiopia, Chinese-funded industrial parks and infrastructure projects, such as the Addis Ababa-Djibouti Railway, have employed significant Chinese labor, limiting local employment opportunities (Nicolas, 2017, p. 2). In Angola, oil-backed loans to China have prioritized resource exports over local processing industries, hindering economic diversification. The lack of local involvement stifles skill development and industrial growth, perpetuating dependency on external expertise and goods (Jonveaux, 2022, p. 1). This undermines the ability of African economies to build self-sustaining industries;

- **Opportunity Costs and Misaligned Development Priorities:** Chinese-funded projects often prioritize large-scale infrastructure (e.g., highways, ports) over sectors like agriculture, education, or small-scale industries that could drive inclusive growth. These projects may align more with China's strategic interests (e.g., resource access or trade routes) than local development needs. In Djibouti, Chinese loans exceeding 70% of GDP have funded port expansions and a military base, benefiting China's trade and geopolitical goals but contributing little to local economic diversification (Cabestan, 2021, p. 134). In Uganda, the $1.5 billion Entebbe Airport loan has been criticized for prioritizing prestige projects over rural development ('La Chine impose à l'Ouganda un contrat léonin pour l'aéroport d'Entebbe', 2022, para. 3). Focusing on capital-intensive projects can crowd out investments in human capital or small enterprises, which are critical for broad-based economic development. This misallocation stifles long-term growth potential;

- **Environmental and Social Costs**: Chinese-funded projects, particularly in mining and resource extraction, often prioritize rapid development over environmental sustainability, leading to ecological degradation and social displacement. These costs can undermine long-term economic productivity. In Ghana, Chinese-backed mining operations have been linked to deforestation and water pollution, harming agricultural livelihoods. In Mozambique, Chinese-funded dam projects have displaced communities, disrupting local economies without adequate compensation. Environmental damage and social unrest reduce the economic viability of affected regions, limiting sustainable development and exacerbating poverty. (Terminski, 2012, pp. 19-21).

To illustrate the relationship between Chinese debt and economic development, the chart below compares Chinese debt levels (as a percentage of GDP) with GDP growth rates (2023 estimates) for select African countries.

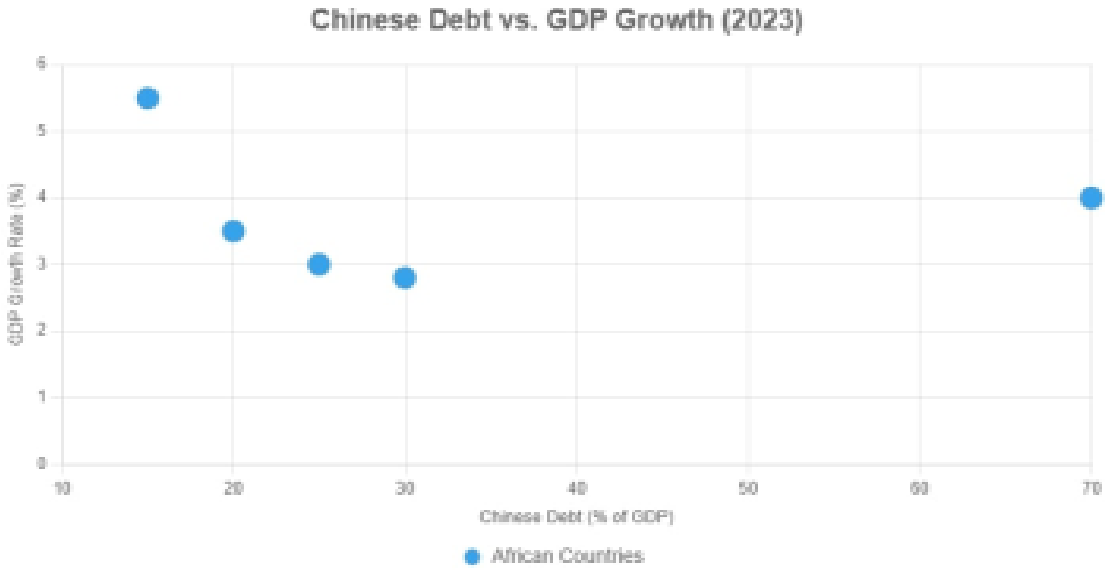

Fig. 3: Chinese Debt vs. GDP Growth (2023). (Source: Adapted African Development Bank, 2024, p. 19).

The graph titled 'Chinese Debt vs. GDP Growth (2023)' illustrates the relationship between the percentage of GDP represented by Chinese debt and the GDP growth rate across select African countries. Data is approximated based on sources indicating debt-to-GDP ratios and GDP growth rates. The chart shows mixed outcomes, with some high-debt countries maintaining growth, suggesting no universal stifling effect. The scatter plot shows a downward trend, suggesting that higher levels of Chinese debt as a percentage of GDP are associated with lower GDP growth rates. For instance, countries with debt levels around 10-20% of GDP exhibit growth rates of approximately 4-5%, while those with debt levels near 30-40% show growth rates dropping to around 2-3%. Notably, a country with a debt level close to 70% maintains a growth rate of about 4%, indicating variability in outcomes. This suggests that while higher Chinese debt burdens may generally correlate with slower economic growth, other factors—such as governance, resource management, or project efficiency—likely influence the extent of economic impact.

Chinese debt-trap diplomacy is argued to stifle African economic development through heavy debt burdens, limited local benefits from tied loans, misaligned project priorities, and environmental/social costs. Examples like Kenya's railway, Zambia's default, and Ghana's mining issues highlight how these dynamics constrain fiscal space, hinder industrialization, and undermine sustainable growth. However, counterarguments emphasize that Chinese investments address critical infrastructure needs, create jobs, and drive growth, as seen in Ethiopia's industrial parks and African Continental Free Trade Area (AFCFTA) trade gains. The extent of stifling depends on African governance: effective management can harness benefits, while poor oversight exacerbates risks. Recent shifts toward smaller, greener projects and debt forgiveness may mitigate some negative impacts, but fostering sustainable development requires African nations to prioritize local capacity and diversified economies.

6.4. Erosion of Democratic Institutions:

Following the discussions on distorted trade relationships and stifled economic development, Chinese debt-trap diplomacy—often associated with the BRI—is argued to contribute to the erosion of democratic institutions in African countries. Critics assert that large-scale Chinese loans and investments create dependencies that undermine governance, transparency, and accountability, aligning African states with China's authoritarian model. Below, are the key mechanisms through which democratic institutions may be eroded, supported by examples, data, and drawing on relevant sources.

- **Debt Dependency and Political Leverage:** High levels of debt to China can create political dependencies, as African governments reliant on Chinese loans may prioritize Beijing's interests over democratic principles. China's non-interference policy often means loans are granted without conditions for governance reforms, unlike Western lenders, potentially emboldening authoritarian tendencies. This leverage can pressure governments to align with China in international forums, sidelining domestic democratic accountability. In Zimbabwe, Chinese loans and investments (e.g., $2 billion for mining and infrastructure) have bolstered the ruling ZANU-PF regime, which has faced accusations of suppressing dissent and rigging elections (Hassan, 2025, para. 6). China's support, including military and economic aid, is seen as enabling authoritarian consolidation. Similarly, Angola's $25 billion debt to China has coincided with limited democratic reforms, as the government prioritizes debt repayment and Chinese partnerships over transparency. Debt dependency can weaken democratic checks by empowering leaders to bypass accountability mechanisms, as they rely on Chinese support to maintain power rather than domestic legitimacy ('As China Buys Less Oil, Angola Struggles to Repay Debt', para. 4-7). This can lead to reduced transparency in loan agreements and public spending;

- **Opaque Loan Agreements and Corruption Risks**: Chinese loans are often negotiated with little transparency, lacking public oversight or competitive bidding, which can enable corruption and weaken democratic institutions. The secrecy surrounding BRI contracts allows elites to benefit, sidelining public accountability and parliamentary scrutiny (Brautigam, 2020, p. 143). In Uganda, the $1.5 billion Chinese-funded Entebbe Airport expansion loan included undisclosed terms, raising concerns about elite capture and lack of public consultation (Mohan, Lampert, and Tan-Mullins, 2014, p. 17). Reports suggest similar opacity in Zambia's Chinese-funded projects, where corruption allegations have undermined public trust in governance (Mushota, 2021, pp. 35-6). Opaque deals erode democratic institutions by limiting civil society's ability to hold governments accountable, fostering corruption, and reducing trust in public institutions (Jones & Hameiri, 2021, p. 89). This can strengthen authoritarian leaders who use Chinese funds to consolidate power;

- **Alignment with Authoritarian Models**: China's engagement with African states often promotes its governance model—centralized control, limited press freedom, and state-led development—as an alternative to Western democracy (Green, Nelson, and Washington, 2020, p. 5). This can influence African leaders to adopt repressive policies, especially in debt-stressed nations reliant on Chinese support (Aidoo & Hess, 2015, p. 110). Training programs for African officials in China often emphasize its authoritarian stability, implicitly encouraging similar approaches (Green, Nelson, and Washington, 2020, p. 5). In Ethiopia, Chinese investments in telecoms (e.g., Huawei's 5G infrastructure) have been linked to enhanced government surveillance capabilities, mirroring China's digital control model and raising concerns about democratic backsliding (Jili, 2022, p. 43). In Sudan, Chinese support for infrastructure has coincided with prolonged military rule, with critics arguing it bolsters non-democratic regimes (International Crisis Group, 2017, p. 2). Exposure to China's model can weaken democratic norms, encouraging leaders to prioritize stability and economic growth over free elections, press freedom, or civil liberties (Green, Nelson, and Washington, 2020, p. 5), thus eroding institutional checks and balances;

- **Geopolitical Alignment and Reduced Democratic Pressure:** Heavy reliance on Chinese loans can shift African foreign policies toward China, reducing engagement with Western democracies that often tie aid to governance reforms. This can insulate leaders from democratic pressure, allowing

them to weaken institutions like independent judiciaries or free media (Cheung, Cheng, and Wang, 2018, para. 6). Djibouti, heavily indebted to China (over 70% of GDP), has aligned closely with Beijing, hosting China's first overseas military base. This alignment has coincided with limited democratic progress, as the government faces less Western pressure for reforms (Bearak, 2019, para. 4). By reducing reliance on Western aid, Chinese loans can weaken external incentives for democratic accountability, allowing governments to suppress opposition or media without risking funding cuts. (Ping, Wang, and Chang, 2020, p. 12)

To illustrate the potential link between Chinese debt and democratic erosion, the chart below compares debt levels to China (as a percentage of GDP) with Freedom House Democracy Scores (2023) for select African countries. Lower scores indicate weaker democratic institutions.

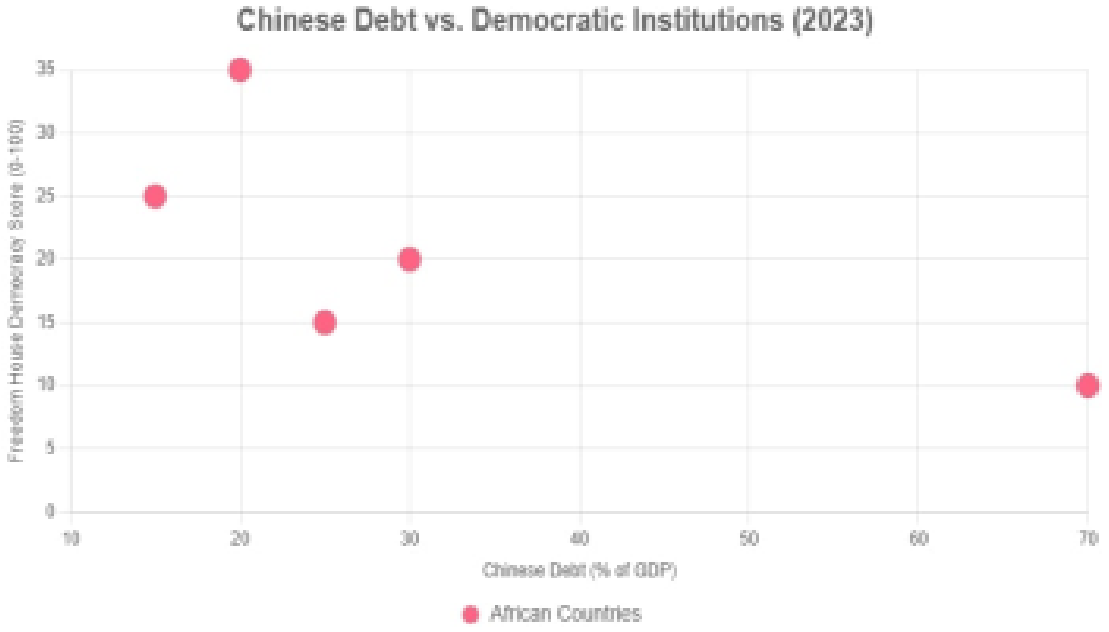

Fig. 4: Chinese Debt vs. Democratic Institutions (2023). (Source: Adapted from International Trade Centre, 2023, p. 27).

The graph titled 'Chinese Debt vs. Democratic Institutions (2023)' illustrates the relationship between the percentage of GDP represented by Chinese debt and the Freedom House Democracy Score (ranging from 0 to 100, with higher scores indicating stronger democratic institutions) across select African countries. Data is approximated based on sources indicating debt-to-GDP ratios and Freedom House scores. Higher debt correlates with lower democratic scores in some cases, though correlation does not imply causation. The scatter plot suggests a general downward trend, indicating that higher levels of Chinese debt as a percentage of GDP are associated with lower democracy scores. For instance, countries with debt levels around 10-20% of GDP have democracy scores of approximately 25-30, while those with debt nearing 30-40% show scores dropping to around 15-20. Notably, a country with a debt level close to 70% has a score of about 10, reflecting weaker democratic institutions. This correlation implies that heavier reliance on Chinese loans may coincide with reduced democratic governance, though other factors like internal governance structures or historical contexts likely play a significant role.

Chinese debt-trap diplomacy is argued to erode democratic institutions in Africa by creating debt dependencies that enhance political leverage, fostering opaque deals that enable corruption, promoting authoritarian governance models, and reducing Western pressure for democratic reforms. Examples like Zimbabwe, Angola, and Djibouti highlight how reliance on Chinese loans can align governments with Beijing, potentially weakening accountability and transparency. However, counterarguments emphasize that China's non-interference policy respects sovereignty, and democratic erosion often stems from pre-existing governance failures rather than Chinese influence. The impact depends heavily on African leadership: strong institutions can mitigate risks, while weak governance amplifies vulnerabilities. Recent trends, such as declining Chinese lending (down 55% from 2021-2022) and debt forgiveness, may reduce these pressures, but fostering democratic resilience requires greater transparency and domestic accountability.

7. Conclusion:

This study has explored the complexities of Chinese debt trap diplomacy and its multifaceted implications for African economies. Through an analysis of lending mechanisms, such as high-interest loans and strategic infrastructure investments under the BRI, it is evident that Chinese financing has delivered significant short-term benefits, including enhanced infrastructure and economic growth in countries like Kenya, Zambia, and Ethiopia. However, these gains come with substantial long-term risks, including debt distress, potential loss of economic sovereignty, and social discontent stemming from project-related challenges. Case studies reveal varied outcomes, with success hinging on factors like governance, economic diversification, and debt management capacity.

The findings underscore that while Chinese investments are pivotal for addressing Africa's infrastructure deficits, they demand careful scrutiny to avoid unsustainable financial burdens. For African governments, policy recommendations include strengthening debt management frameworks, diversifying funding sources, and prioritizing projects with clear economic returns. For China, adopting transparent and sustainable lending practices could enhance mutual benefits and trust. The international community, including institutions like the IMF and World Bank, should support African nations through debt relief and capacity-building initiatives. Looking ahead, future research should track the long-term performance of Chinese-funded projects and compare Africa's experiences with other regions to deepen understanding of global debt dynamics. By navigating these challenges strategically, African economies can harness Chinese investments for sustainable development while safeguarding their economic futures.

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THE RELATIONSHIP BETWEEN ETHNIC FRAGMENTATION AND STATE WEAKNESS: A CASE STUDY ON SOMALIA

BOUTKHIL GUEMIDE

UNIVERSITY MOHAMMED BOUDIAF, MSILA (Algeria)

boutkhil.ghemid@univ-msila.dz

https://orcid.org/0000-0002-3415-2059

Abstract:

The present paper examines the relationship between ethnic fragmentation and state weakness, using Somalia as a case study. Somalia's clan-based society has been plagued by state weakness and instability since the collapse of the Siad Barre regime in 1991. Through a combination of historical analysis, literature review, and case studies, this research paper argues that ethnic fragmentation is a significant factor contributing to state weakness in Somalia.

The findings indicate that ethnic fragmentation has led to a lack of national identity, perpetuating clan rivalries, regionalism, and decentralization, which have weakened the state's ability to provide public goods and services, maintain law and order, and promote economic development. Furthermore, the study shows that external actors have exacerbated the conflict and instability by supporting different clans and factions, while clan elders and warlords have exploited ethnic divisions for personal gain. Furthermore, the paper analyzes how external actors, including neighboring countries and international organizations, have exacerbated the conflict and instability by supporting different clans and factions. The research also examines the role of clan elders and warlords in perpetuating state weakness and exploiting ethnic divisions for personal gain.

The paper concludes that addressing ethnic fragmentation is crucial to building a more stable and peaceful Somalia. It recommends that policymakers and international organizations prioritize national reconciliation, promote inclusive governance, and support economic development initiatives that benefit all Somalis, regardless of their clan affiliation.

This research contributes to the existing literature on ethnic conflict and state building by highlighting the importance of addressing ethnic fragmentation in post-conflict state-building efforts. The findings of the study have significant implications for policymakers and international organizations seeking to promote peace, stability, and development in Somalia and other fragile states.

Keywords: Ethnic fragmentation, state weakness, Somalia, conflict, instability.

8. INTRODUCTION:

Ethnic fragmentation, defined as the division of society into distinct ethnic or cultural groups, poses unique challenges to state formation and governance. In Somalia, the interplay between clan identities and political power dynamics has led to persistent instability, undermining efforts to establish a cohesive

and functional state. The historical context of colonialism and subsequent political developments have further entrenched these divisions, creating a complex landscape where loyalty to clan often supersedes allegiance to the nation-state (‘Somalia: Impact of clan conflicts,’ 2025, p. 3).

Ethnic fragmentation is often cited as a driver of state weakness in post-colonial African states, yet its precise role remains contested. Conventional geopolitical theory posits that ethnic homogeneity fosters internal stability and territorial integrity by acting as a centripetal force, alongside factors like equitable resource distribution and strong national identity. Within this context, Popescu (2021) reported that despite Somali ethnic and linguistic homogeneity—where nearly all citizens identify as Somali and speak the Somali language—the country epitomizes state failure, marked by civil war, secessionism, piracy, and terrorism since the collapse of its central government in 1991 (p. 171). This paradox suggests that other forms of social fragmentation, notably clan-based divisions, may play a more significant role in undermining state cohesion than ethnic diversity alone.

Warsame (2024) explained that Somalia’s descent into chaos following the fall of Siad Barre’s regime highlighted the interplay of clannism, poor governance, and external pressures in perpetuating state weakness. Clan identities, rooted in primordial cleavages, have superseded national unity, fueling conflict and fragmenting political authority (p. 32). Compounded by a colonial legacy of arbitrary borders and Cold War interventions, Somalia’s strategic location in the Horn of Africa has further exacerbated instability (Ali, 2023, p. 1466).

The collapse of the Somali state in 1991 and its failure to reconstitute effective central authority for over three decades presents a puzzle for scholars of comparative politics and development. Despite sharing common language, religion, and cultural practices—factors typically associated with successful nation-building—Somalia has remained fragmented along clan lines, with repeated attempts at state reconstruction failing to establish legitimate and capable governance institutions (Issa-Salwe, 1996, p. 93). This persistence of state weakness in an ostensibly homogeneous society challenges conventional wisdom about the relationship between ethnic diversity and state capacity.

Understanding the relationship between ethnic fragmentation and state weakness in Somalia is crucial for several reasons. First, it sheds light on the specific mechanisms through which ethnic divisions can exacerbate governance challenges, leading to political instability and social conflict. Second, it highlights the importance of inclusive governance and the need for policies that address the grievances of diverse ethnic groups. Finally, the findings from this research can offer valuable insights for international actors seeking to engage in peacebuilding and state-building efforts in Somalia and similar contexts.

Somalia's trajectory from a functioning post-colonial state to a paradigmatic example of state failure raises fundamental questions about the role of ethnic divisions in undermining state capacity. Mohamoud (2002) claimed that despite sharing a common language, religion, and cultural heritage, Somalia has been unable to rebuild effective central government institutions since the fall of Siad Barre's regime. According to him, the persistence of clan-based politics and territorial fragmentation suggests that sub-ethnic divisions within an otherwise homogeneous society can be as destructive to state capacity as broader ethnic heterogeneity (pp. 133-5).

The relationship between ethnic diversity and state performance has generated extensive scholarly debate with competing theoretical perspectives. The fragmentation hypothesis, most prominently articulated by Easterly and Levine (1997), argued that ethnic heterogeneity undermines economic growth and governance effectiveness by reducing social cohesion and increasing coordination costs. Their cross-national analysis demonstrates that ethnically fragmented societies struggle to provide public goods, maintain political stability, and achieve sustainable development outcomes.

Building on this foundation, Alesina and La Ferrara (2005) provided compelling evidence that ethnic fragmentation reduces public goods provision by fragmenting political coalitions and creating collective

action problems. Their work suggests that ethnically diverse societies face inherent difficulties in building consensus around taxation and public investment, leading to under-provision of infrastructure, education, and other state services essential for development. However, this deterministic view has faced significant criticism. Posner (2004) argued that ethnic diversity measures fail to capture the political salience of ethnic divisions, which varies considerably across contexts. His work on Zambia demonstrates that the same ethnic groups can be politically relevant or irrelevant depending on institutional arrangements and demographic configurations. Similarly, Chandra (2005) emphasized the constructed and contextual nature of ethnic identity, arguing that institutions shape which ethnic categories become politically mobilized.

The concept of state failure has evolved considerably since its emergence in the 1990s. Rotberg (2004) defined failed states as those that can no longer provide basic security, maintain rule of law, or deliver essential services to their populations. His framework identifies Somalia as the archetypal failed state, characterized by complete breakdown of central authority and the emergence of competing power centers.

Migdal's (1988) 'strong society, weak state' framework offers a more nuanced understanding of state-society relations in fragmented contexts. His analysis suggests that strong social organizations, including ethnic institutions, can systematically undermine state capacity by competing for loyalty and resources. This perspective is particularly relevant to Somalia, where clan institutions have maintained legitimacy and effectiveness even as formal state structures collapsed.

Recent scholarship has moved beyond simple state failure typologies toward understanding the dynamics of state fragility. Call (2008) distinguished between different types of state weakness, arguing that institutional legitimacy deficits may be more fundamental than capacity limitations. This insight is crucial for understanding Somalia, where technical capacity exists within clan-based governance systems but national-level legitimacy remains elusive.

The role of clan-based politics in African governance has received increasing scholarly attention. Englebert (2009) argued that pre-colonial institutions significantly influence contemporary governance outcomes, with societies possessing strong traditional governance systems often struggling to develop effective modern states. His work suggests that institutional competition between traditional and modern authority structures creates governance challenges that persist across generations.

Lewis (2008) provided the most comprehensive analysis of Somali clan politics, demonstrating how the segmentary lineage system creates both opportunities for conflict resolution and obstacles to centralized governance. His ethnographic work reveals how clan identity operates at multiple levels—from immediate family groups to major clan families—creating complex patterns of alliance and opposition that shift based on political context.

Bradbury (2008) offered crucial insights through his comparative analysis of Somaliland and Somalia, arguing that successful state-building requires alignment between formal institutions and traditional governance systems. His work suggests that Somaliland's relative success stems from its ability to integrate clan politics into modern state structures, while Somalia's failures reflect continued institutional competition.

The political economy literature emphasizes how ethnic fragmentation enables rent-seeking behavior by political elites. Bates (2008) argued that ethnic politics becomes a rational strategy for elites seeking to maintain power in contexts where programmatic competition is difficult. His analysis of African politics demonstrates how ethnic mobilization allows elites to secure electoral support while avoiding accountability for policy performance.

Arriola (2013) extended this analysis by examining how ethnic coalition-building affects governance outcomes. His work suggests that multi-ethnic coalitions require extensive side payments to maintain

stability, leading to increased corruption and reduced public goods provision. This insight helps explain why Somalia's clan-based politics has proven so resistant to reform efforts.

Despite extensive scholarship on ethnicity and governance, significant gaps remain in our understanding of how ethnic fragmentation specifically undermines state capacity. First, most quantitative studies rely on crude ethnic fractionalization indices that fail to capture the institutional depth and political salience of ethnic divisions. Somalia's clan system, with its complex segmentary structure and traditional governance mechanisms, requires more nuanced analysis than simple diversity measures can provide. Second, the literature lacks sufficient attention to temporal dynamics in ethnicity-state relationships. Most studies provide snapshot analyses rather than examining how ethnic divisions evolve in response to state policies and external shocks. Somalia's experience across different political periods—from democratic competition through military rule to state collapse and reconstruction—offers unique opportunities to trace these dynamics over time. Third, existing work often treats ethnic fragmentation as exogenous to state-building processes. However, Somalia's experience suggests that state policies can significantly reshape ethnic political salience, as evidenced by Siad Barre's manipulation of clan identities during his authoritarian rule. Understanding these endogenous relationships is crucial for developing effective state-building strategies.

The relationship between ethnic diversity and state capacity remains one of the most contested debates in comparative politics and development studies. While some scholars argue that ethnic heterogeneity undermines social cohesion and effective governance, others contend that diversity can be managed through appropriate institutional arrangements. Somalia presents a compelling case for examining this relationship, having experienced complete state collapse in 1991 followed by over three decades of fragmentation, conflict, and failed reconstruction efforts.

This study makes several important contributions to scholarly understanding of ethnicity-state relationships and practical knowledge for state-building in fragmented societies. These are:

- The research advances theoretical understanding of how ethnic institutions interact with formal governance structures. By examining Somalia's clan system in detail, the study provides insights into the mechanisms through which traditional ethnic organizations can both compete with and complement modern state institutions. This contributes to broader debates about institutional pluralism and hybrid governance arrangements in post-colonial societies;
- The study also refines our understanding of ethnic fragmentation measurement and analysis. Rather than relying on aggregate diversity indices, the research develops a more sophisticated framework for analyzing how different configurations of ethnic divisions—homogeneous versus heterogeneous, hierarchical versus horizontal—affect state capacity. The Somaliland-Somalia comparison provides particularly valuable leverage for testing these theoretical distinctions;
- Furthermore, the research contributes to state failure literature by demonstrating how ethnic fragmentation creates specific pathways to state weakness. While existing scholarship often treats state failure as a general phenomenon, this study identifies the particular mechanisms through which ethnic divisions undermine institutional development, offering more precise theoretical predictions about state fragility patterns.

Empirically, the study provides the most comprehensive analysis to date of how clan politics has shaped Somalia's political trajectory from independence through contemporary reconstruction efforts. By tracing these dynamics across multiple political periods, the research illuminates how ethnicity-state relationships evolve over time in response to changing political conditions.

The comparative analysis of Somaliland and Somalia offers unique insights into the conditions under which ethnic fragmentation can be successfully managed. This comparison provides rare empirical leverage for testing hypotheses about ethnic homogeneity and state capacity within a single cultural and historical context.

The study's findings have significant implications for international state-building efforts in fragmented societies. By identifying specific mechanisms through which ethnic fragmentation undermines governance, the research provides guidance for designing institutional arrangements that can accommodate diversity while building effective state capacity.

The analysis of Somalia's federal arrangement and clan-based power-sharing formulas offers lessons for other societies attempting to manage ethnic divisions through institutional design. The study's assessment of these arrangements' strengths and limitations provides practical insights for policy-makers engaged in similar efforts elsewhere. Moreover, the research contributes to debates about international intervention in failed states by examining how external support can either reinforce or mitigate the effects of ethnic fragmentation on governance outcomes.

The primary purpose of this study is to examine how clan-based ethnic fragmentation has contributed to persistent state weakness in Somalia and to identify the specific mechanisms through which ethnic divisions undermine state-building efforts. This involves three interconnected analytical tasks:

- The study aims to trace the historical evolution of clan politics in Somalia from pre-colonial times through contemporary reconstruction efforts, identifying how ethnic institutions have shaped state-society relations across different political periods. This historical analysis provides essential context for understanding why Somalia's state-building efforts have repeatedly failed despite apparent cultural homogeneity;
- The research seeks to identify and analyze the specific mechanisms through which clan fragmentation undermines state capacity. Rather than simply documenting correlation between ethnic diversity and state weakness, the study aims to unpack the causal processes that link clan politics to governance failures, providing theoretical insights applicable beyond the Somali context;
- The study examines variation in outcomes across different parts of Somalia, particularly comparing Somaliland's relative success with the continued fragmentation of south-central Somalia. This comparative analysis aims to identify the conditions under which ethnic divisions can be successfully managed versus those that perpetuate state weakness.

The study addresses several specific research questions designed to illuminate different aspects of the ethnicity-state relationship. To guide this investigation, the following research questions have been formulated:

- In what ways does ethnic fragmentation contribute to the weakness of the Somali state?
- How has clan-based ethnic fragmentation contributed to persistent state weakness in Somalia?
- What are the specific mechanisms through which ethnic divisions undermine state-building efforts?
- How has the absence of a strong central government impacted ethnic relations in Somalia?
- What strategies have been proposed or implemented to address ethnic fragmentation and strengthen the state in Somalia?

The study employs a qualitative case study methodology that combines historical analysis with comparative examination of different regions within Somalia. This approach allows for detailed process tracing to identify causal mechanisms while providing variation for testing theoretical hypotheses. The comparative element focuses primarily on contrasting Somaliland's state-building experience with that of south-central Somalia, while also examining variation within south-central regions where different clan configurations have produced different governance outcomes. This within-case comparison strengthens causal inference while controlling for many potential confounding variables.

The study expects to make several contributions to both scholarly knowledge and policy practice. Theoretically, the research should advance understanding of how ethnic institutions interact with formal

governance structures, particularly in post-colonial contexts where traditional and modern authority systems compete for legitimacy. Empirically, the study should provide the most comprehensive analysis to date of clan politics' role in Somalia's state failure and reconstruction efforts, offering insights valuable for scholars of African politics, state-building, and conflict resolution.

From a policy perspective, the research aims to provide practical guidance for state-building efforts in ethnically fragmented societies, identifying institutional arrangements that can accommodate diversity while building effective governance capacity. These insights should be particularly valuable for international organizations and donor countries engaged in supporting governance development in fragile states.

9. Ethnic Fragmentation and State Weakness: Theoretical Framework:

Ethnic fragmentation and state weakness are central themes in understanding the challenges of governance, political stability, and development in diverse societies. Ethnic fragmentation refers to the division of a population into distinct ethnic, linguistic, or religious groups, often leading to competing identities and interests. When these divisions are politicized, they can undermine social cohesion, fuel conflict, and weaken state institutions. State weakness, characterized by limited administrative capacity, poor legitimacy, and ineffective governance, exacerbates these tensions, creating a cycle of instability. Theoretical perspectives from political science and sociology suggest that high levels of ethnic diversity may strain state-building efforts, particularly where institutions lack inclusivity or equitable resource distribution. This section explores how ethnic fragmentation interacts with state weakness, shaping patterns of conflict, economic performance, and democratic consolidation in multi-ethnic states.

2.1. Definition of Ethnic Fragmentation:

Ethnic fragmentation refers to the degree to which a society is divided into distinct ethnic groups, often characterized by differences in language, culture, religion, or ancestry. It measures the diversity and lack of cohesion among these groups within a given population (Rafi Khan, 2024, para. 1). The term means the degree of diversity within a population based on ethnic group affiliations. It is often quantified using indices, such as the *Ethno-Linguistic Fragmentation (ELF) index*, where higher values indicate greater societal diversity (Cassilde and Labart, 2019, p. 223).

Mathematically, fragmentation is calculated using the formula below:

Fragmentation=1−∑i=1Nsi2Fragmentation=1−*i*=1∑*Nsi*2

In the abovementioned formula, (*si*) represents the population share of the (*i*), the ethnic group. This formula reflects the likelihood that two individuals do not share the same ethnic identity (Akee, Basu, Chau, and Khamis, 2010, p. 6).

According to Alesina, Devleeschauwer, Easterly, Kurlat, and Wacziarg (2003), the key aspects of ethnic fragmentation include:

- **Ethnic Diversity:** The presence of multiple ethnic groups in a society;
- **Lack of Dominant Group:** No single ethnic group holds an overwhelming majority;
- **Social Divisions:** Differences may lead to segregation, competition, or conflict;

- **Measurement:** Often quantified using indices like the *Ethnic Fractionalization Index* or *Linguistic Fractionalization Index*, which estimate the probability that two randomly selected individuals belong to different ethnic groups. (p. 156)

Globally, ethnic fragmentation includes several dynamics and patters which are noticeable in different regions and countries. Since ethnic fragmentation reflects both diversity and plurality of the world's population, this diversity contributes to enriching the global heritage and human experience (Stren and Polese, 2000, p. 4).

Regardless of the factors of migration, the latter has created diaspora communities in which different ethnic groups emerged ad spread across different regions. This; in fact, has resulted in the establishment of transnational ethnic identities. In political geography, ethnic fragmentation deeply interacts with the concepts

of nation-states and national boundaries, often creating tensions between idealized political borders and ethno-cultural realities. The drawing of political borders and the formation of nation-states while neglecting existing ethnic boundaries often leads to the inclusion of multiple ethnic groups within a single country. This can create challenges in managing intergroup relations and fostering a sense of national identity. It is worth mentioning that the nature of ethnic fragmentation in the global context is complex and multifaceted. It is shaped by historical, political, social, and economic factors, and its manifestations can vary significantly across different regions and contexts. Therefore, understanding and addressing the challenges and opportunities associated with ethnic fragmentation requires global cooperation, dialogue, and respect for cultural diversity (Mukanda, Okoth, and Lusambili, 2024, p. 1).

Ethnic fragmentation refers to the division of a society into distinct ethnic groups, characterized by diversity in cultural, linguistic, or ancestral identities, the absence of a single dominant group, and the potential for social divisions such as segregation, competition, or conflict. This concept is commonly measured through indices like the Ethnic Fractionalization Index, which quantifies the likelihood that two randomly selected individuals belong to different ethnic groups. While ethnic diversity can enrich societies, high fragmentation may also pose challenges to social cohesion, political stability, and equitable development. Understanding these dynamics is crucial for policymakers and researchers addressing multicultural societies, conflict resolution, and nation-building efforts.

2.2. Ethnic Fragmentation Theory:

Ethnic fragmentation theory examines how societal divisions along ethnic, linguistic, or cultural lines influence political stability, economic development, and social cohesion. Rooted in political science, sociology, and economics, this theory posits that highly fragmented societies—those with multiple distinct ethnic groups and no dominant majority—face unique challenges, including increased risk of conflict, difficulties in public goods provision, and weaker governance. Scholars measure fragmentation using indices such as the *Ethnic Fractionalization Index* or *Linguistic Fractionalization Index*, which estimate the probability of two randomly selected individuals belonging to different groups. While some argue that diversity fosters innovation and resilience, others highlight its potential to exacerbate polarization and collective action problems. Understanding ethnic fragmentation is thus critical for analyzing state-building, conflict prevention, and inclusive policymaking in multicultural societies.

2.2.1. Easterly and Levine's Fragmentation-Growth Hypothesis:

Easterly and Levine's (1997) study introduced a groundbreaking hypothesis linking ethnic fragmentation to cross-country differences in economic growth, particularly in Sub-Saharan Africa.

Their work emphasizes that ethnic diversity indirectly undermines growth by fostering institutional and policy distortions (p. 1203).

Easterly and Levine's fragmentation-growth hypothesis tailored for inclusion in the theoretical framework of a research article on *The Relationship between Ethnic Fragmentation and State Weakness: A Case Study on Somalia*. Their work situated the hypothesis within the broader context of ethnic fragmentation and state weakness. The aforementioned study summarized Easterly and Levine's (1997) hypothesis, focusing on its core argument about ethnic fragmentation's negative impact on growth and stability, supported by their empirical findings. Being relevant to Somalia, the hypothesis adapts to Somalia's context by highlighting clan-based fragmentation as a parallel to ethnic diversity, aligning with the article's focus on clannism as a driver of state weakness.

Easterly and Levine's (1997) fragmentation-growth hypothesis posits that high levels of ethnic fragmentation negatively impact economic growth and state stability, particularly in African contexts. In their influential study, they argue that ethnically diverse societies face challenges in coordinating public policy and resource allocation due to competing group interests, leading to inefficiencies, corruption, and weak institutions (p. 1205).

Using a cross-country econometric analysis, they demonstrated that ethnic fragmentation-measured by the probability that two randomly selected individuals belong to different ethnic groups-correlates with lower GDP growth, reduced public goods provision, and heightened political instability. They attribute this to polarized preferences, which hinder consensus on development priorities and foster rent-seeking behavior among ethnic elites. Using Sub-Saharan Africa as a case study, the authors argued that Africa's post-colonial institutions, shaped by arbitrary borders and ethnic rivalries, perpetuated instability and poor governance (Easterly and Levine, 1997, p. 1220).

In the context of state weakness, the hypothesis suggests that ethnic fragmentation undermines governance by fragmenting political authority and eroding social cohesion. For Somalia, this framework requires adaptation, as the country's ethnic homogeneity contrasts with its deep clan-based divisions. While Easterly and Levine focus on ethnic diversity, Somalia's clannism operates similarly, with clan loyalties driving political fragmentation and conflict over resources, as seen in the post-1991 civil war. The hypothesis thus provides a lens to analyze how sub-ethnic cleavages replicate the destabilizing effects of ethnic fragmentation, contributing to Somalia's persistent state failure. However, critics note that the hypothesis overemphasizes ethnic factors, potentially underestimating the role of colonial legacies or external interventions, which are critical in Somalia's case (Easterly and Levine, 1997, pp. 1225-7).

As for the core mechanism of the hypothesis, it posits that high ethnic fragmentation (measured via indices like the Ethno-Linguistic Fragmentation Index, ELF) correlates with:

- **Political instability**: Fragmented societies struggle to build consensus, leading to frequent leadership changes, coups, and weak governance; (Fukumi, 2004, p. 2)
- **Distorted economic policies**: Ethnic divisions incentivize rent-seeking, overspending on patronage, and unsustainable fiscal policies; (Fukumi, 2004, p. 2)
- **Poor institutional quality**: Fragmented societies often lack cohesive institutions to enforce property rights or manage public goods efficiently; (Marson, Migheli, and Saccone, 2021, p. 259)
- **Policy polarization**: Ethnically fragmented societies struggle to reach consensus on growth-promoting policies. Different ethnic groups may have conflicting preferences about public spending, taxation, and economic priorities, leading to policy gridlock or suboptimal compromises; (Okediji, 2011, p. 79)

- **Rent-seeking behavior**: Ethnic divisions encourage politicians to engage in ethnic favoritism and patronage rather than focusing on broad-based economic development. Resources get diverted to ethnic coalition-building rather than productive investments; (Alesina, Easterly, and Matuszeski, 2011, pp. 253-4)
- **Reduced public goods provision**: Fragmented societies find it difficult to agree on and fund public goods like infrastructure, education, and healthcare that benefit the entire population. Groups may be reluctant to support public investments that primarily benefit other ethnic groups; (Alesina, Baqir, and Easterly, 1999, pp. 1245-7)
- **Institutional weakness**: Ethnic fragmentation can undermine the development of strong, impartial institutions. Instead of merit-based systems, ethnic considerations may dominate appointments and resource allocation; (Easterly and Levine, 1997, pp. 1225-7)
- **Empirical Evidence**: Easterly and Levine provided cross-country statistical evidence showing a strong negative correlation between ethnic fragmentation and economic growth, particularly in sub-Saharan Africa. They argued this relationship helped explain Africa's relatively poor growth performance compared to other developing regions; (Easterly and Levine, 1997, pp. 1212-7)
- **Policy Implications**: Their work suggested that addressing ethnic divisions and building inclusive institutions should be priorities for development policy, rather than focusing solely on traditional economic factors like capital accumulation or trade policies. (Easterly and Levine, 1997, pp. 1238-1240)

These factors collectively suppress economic growth, creating a 'growth tragedy' in highly fragmented nations.

This hypothesis has been highly influential in development economics and political economy, though it has also sparked considerable debate about the relationship between diversity and economic outcomes. However, in spite of being influential, the hypothesis has faced scrutiny:

- **Endogeneity Concerns**: Critics note that growth failures might exacerbate fragmentation (reverse causality); (Fearon and Laitin, 2003, pp. 80-2)
- **Institutional Interplay**: Later studies (e.g., La Porta et al., 1999) suggested ethnic diversity interacts with institutional quality; fragmentation may harm growth only in weakly institutionalized states; (La Porta, Lopez-de-Silanes, Shleifer, and Vishny, 1999, pp. 245-7)
- **Alternative Explanations**: Some argue that geographic factors (e.g., disease burden) or colonial legacies better explain Africa's growth trajectory. (Bloom and Sachs, 1998, pp. 220-5)

2.2.2. Alesina and La Ferrara's Ethnic Diversity and Public Goods Provision:

Alesina and La Ferrara's ethnic diversity and public goods provision hypothesis was tailored for inclusion in the theoretical framework of a research article on 'The Relationship between Ethnic Fragmentation and State Weakness: A Case Study on Somalia.' This work, which was published in 2005, situated the abovementioned hypothesis within the context of ethnic fragmentation and state weakness. Taking into account Somalia as a case study, the research summarizes Alesina and La Ferrara's (2005) hypothesis, focusing on the link between ethnic diversity and reduced public goods provision, supported by their empirical findings. The hypothesis adapts to Somalia's context by emphasizing clan-based fragmentation as a parallel to ethnic diversity, aligning with the article's focus on clannism as a driver of state weakness.

Alesina and La Ferrara's work has significantly shaped the understanding of how ethnic diversity impacts public goods provision. Their research highlights a recurring theme: ethnically fragmented societies often struggle to sustain collective action, leading to under-provision of public goods.

Alesina and La Ferrara (2005) argued that ethnic diversity negatively affects the provision of public goods, contributing to state weakness and social fragmentation. Their hypothesis, grounded in cross-country empirical analysis, posits that ethnically heterogeneous societies struggle to agree on the allocation and management of public goods—such as infrastructure, education, and healthcare—due to divergent preferences and mistrust among groups. They measure ethnic diversity using a fragmentation index, which captures the likelihood that two randomly selected individuals belong to different ethnic groups, and find that higher fragmentation correlates with lower public goods provision, weaker governance, and increased social tension. This occurs because ethnic groups prioritize their own interests, leading to underinvestment in collective resources and institutional inefficiencies (Alesina and La Ferrara, 2005, pp. 772-8).

Theoretically, Alesina and La Ferrara's thesis is built around the followings:

- **Preference Heterogeneity**: Ethnic diversity increases the likelihood of conflicting preferences over public goods (e.g., schools, infrastructure, sanitation). When groups have divergent needs or priorities,
consensus becomes harder to reach, stalling provision; (Alesina, Baqir, and Easterly, 1999, pp. 1245-7)
- **Coordination Failures**: In diverse communities, coordination costs rise due to mistrust or misaligned incentives. This undermines collective action, even when public goods would benefit all; (Habyarimana, Humphreys, Posner, and Weinstein, 2007, pp. 712-4)
- **Social Cohesion**: Ethnic divisions weaken social cohesion, reducing trust and cooperation necessary for public goods provision. For example, homogeneous communities exhibit higher participation in group activities and mutual aid. (Putnam, 2007, pp. 149–153)

In Somalia, where ethnic homogeneity masks deep clan-based divisions, Alesina and La Ferrara's (2005) framework is highly relevant. Clan loyalties, functioning as sub-ethnic cleavages, mirror the dynamics of ethnic diversity by fostering competition over resources and undermining centralized governance. Post-1991 Somalia exemplifies this, with clan-based militias and regional authorities fragmenting state capacity to deliver public goods (pp. 772-8). However, the hypothesis may overstate the role of diversity alone, as Somalia's state weakness is also shaped by historical mismanagement and external interventions. This framework thus illuminates how clanism exacerbates Somalia's governance challenges, complementing broader analyses of ethnic fragmentation (Alesina and La Ferrara's, 2005, p. 785).

It is worth mentioning that Alesina and La Ferrara's research contributed to understanding why some communities are more successful at collective action than others, with important implications for urban planning, fiscal policy, and theories of social cooperation. It also sparked debates about the trade-offs between diversity and social solidarity in modern societies.

Alesina and La Ferrara's research underscores the tension between ethnic diversity and collective action. While their research emphasizes challenges, it also provides a roadmap for designing institutions that harness diversity's benefits while minimizing its costs.

2.3. Definition of State Weakness:

As a significant concept in political science and international relations, the term 'weak state' is contentious. It is generally used to define a state that is weak in its core functions of (1) providing

security to its citizens, (2) providing basic services to its citizens, and (3) having legitimacy among its people. This definition demonstrates three gaps which exist in the weak state, namely security gap, capacity gap, and legitimacy gap. Actually, a weak state has a functioning government, but lacks the capacity, resources, or legitimacy to effectively enforce laws, provide public services, or maintain control over the country's entire territory. Weak states often face internal challenges such as corruption, conflict, and economic instability that undermine their sovereignty and legitimacy.

State weakness refers to a government's inability to effectively perform its core functions, such as maintaining security, providing public services, enforcing laws, or fostering economic stability. It often involves characteristics like institutional fragility, corruption, lack of legitimacy, or inadequate control over territory. Weak states struggle to meet citizens' needs, maintain order, or assert authority, making them vulnerable to instability, conflict, or external influence. The term is often used in political science and international relations to describe states with diminished capacity to govern effectively (Rotberg, 2004, pp. 2–5).

A weak state is a nation-state that lacks the capacity, legitimacy, or effectiveness to perform essential governance functions, resulting in instability, vulnerability to internal or external pressures, and an inability to meet the needs of its citizens. Weak states exist on a spectrum, ranging from relatively stable but underperforming states to those on the verge of collapse (often termed 'fragile states' or, in extreme cases, 'failed states').

Rotberg (2004) differentiated between strong and weak states. According to him, 'the possibility or impossibility, efficiency or inefficiency of providing three groups of political goods by the state to the citizens is the basis for the division of states into strong states, weak states. States that do not perform their functions are weak, failed, and collapsed states' (As cited in Zelinska and Chechel, 2019, p. 61). Within this context, Zelinska and Chechel (2019) further added that weak states make a wide circle. This; in fact, suggests that the impact of weak states extends far beyond their borders, creating a 'wide circle' of consequences that affect neighboring countries, regions, or even the global community. Due to their inability to govern effectively, weak states generate instability, insecurity, or socioeconomic challenges that radiate outward, influencing other states, organizations, or global systems. As described by the authors, this 'wide circle' is characterized as (1) naturally weak due to the physical and geographical situation or unfavorable ecological and economic situation and resource constraints, (2) initially strong, but demonstrate, at some stage of their functioning, weakness because of unsuccessful management, despotism, internal contradictions, or external attack, and (3) states of a mixed type combining the characteristics of the two above-mentioned ones (p. 61).

Weak states often include ethnic, religious, linguistic and other intergroup issues that eventually move from a latent conflict phase to an open armed conflict. In the weak states, the main indicators of economic development are extremely fast, the level of corruption inside the country is high, and the form of government is often despotism (Mashura, 2015, as cited in Zelinska & Chechel, 2019, p. 61).

In his view of the existence of a weak state, Buzan (1991) believed that the essence of any state is a combination of the three main components that form a triangle, namely, the institutional expression of the state: administrative, legal and legislative authorities, coercive forces. This indicator also covers the rules and procedures under which public administration is carried out. The second component of the triangle is the idea

(spirit) of the state (nation)- an idea that connects people in socio-political unity and answers the question of how organized the state is and why it exists. The indicator relates to terms such as nationality and ideology, which is particularly strong in national states. Finally, the third component, the physical basis for the existence of the state (territory)- since the basis of the state are people, a certain territory, natural resources within the state borders (p. 205).

Brooker (2000) explored the phenomenon of state weakness in the context of the political regimes in Africa, a situation where elites are unable to implement effective and constructive policies within African dictatorships. Although strong states are almost absent in Africa, Latin America, Asia, and the Middle East, Brooker does not address the relationship between political regimes and the strength/ or weakness of the state. He, rather, assumed the possibility of deconstructing the existing non-democratic regime in the future towards consolidation, but does not consider regimes in weak states as self-sufficient and rather long-lasting phenomenon (pp. 135-140).

Consequently, weaker states are those ones where the influence of ideas (spirit) and bureaucracy is too weak for the unmanaged space possessed by the state, in order to protect the territorial integrity, full-fledged life and the implementation of international norms incorporated in the UN Charter.

In regard to political science and international relations perspectives, weak states are characterized by their diminished ability to exercise authority, maintain order, and deliver core public goods (Rotberg, 2004, p. 1). They often struggle with:

- **Institutional Fragility:** Weak states are marked by dysfunctional political, economic, and social institutions that undermine effective governance. This includes weak bureaucracies, judiciaries, or security apparatuses that fail to enforce laws or provide essential services like healthcare or education (Fukuyama, 2004, p. 7). Such institutional weaknesses prevent the state from fulfilling its basic functions, leading to governance failures.
- **Limited Legitimacy:** Weak states often lack public trust or acceptance of their authority, stemming from corruption, exclusionary policies, or inability to deliver services. As Max Weber emphasized, legitimacy is critical for state authority, and its absence can lead to societal unrest or rebellion (Weber, 1978, p. 213). This is particularly evident in states where governance is perceived as corrupt or exclusionary, eroding public confidence (Englebert, 2009, p. 62).
- **Inadequate Sovereignty:** These states exhibit incomplete control over their territory, population, or resources, often challenged by internal factions like warlords or militias, or external actors such as foreign governments or transnational groups. This aligns with the realist perspective in international relations, which views the monopoly on legitimate violence as a cornerstone of sovereignty (Krasner, 1999, p. 20).
- **Vulnerability to Crises:** Weak states are highly susceptible to conflict, economic collapse, or humanitarian disasters due to governance failures. The Fragile States Index highlights how indicators like group grievance, economic decline, and human flight exacerbate this vulnerability (Fund for Peace, 2023, n.p.).

From a political science and international relations perspective, weak states pose significant challenges to global stability. Realists argue they create power vacuums that invite external intervention, while liberals advocate for international cooperation to strengthen governance through aid or peacekeeping (Paris, 2004, p. 5). Critical theorists point to historical legacies like colonialism or global economic inequalities as root causes of state fragility (Escobar, 1995, p. 10).

2.3.1. Characteristics of Weak States:

Weak states exhibit a diminished capacity to exercise authority, maintain order, and deliver public goods (Rotberg, 2004, p. 1). The following dimensions outline their key characteristics, supported by examples and scholarly insights:

- **Security Weakness:**

Weak states struggle to maintain a monopoly on violence, a core feature of statehood (Weber, 1978, p. 54). They are often unable to suppress non-state actors like insurgent groups, militias, or criminal organizations, leading to territorial control issues where parts of the state are governed by warlords or external powers (Krasner, 1999, p. 20). High levels of violence or insecurity persist due to ineffective law enforcement, compounded by weak, underfunded, or corrupt military and police forces (Bayart, 1993, p. 22). For example, Somalia in the 1990s–2000s saw its central government lose control to warlords and militias, resulting in widespread insecurity; (Menkhaus, 2007, p. 74)

- **Governance and Institutional Weakness:**

Governance in weak states is undermined by widespread corruption and inefficiency, eroding public trust and diverting resources from public goods (Chabal & Daloz, 1999, p. 15). A weak rule of law, characterized by inconsistent legal frameworks or impunity, leads to arbitrary governance and human rights abuses (Fukuyama, 2004, p. 7). Dysfunctional bureaucracies fail to deliver services like healthcare or education, and accountability mechanisms, such as free elections or independent judiciaries, are often absent (Englebert, 2009, p. 62). Zimbabwe under Robert Mugabe's later years exemplifies this, with corruption and mismanagement precipitating economic collapse and institutional decay; (Rotberg, 2004, p. 14)

- **Economic Weakness:**

Weak states frequently suffer from economic mismanagement, leading to poverty, unemployment, or hyperinflation (Acemoglu & Robinson, 2012, p. 68). Heavy dependence on external aid or resource exports creates vulnerabilities to external influence, while weak infrastructure hinders development and service delivery (Collier, 2007, p. 19). High inequality, with wealth concentrated among elites, exacerbates social tensions and reduces state legitimacy (Stewart, 2008, p. 12). Haiti's chronic economic challenges and reliance on foreign aid illustrate how these factors compound governance failures; (Fatton, 2014, p. 33)

- **Social and Political Weakness:**

A lack of legitimacy often stems from governments that exclude ethnic, religious, or social groups, undermining their credibility (Englebert, 2009, p. 65). Ethnic or sectarian divisions deepen societal cleavages, fueling conflict and weakening national unity (Horowitz, 1985, p. 141). Weak civil society, with limited civic organizations or media, reduces checks on state power and hinders social cohesion (Paris, 2004, p. 5). Poor service delivery, such as inadequate access to education or healthcare, further erodes public trust (Rotberg, 2004, p. 16). South Sudan's ethnic divisions and exclusionary governance have fueled ongoing conflict, weakening state capacity; (Johnson, 2016, p. 25)

- **Vulnerability to External Influence:**

Weak states are highly susceptible to foreign interference, with external actors like governments or corporations influencing domestic policies or exploiting resources (Krasner, 1999, p. 22). They struggle to counter transnational threats like terrorism or trafficking due to porous borders and weak enforcement (Clunan & Trinkunas, 2010, p. 17). Dependence on international organizations or foreign governments for security or economic support further undermines autonomy (Escobar, 1995, p. 10). Afghanistan in the early 2000s, where weak governance allowed foreign actors to shape political and security outcomes, serves as a clear example. (Rubin, 2002, p. 89)

2.3.2. Indicators of State Weakness:

Several indices and frameworks, such as the *Fragile States Index* by the Fund for Peace, identify measurable indicators of state weakness, including:

- **Demographic pressures:** High population growth or displacement straining resources;
- **Refugee or displacement crises:** Large populations of internally displaced persons or refugees;
- **Human flight and brain drain:** Emigration of skilled professionals, weakening institutional capacity;
- **Uneven development:** Disparities in access to resources or opportunities across regions or groups;
- **Factionalized elites:** Political elites divided by ideology, ethnicity, or personal interests, undermining cohesive governance. (Fund for Peace, 2020, pp. 10-2)

2.3.3. Consequences of State Weakness:

- **Internal instability:** Increased risk of civil war, insurgency, or communal violence;
- **Humanitarian crises:** Widespread poverty, famine, or disease due to inadequate state response;
- **Regional spillover:** Weak states can destabilize neighboring countries through refugee flows, crime, or conflict;
- **Global security risks:** Weak states may become safe havens for terrorism, trafficking, or other transnational threats. (Fund for Peace, 2020, pp. 14-6)

2.4. State Weakness and Failure Concepts:

In comparative politics and international relations, state weakness and failure are critical concepts which describe varying degrees of governmental incapacity to perform core sovereign functions. These concepts emerged prominently in post-Cold War era when political analysts sought to understand why some states struggled to maintain effective control over their territory, provide basic services to citizens, or maintain legitimate authority. State weakness exists along a spectrum, ranging from relatively minor institutional deficiencies to complete state collapse, with failed states representing the extreme end where central authority has fundamentally broken down. The distinction between weak and failed states is not merely academic—it has profound implications for human security, regional stability, economic development, and international intervention strategies. Understanding these concepts requires examining multiple dimensions of state capacity, including administrative effectiveness, territorial control, legitimacy, and the ability to maintain a monopoly on the legitimate use of force. As globalization and transnational challenges have intensified, the study of state weakness has become increasingly relevant for policymakers grappling with issues ranging from terrorism and organized crime to refugee flows and economic instability that often originate in or are exacerbated by weak state structures.

2.4.1. Robert Rotberg's Failed State Characteristics:

Robert Rotberg, a prominent scholar of African politics and state failure, outlines key characteristics of failed states in his work, particularly in *When States Fail: Causes and Consequences*, published in 2004. Rotberg defines a failed state as one that can no longer perform its basic security and development functions, having lost the ability to provide public goods, maintain order, or govern effectively. Failed states are marked by a collapse of central authority, widespread violence, and an inability to meet citizens' needs, distinguishing them from weak states (which struggle but retain some functionality) and collapsed states (where governance is entirely absent) (Rotberg, 2004, pp. 1–10; Rotberg, 2003, pp. 5–10).

His typology provides specific characteristics that distinguish failed states from weak or strong states. According to Rotberg, a failed state is one that loses its legitimacy, control over territory, and ability to provide basic political goods to its citizens. He distinguished failed states from "weak states" (which struggle with capacity but maintain basic functions) and "collapsed states" (where even the pretense of central authority has disappeared). This nuanced approach recognized that state failure exists on a spectrum rather than as a binary condition.

Rotberg emphasized that failed states differ from weak states, which may struggle with governance but still provide some public goods and maintain a degree of order (e.g., Kenya or Nigeria). Collapsed states, conversely, are an extreme subset of failed states, where governance has entirely ceased (e.g., Somalia post-1991) (Rotberg, 2004, pp. 9–10).

While the query specifically asks for the characteristics of failed states as outlined by Rotberg, these characteristics are closely related to the broader spectrum of state weakness, as failed states represent an extreme form of state fragility.

Rotberg identifies several defining characteristics of weak states, which can be grouped into security, governance, economic, and social dimensions. In regard to Rotberg's framework, the core characteristics of a weak state are listed in the table below:

Persistent and Widespread Violence	➢ Failed states are characterized by enduring internal conflict, including civil wars, insurgencies, or ethnic/sectarian violence, often fueled by the state's inability to maintain a monopoly on the legitimate use of force. ➢ Violence is not sporadic but pervasive, with the state unable to protect citizens or control armed groups (e.g., warlords, militias, or rebels). Example: Somalia in the 1990s, where clan-based militias dominated in the absence of central authority (Rotberg, 2004, p. 6).
Loss of Territorial Control	➢ The central government lacks control over significant portions of its territory, which may be governed by non-state actors such as rebel groups, warlords, or external powers. ➢ Borders are often porous, and the state cannot enforce sovereignty or manage cross-border threats like smuggling or terrorism. Example: The Democratic Republic of Congo (DRC), where rebel groups controlled eastern regions (Rotberg, 2003, p. 7).
Inability to Provide Public Goods	➢ Failed states cannot deliver essential services such as security, healthcare, education, or infrastructure, leading to widespread deprivation and loss of legitimacy. ➢ Basic governance functions, like tax collection or law enforcement, are severely compromised or nonexistent. Example: Sierra Leone during its civil war (1991–2002), where the state failed to provide basic services amid conflict (Rotberg, 2004, p. 8).

	➢ The government lacks legitimacy, often due to corruption, repression, or exclusion of significant population groups (e.g., ethnic or religious minorities).
Erosion of Legitimate Authority	➢ Political power is concentrated among a small elite, often centered on a single leader or faction, undermining broader societal trust. Example: Zimbabwe under Robert Mugabe, where authoritarian rule eroded state legitimacy (Rotberg, 2004, p. 9).
Economic Collapse and Dysfunction	➢ Failed states experience severe economic decline, marked by hyperinflation, unemployment, and collapse of formal economic systems. ➢ The state often relies on illicit economies (e.g., smuggling, resource looting) or external aid, with little capacity to foster sustainable development. Example: Haiti, where economic mismanagement and poverty exacerbated state failure (Rotberg, 2003, p. 8).
Fragmentation of Social Cohesion	➢ Deep ethnic, religious, or regional divisions fracture society, often exacerbated by state policies or elite manipulation. ➢ These divisions fuel conflict and prevent the state from fostering national unity or collective governance. Example: Sudan, where ethnic and regional divides contributed to civil war and state failure (Rotberg, 2004, p. 7).
Humanitarian Crises and Human Rights Abuses	➢ Failed states are often marked by widespread human suffering, including famine, disease, and mass displacement (e.g., refugees or internally displaced persons). ➢ Human rights abuses are rampant, as the state either perpetrates or fails to prevent atrocities. Example: Liberia during its civil wars (1989–2003), with mass displacement and atrocities (Rotberg, 2004, p. 8).
Dependence on External Actors	➢ Failed states often rely on foreign intervention, peacekeeping forces, or international aid to function, as domestic capacity is minimal. ➢ This dependency can further erode sovereignty and legitimacy. Example: Afghanistan in the early 2000s, reliant on international forces for security (Rotberg, 2003, p. 9).

Table 2: The core characteristics of a weak state.

It is worth noting that Rotberg's framework complements Brooker's discussion of African dictatorships. While Brooker focused on elite behavior and regime dynamics without explicitly addressing state weakness (Brooker, 2000, pp. 135–140), Rotberg (2004) provided a more systematic analysis of state failure, emphasizing measurable characteristics like violence and loss of territorial

control. Brooker's assumption of potential regime deconstruction aligns with Rotberg's view that failed states are not necessarily permanent but can be repaired through intervention or reform (pp. 25–30).

Rotberg's framework has been widely used by policymakers, international organizations, and researchers to identify states at risk of failure and design appropriate interventions, though it has also faced criticism for potential bias toward Western governance models.

2.4.2. Joel Migdal's 'Strong Society, Weak State' Framework:

Joel Migdal's *strong society, weak state* framework, introduced in his book *Strong Societies and Weak States: State-Society Relations and State Capabilities in the Third World*, published in 1988, explained the dynamics of political power in developing countries. It highlights why some states struggle to implement policies effectively despite having formal authority. Joel Migdal's influential work challenges conventional state centric theories by emphasizing the asymmetrical power dynamics between states and societal groups in developing nations.

Migdal argued that in many developing countries, the state lacks the capacity to dominate or effectively govern society due to the strength of social organizations and local power structures. These 'strong societies' consist of local elites, traditional leaders, or social groups (e.g., tribes, clans, or religious networks) that hold significant social control and influence, often rivaling or undermining the state's authority. Meanwhile, 'weak states' are characterized by limited institutional capacity, fragmented bureaucracies, and an inability to enforce rules or extract resources effectively.

Migdal's central thesis is that 'strong societies' often coexist with 'weak states' in the developing world. This paradox arises because:

- **Societal groups** (e.g., tribes, clans, ethnic associations, religious organizations) are powerful enough to resist state penetration and control; (Migdal, 1988, pp. 27-8)
- **States**, despite their formal authority, lack the institutional capacity to enforce policies, monop olize violence, or transform society; (Migdal, 1988, p. 33)

Migdal stated that 'In parts of the [Third World], if the state is too strong relative to society, society gives up its [autonomy]' (p. 33). This tension highlights the struggle between state-building and societal resistance. In addition, Migdal's model emphasized *state-society relations* as the lens for understanding governance in the Global South:

- **State Capabilities**: A state's strength is measured by its ability to *transform society* by overcoming resistance from social organizations and implementing policies (Migdal, 1988, p. 35). Weak states fail to penetrate or regulate societal groups effectively;
- **Social Organizations**: Migdal argues that *strong societies*—characterized by cohesive, hierarchical, and resourceful groups—often dominate local governance, creating a *patchwork of authority* that undermines state sovereignty (Migdal, 1988, p. 28);
- **Institutional Struggle**: The state's weakness stems from its inability to *aggregate power* against competing social forces. Migdal critiques modernization and dependency theories for oversimplifying

the state's role. (Migdal, 1988, p. 30)

Migdal's core theoretical framework is explained as follows:

- **State-society struggle**: Migdal conceptualizes politics as an ongoing struggle between state institutions and societal forces for social control. Rather than viewing the state as naturally dominant, he argues that states must compete with other social organizations for authority, compliance, and resources; (Migdal, 1988, pp. 23-4)
- **Social fragmentation**: In many developing countries, society is characterized by multiple, competing centers of power—including tribal leaders, religious authorities, landlords, clan networks, and local strongmen—that challenge state authority and create alternative systems of social control; (Migdal, 1988, pp. 28-9)
- **Weblike society**: Migdal describes these societies as 'weblike,' with numerous overlapping networks of personal relationships, patron-client ties, and informal institutions that often prove more effective than formal state structures in organizing social life and providing security. (Migdal, 1988, pp. 29-31)

Moreover, Migdal explained the key mechanisms of state weakness as follows:

- **Competing loyalties**: Citizens often maintain stronger allegiances to local leaders, ethnic groups, or traditional authorities than to the central state, undermining state legitimacy and compliance; (Migdal, 1988, pp. 27-9)
- **Resource extraction challenges**: When society is organized through multiple competing networks, states struggle to extract resources (taxes, military recruits, information) necessary for building institutional capacity; (Migdal, 1988, pp. 35-7)
- **Implementation gaps**: Even when states formulate policies, they often lack the social penetration necessary to implement them effectively, as local power brokers may resist, subvert, or capture state programs; (Migdal, 1988, pp. 74-76)
- **Accommodation strategies**: Weak states frequently accommodate powerful societal actors rather than challenging them, leading to informal bargains that further erode state autonomy and capacity. (Migdal, 1988, pp. 115-7)

The key elements in Migdal's framework are listed in the table below:

State Weakness	➢ Weak states have low 'state capabilities,' meaning they struggle to penetrate society, regulate social behavior, extract resources (e.g., taxes), or implement policies; (Migdal, 1988, pp. 33-5) ➢ Causes include colonial legacies, poorly developed bureaucracies, corruption, or internal divisions within the state apparatus; (Migdal, 1988, pp. 41-3) ➢ States often compete with local power brokers for control over resources and loyalty. (Migdal, 1988, pp. 27-9)
Strong Societies	➢ Societies are "strong" when local social organizations (e.g., tribal leaders, warlords, religious groups) maintain significant control over social, economic, and political life; (Migdal, 1988, pp. 27-9)

State-Society Interaction	➢ These groups often provide services (e.g., security, welfare) that the state fails to deliver, further undermining state authority; (Migdal, 1988, pp. 29-31) ➢ Local elites may resist state policies to preserve their own power, creating a fragmented political landscape. (Migdal, 1988, pp. 112-5) ➢ The relationship is a power struggle. Strong social groups limit the state's ability to centralize power, while the state may attempt to co-opt or weaken these groups; (Migdal, 1988, pp. 25-7) ➢ Migdal described a 'web of social control' where local leaders act as intermediaries, often manipulating state policies to serve their interests. (Migdal, 1988, pp. 29-31)
Implications for Governance	➢ Weak states struggle to implement reforms, enforce laws, or achieve developmental goals because they lack legitimacy or control over society; (Migdal, 1988, pp. 35-8) ➢ Policies may be distorted or blocked by local power structures, leading to uneven development or persistent instability. (Migdal, 1988, pp. 112-5)

Table 3 The key elements of Migdal's framework.

Migdal applied this framework primarily to post-colonial states in Africa, Asia, and Latin America. For instance, in parts of Africa, tribal leaders or ethnic groups often hold more sway than central governments, which struggle to impose authority beyond urban centers. In South Asia, local landlords or religious organizations may control rural areas, limiting the state's reach (Migdal, 1988, pp. 80-5).

Migdal's "strong society, weak state" framework redefined debates about governance in developing nations by highlighting the negotiated, contested nature of state authority. His work remains foundational for understanding why many states struggle to consolidate power despite formal sovereignty (Migdal, 1988, pp. 16-8).

3. Somalia: A Historical Background:

Situated in the Horn of Africa, Somalia boasts a rich and complex history that stretches back thousands of years. Known in antiquity as the Land of Punt, the region was a thriving center of trade and commerce, connecting Africa with the Arabian Peninsula, India, and beyond through its strategic coastal cities like Mogadishu and Zeila. From the emergence of powerful medieval Somali sultanates, such as the Ajuran and Adal, to the colonial era marked by British and Italian influence, Somalia's past is characterized by vibrant cultural exchanges, maritime prowess, and dynamic clan structures. These historical foundations have shaped the modern identity of Somalia, a nation that continues to navigate its legacy amidst contemporary challenges.

Somalia is situated in Eastern Africa, particularly in the Horn of Africa, a strategically significant region in the northeastern part of the African continent. It is bordered by Djibouti in the northwest, Ethiopia to the West, Kenya to the South, the Gulf of Aden to the North, and the Indian ocean to the East (Popescu, 2021, p. 164).

The land of Somalia covers an area of 638.000 km^2. It is mostly flat, consisting of arid plateaus, plains, and highlands, with the *Cal Madow* Mountain range in the North and fertile regions the Shabelle and Jubba rivers in the South. Somalia has the longest coastline in mainland Africa, stretching approximately 3.333 km (2.071 miles), providing critical access to major maritime trade routes between Africa, Asia, and the Middle East (Briton and Cabdi, 1993, p. 9).

As for the climate in Somalia, it is dry and continuously hot, except at higher elevations in the North. There are two wet seasons which bring erratic rainfall. The *Gu* (April to June) and the *Dayr* (October to November), averaging 500 millimeters in much of the country. This rainfall system leads to frequent droughts, impacting agriculture and livelihoods (Metz, 1992, p. XIV).

Due to this geographical location, Somalia occupies a strategic maritime position which it controls southern approaches to the Bab el-Mandab Strait, a vital chokepoint for global shipping between the Red Sea and the Indian Ocean. This makes it geopolitically significant for international shipping, trade, and security. This strategic location has historically attracted foreign interest, from colonial powers to Cold War rivals and, more recently, global counterterrorism and anti-piracy efforts. However, despite its advantageous geography, Somalia has been plagued by decades of state collapse, civil war, and weak governance, exacerbated by deep ethnic and clan divisions. The interplay between its fragmented society and unstable political institutions has hindered its ability to leverage its strategic position for stability and development, making it a focal point for regional and international security concerns.

Being known for its strategic location on the Horn of Africa which shaped its role as a trade hub, Somalia's history dates back to antiquity. Although there are much scholarly debates nowadays about the origins of Somalia and the Somalis, ancient Egyptian records (c. 2500-1500 BC), labelled the 'Land of Punt' to present day Somalia which was renowned for its resources in gold, ivory, and incense. Because of its location, the coastal cities of Mogadishu and Berbera emerged as key nodes in the Indian Ocean trade network, linking Africa with Arabia, Persia, and beyond (Briton & Cabdi, 1993, p. 11).

Fig. 1: Map of Somalia. (Source: Adapted from Britannica, 2012).

During Medieval times (13th -15th centuries), the Ajuran Sultanate, located in southern Somalia, rose as a powerful centralized state. The latter played significant roles in regional politics, trade, and culture. During the 15th and 17th centuries, the Adal Sultanate rose to power and dominated the northern Horn and engaged in several clashed and wars with the Christian Ethiopian Kingdom, notably the Ethiopian an-Adal War (1529-1543) (Laitin and Samatar 1987, pp. 32–5).

In the late 19th–Mid 20th Century, the African continent was subjected to European partition and colonization following the Berlin Conference (1884-1885), and Somalia was no exception. (Lewis 2002, pp. 45–60). By the late 1800,

European powers divided Somali-inhabited lands into:

- **British Somaliland (north, 1884–1960):** It was administered from Aden (Yemen), and focused on securing trade routes;
- **Italian Somaliland (south, 1889–1960):** Centered on Mogadishu, with agricultural development (e.g., banana plantations);
- **French Somaliland (Djibouti, 1883–1977):** The territory remained separate from the other two. (Michalopoulos and Papaioannou, 2016, pp. 1810–5)

Led by Muhammad Abdullah Hassan, the Dervish State (1896–1920) rose and resisted the British rule for over two decades before collapsing (Jardine, 1923, pp. 112–120). After the end of World War II and during the Potsdam Conference (November, 1945), the United Nations granted the Italian Somaliland to Britain, and the territory remained a British protectorate until 1960 (Hess, 1966, pp. 180–185).

The year 1960 witnessed the independence of Somalia, with both territories of British and Italian Somaliland merged to form the Somali Republic, with Mogadishu being the capital. Initial optimism faded

amid weak governance and clan tensions (Lewis, 2002, pp. 148–155). In 1969, President Abdirashid Ali Shermarke's assassination prompted a military coup by General Siad Barre, who established the Somali Democratic Republic, with a socialist regime (Laitin & Samatar 1987, pp. 72–5). Barre's rule was characterized by authoritarian government, suppressing dissent, favoring his Marehan clan. Economic collapse and human rights abuses fueled opposition in the 1980s (Compagnon 1998, pp. 210–5). Although Barre was Soviet-aligned, he switched to US support after the Ogaden War (1977–78). However, Somalia's defeat in the war led to a refugee crisis and economic strain (Tareke 2009, pp. 178–185).

The fall of Barre regime in 1991 led to a civil war and state collapse. A coalition of clans, including the United Somali Congress ousted Barre, but infighting erupted over power. The Somali National Movement (SNM) declared independence for northern Somaliland (unrecognized internationally) (Bradbury 2008, pp. 45–52). The country entered a state of chaos and famine. Warlords, clan militias, and Islamist groups (Al-Itihad Al-Islamiya) battled for control. The 1992–93 famine killed 300,000 (De Waal, 1997, pp. 112–8). The UNOSOM mission and U.S. Operation Restore Hope intervened, but withdrew after the Black Hawk Down incident (1993) (Bowden, 1999, pp. 203–210). The year 2000 saw the rise of Al-Shabaab Movement, a radical group linked to Al-Qaeda, which exploited instability, controlling southern Somalia by 2009 (Marchal, 2011, pp. 12–5).

Following the civil war era, a federal government, backed by the UNO, was established in 2012 in Mogadishu, though authority remained limited outside the capital (Hirsch 2018, pp. 134–9). In spite of achieving stability in the country, Al-Shabaab Movement rose to insurgency. This radical group continued guerrilla attacks despite African Union (AMISOM) offensives (Williams 2018, pp. 210–7). The North maintains de facto independence (Somaliland) or autonomy (Puntland), complicating national unity. Despite partial stability was achieved in Mogadishu, challenges persist, such as corruption, clan rivalries, and climate-related crises (e.g., droughts) (Menkhaus, 2014, pp. 88–94).

4. Historical Context of Ethnic Fragmentation in Somalia:

Ethnically and culturally the Somalis are descendent to the Hamitic ethnic group, peoples of the Ethiopian lowlands and Eritrea (Lewis, 1988, p. 4). The Somali society is organized into clans and sub-clans. Originally, the Somali society is divided between two major clans, namely the *Samaale* and the *Sab*. Since they comprise the majority of the Somali society, the *Samaale* consists of four main clan families: the *Dir*, *Issaq*, *Hawiye*, and *Daarood*. The *Sub* consists two main clan families: the *Digil* and *Raxanweyn* (Briton & Cabdi, 1993, p. 19). While Somali society is traditionally divided into major clan families, its deep fragmentation stems from sub-clan loyalties and historical conflicts (Lewis, 1994, pp. 15-8).

Somalia's ethnic fragmentation is a complex interplay of historical, colonial, and post-colonial dynamics, which historically provided social organization but later became politicized. While, the country is ethnically homogenous- with most Somalis sharing language, religion, and cultural practices, internal divisions along clan lines have driven persistent conflict and state collapse. It is worth mentioning that colonial powers exacerbated these divisions through partitioned administration: The British in the north, Italians in the south, and French in Djibouti- creating lasting regional disparities (Laitin, 1977, p. 42). Durind post-independence era, Siad Barre's regime (1969-1991), manipulated clan loyalties to maintain power while suppressing dissent, weaponizing kinship networks that would later

fuel civil war (Compagnon, 1998, pp. 210). This historical trajectory transformed Somalia's clan system from a traditional social structure into a centrifugal force of political fragmentation, complicating state-building efforts into the 21st century.

4.1. Pre-Colonial and Colonial Influences:

The ethnic fragmentation in Somalia is deeply rooted in its pre-colonial and colonial history. While Somalia is often perceived as a homogenous society due to its shared language (Somali), religion (Islam), and ethnic identity (Somali), it has historically been divided along clan lines, a division that was exacerbated by colonial interventions.

Due to pre-colonial influences, Somali society was built around clan-based social structure. It was traditionally organized into patrilineal clans and sub-clans, forming a complex system of kinship known as *tol*. The major clan families include the *Dir, Isaaq, Hawiye, Darod,* and *Rahanweyn*, each further subdivided into numerous sub-clans. These clans were historically nomadic or semi-nomadic, competing for resources such as grazing land and water, leading to conflicts and shifting alliances. This system served as units of identity, resource allocation, and conflict resolution (Nasteha, 2019, pp. 7-8). Pre-colonial Somalia lacked a centralized state. Instead, 'clan fiefdoms' governed localized territories, creating a fragmented political landscape that persists today (Ingiriis, 2018, p. 58). Historical narratives of conflict (e.g., inter-clan raids, resource dispute) became embedded in Somali identity, legitimizing violence as a tool for political control (Emmenegger, 2021, p. 2).

4.2. Colonial Era: Artificial Borders and Divide-and-Rule Policies:

During the Scramble for Africa, Somali territories were divided among five colonial powers:

- British Somaliland (northwest)
- Italian Somaliland (south)
- French Somaliland (Djibouti)
- Ethiopian Empire (Ogaden region)
- British Kenya (Northern Frontier District) (Lewis, 2002, p. 35)

This artificial division fragmented Somali-speaking populations, creating long-term irredentist tensions. European powers (Britain, Italy) drew arbitrary European powers (Britain, Italy) drew arbitrary borders in the late 19th century, splitting ethnic Somalis across modern-day Somalia, Ethiopia, Kenya, and Djibouti. This

disrupted traditional clan territories and fueled irredentist claims (Chan, 2021, para. 8-9). Using the divide-and-rule tactics, colonial administrators exploited existing clan rivalries to maintain control, deepening divisions. For example, British policies in the north favored certain clans over others ('Somalia: A Brief History.' n .d., para. 4-5)

In British Somaliland, indirect rule was practised, relying on clan leaders (*akils*) to administer governance, reinforcing clan identities. In contrast, more direct control was used in Italian Somaliland, but also manipulated clan divisions to prevent unified resistance. The French focused on Djibouti as a strategic port, marginalizing Somali nationalist aspirations. During colonial rule in Somalia, ethnic favoritism was introduced. Colonial powers often privileged certain clans over others in administration

and resource allocation, deepening rivalries. For example, the British favored the Isaaq clan in the north, while the Italians worked with Hawiye and Darod elites in the south. These colonial administrations discouraged pan-Somali nationalism, fearing a united resistance.

4.3. Post-Independence Political Landscape:

The post-independence era witnessed efforts to Somali national identity formation. After independence (1960), the unification of British and Italian Somaliland created a centralized state. However, clan-based patronage networks persisted, undermining national cohesion, leading to political instability. Like many African countries, Somalia encountered a stage of political instability when the Somali President was assassinated, followed by a coup d'état led by Muhammed Siad Barre in 1969. The latter ruled until 1991, when the Civil War broke out. Siad Barre's Regime (1969–1991) was characterized by authoritarianism and clan marginalization. The military junta centralized power, but relied on clan favoritism (e.g., favoring the Marehan clan) to consolidate control. This alienated other clans, such as the Isaaq and the Hawiye, sowing seeds of rebellion ('Somalia: A Brief History.' n .d., para. 6-8). Barre's regime had already targeted Isaaq clans in the 1980s (e.g., Hargeisa bombing, 1988). The Somali Youth League (SYL), the leading nationalist movement, struggled to overcome clan-based politics. The Ogaden War (1977–1978) and Siad Barre's dictatorship (1969–1991) exploited clan loyalties, leading to persecution of certain groups, mainly the Isaaq in the 1980s (Samatar, 1988, pp. 132–135; Lewis, 2002, pp. 208–210).

4.4. Civil War and its Impact on Ethnic Relations:

The Civil War era in Somalia witnessed the collapse of the state, political regime, and clan-based fragmentation. The regime's collapse in 1991 triggered a 'clan-based scramble for power.' Warlords and faction leaders mobilized clan militias to seize territory, leading to a 'patchwork of clan fiefdoms.' After Barre's fall in 1991, clan militias fragmented the country, leading to civil war, warlordism, and the rise of Al-Shabaab (Henek, 2007, para. 1). The absence of a central authority left minorities, such as the Bantu and the Bajuni vulnerable. Many became refugees as dominant clans targeted rivals for resources ('Somalia', 2023, para. 1).

The Somali civil war, which began in 1991 after the collapse of Siad Barre's regime, transformed clan identities from social structures into militarized political factions. The conflict deepened ethnic fragmentation, reshaped power dynamics, and created lasting divisions that continue to influence Somali politics today (Menkhaus, 2007, pp. 76–9).

After Barre's fall, no central authority replaced his regime. Instead, armed factions based on clan allegiances competed for control. The major warlord factions included:

- United Somali Congress (USC – Hawiye) – Controlled Mogadishu (split into Ali Mahdi vs. Mohamed Farah Aideed factions); (Lyons & Samatar, 1995, pp. 34–6)
- Somali National Movement (SNM – Isaaq) – Took over the northwest, declaring Somaliland's independence (1991); (Reno, 2003, pp. 112–115)
- Somali Salvation Democratic Front (SSDF – Majerteen/Darod) – Dominated the northeast, later forming Puntland (1998); (Menkhaus, 2007, pp. 81–83)
- Rahanweyn Resistance Army (RRA – Digil-Mirifle) – Fought for control of the Bay and Bakool regions. (Menkhaus, 2007, pp. 81–83)

The USC's internal split (1991–1992) between Ali Mahdi (Abgal/Hawiye) and Aideed (Habar Gidir/ Hawiye) turned Mogadishu into a warzone. This conflict drew in international intervention (UNOSOM/US-led UNITAF, 1992–1995), which failed to restore order and withdrew after the Black Hawk Down incident (1993) (Lyons & Samatar, 1995, pp. 48–50). Somaliland seceded in 1991, with Isaaq tribe dominance. The SNM (Isaaq-led) unilaterally declared independence,

establishing Somaliland as a de facto state. Unlike the south, Somaliland avoided prolonged warlordism by relying on traditional clan conferences (Guurti system). However, minority clans (Gadabuursi, Issa, Dhulbahante) sometimes felt marginalized (Reno, 2003, pp. 112–115). After 1991, Isaaq-dominated Somaliland expelled non-Isaaq militias, consolidating their control. Mogadishu became a battleground between Hawiye warlords and Darod factions (e.g., SSDF, later Puntland). The Juba Valley saw clashes between Darod (Ogadeni/Marehan) and Hawiye groups. The Somali Civil War witnessed marginalization of minority groups. The Bantu (Jareer) communities, already historically discriminated against, faced land seizures and violence. The Benadiri (urban coastal clans) and Gaboye (low-caste groups) were also targeted (Besteman, 1999, pp. 201–204).

4.5. Current Ethnic Fragmentation in Somalia: Post-Civil War (1991)-:

The historical context of ethnic fragmentation in Somalia since the 1991 civil war is marked by a complex
interplay of clan dynamics, political instability, external interventions, and resource competition.

It is worth mentioning that Somalia's social structure is organized around six major clans, including the Hawiye, Darod, and Issaq, and numerous sub-clans. Post-1991, these divisions became politicized, with elites exploiting clan identity to mobilize support ('Understanding Civil Militia Groups in Somalia', 2016, para. 2). For example:

- The Issaq clan's tensions with the government (post-1991) exemplify how historical grievances fueled conflict (Prunier, 1995, para. 22);
- Clan-based militias engaged in retaliatory violence, extrajudicial killings, and resource plunder, perpetuating cycles of retaliation ('Understanding Civil Militia Groups in Somalia', 2016, para. 9);
- Stereotypes framing conflicts as 'Stone Age clan rivalries' using modern weaponry that highlight the paradox of localized disputes escalating into widespread violence. (Osman, 2007, para. 6)

It is worth mentioning that the overthrow of Mohammed Siad Barre's authoritarianism regime in January 1991 triggered state collapse and created a power vacuum that intensified pre-existing clan divisions. In fact, the lack of a centralized government enabled rival factions to control, leading to widespread violence and the rise of warlordism. This collapse fragmented the country along clan lines, with militias, like the United Somali Congress (USC), splintering into competing groups (Hersi, 2018, pp. 7-8).

It is worth recalling that foreign involvement in the Somali conflict often exacerbated fragmentation. As for Ethiopia's role, although Ethiopian military interventions aimed to stabilize Somalia, but they deepened distrust among local groups, particularly Islamist factions like the Islamic Courts Union (ICU) (De Sousa, 2014, p. 59). In this regard, Ethiopian military intervention was due to violence along the Somali-Ethiopian border reflects tensions between Somali-inhabited regions and the Ethiopian state. In addition, external powers (e.g., US, EU, Gulf states) have supported competing factions, framing Somalia as a proxy battleground for ideological or geopolitical interests (De Sousa, 2014, pp. 60-1).

Efforts to decentralize power through federalism emerged as a potential solution to end the civil war. The Transitional Federal Government (TFG), and later the Federal Government of Somalia (FGS) sought to balance clan representation and regional autonomy.

However, debates over resource allocation, land rights, political power-sharing between central and regional authorities remain contentious (Dahir and Sheikh Ali, 2021, pp. 91-3).

Currently, The Somali Civil War still persists, driven by:

- **Militant Insurgencies**: Al- Shabaab and other Islamist groups exploit clan grievances and week governance to expand territorial control; (Hoff, 2022, para. 1-2)

- **Urban Fragmentation**: Cities like Mogadishu remain divided along clan lines, with recurrent violence targeting civilians, including sexual violence against women ('Somalia Faces the Future: Human Rights in a Fragmented Society', 1995, para. 9-11);

- **Refugee Crises**: Minority groups without clan protection face displacement, reflecting systematic

Marginalization. ('Somalia', 2023, para. 2)

As a matter of fact, ethnic fragmentation in Somalia stems from a confluence of historical clan rivalries, state collapse, external interference, and economic exploitation. While federalism and peace negotiations offer pathways to stability, entrenched interests and cyclical violence continue to obstruct reconciliation (Dahir and Sheikh Ali, 2021, p. 97). Current efforts to rebuild governance and address resource inequities remain critical to breaking this cycle.

5. Indicators of State Weakness in Somalia:

Somalia's state weakness is multifaceted, reflecting failure across governance, security, economic, and social dimensions.

5.1. Political instability:

Political instability in Somalia has been a persistent and multifaceted issue for decades, rooted in a complex interplay of historical, social, and geopolitical factors. Smith (2023) reported that since the collapse of Siad Barre's authoritarian regime in 1991, the country has experienced prolonged civil conflict, weak governance, and fragmentation along clan lines, exacerbating insecurity and hindering development. The absence of a strong central authority has allowed militant groups like Al-Shabaab to thrive; while recurring droughts, famine, and economic struggles have further destabilized the nation. Despite international efforts to support peacebuilding and state formation, Somalia continues to grapple with political infighting, electoral disputes, and regional divisions, leaving its future stability uncertain (p. 115).

5.1.1. Weak Governance and Institutional Fragility:

Weak governance and institutional fragility are central indicators of Somalia's state weakness, rooted in decades of conflict, political instability, and systemic challenges. Weak governance in Somalia is characterized by limited government authority, pervasive corruption, and inability to deliver basic services:

- **Limited Central Authority:** The Federal Government of Somalia (FGS), established in 2012, struggles to exert control beyond Mogadishu and major urban centers. Clan-based power structures and regional administrations (e.g., Puntland, Somaliland) often operate autonomously, undermining

centralized governance. For instance, the 2023 Fragile States Index (FSI) by the Fund for Peace ranked Somalia among the top five most fragile states, scoring 110.5 out of 120, with poor governance as a key driver (Fund for Peace, 2023, p. 12);

- **Corruption and Mismanagement:** Corruption is systemic, with Somalia consistently ranking at the bottom of Transparency International's Corruption Perceptions Index (180/180 in 2024). Public funds are often misappropriated, and clan-based patronage networks dominate resource allocation, eroding public trust. For example, reports from 2023 highlighted mismanagement of international aid, with funds diverted to elites rather than development or security (Transparency International, 2024, p. 3);

- **Service Delivery Failures:** The government's inability to provide basic services like healthcare, education, or security exacerbates state weakness. Only 52% of Somalis have access to basic drinking water, and just 40% of children are enrolled in primary school, according to UNICEF (2023). This vacuum allows non-state actors like Al-Shabaab to gain influence by offering alternative governance structures. (UNICEF, 2023, p. 8)

5.1.2. Institutional Fragility and the Lack of effective institutions:

Somalia's institutions are undermined by weak legal frameworks, lack of capacity, and ongoing conflict. All these are manifested in:

- **Weak Rule of Law:** The absence of a robust judicial system leaves Somalia reliant on customary (xeer) and Sharia-based systems, which vary regionally and often conflict with formal laws. The FGS's justice institutions lack enforcement power, and Al-Shabaab operates parallel courts in areas under its control, further fragmenting legal authority (SIDRA Institute, 2025, p. 6);

- **Fragile Security Institutions:** The Somali National Army (SNA) and police are underfunded, poorly trained, and infiltrated by clan loyalties and insurgent sympathizers. Despite international support (e.g., AMISOM/ATMIS), the SNA struggles to counter Al-Shabaab, which controls significant rural areas. A 2024 UN report noted that Al-Shabaab's revenue from extortion and taxation ($100 million annually) often surpasses the FGS's budget for security; (United Nations, 2024, p. 22);

- **Lack of Institutional Capacity:** Bureaucratic institutions are nascent and lack trained personnel. The FGS's ministries are often understaffed and rely heavily on international donors for funding and technical expertise. For example, the World Bank's 2023 Somalia Economic Update highlighted that only 17% of civil servants have adequate training, hampering policy implementation. (World Bank, 2023, p. 45)

5.1.3. Impact on State Weakness:

Weak governance and institutional fragility perpetuate a cycle of state failure:

➢ **Security Vacuum:** The government's inability to monopolize violence allows Al-Shabaab and other militias to thrive, further weakening state legitimacy. Since 2006, the group has exploited central government weakness to seize territory, contributing to Africa's highest violence levels. In 2024, Al-Shabaab conducted over 300 attacks, killing hundreds, according to the Armed Conflict Location& Event Data Project;(ACLED, 2024, p. 4)

➢ **Economic Stagnation:** Institutional fragility deters investment and development. Somalia's GDP per capita remains one of the lowest globally ($592 in 2023), and reliance on remittances (over 30% of GDP) highlights the state's failure to generate domestic revenue; (World Bank, 2023, p. 10)

➢ **Social Fragmentation:** Weak governance exacerbates clan divisions, as groups compete for scarce resources and power. This fuels local conflicts and hinders national cohesion. (Menkhaus, 2023, p. 27)

Weak governance and institutional fragility are defining features of Somalia's state weakness, reflected in limited central authority, corruption, poor service delivery, and fragile institutions. These factors create a vicious cycle of insecurity, economic stagnation, and social fragmentation. While international support offers some progress, addressing these challenges requires tackling clan dynamics, building institutional capacity, and countering insurgent influence. Without significant reforms, Somalia's state fragility will persist.

5.2. Economic Fragility:

Somalia's economy remains highly fragile, undermined by decades of conflict, political instability, and environmental shocks. The country's weak governance, reliance on subsistence agriculture, and frequent climate-related disasters, such as droughts and floods which have stifled sustainable growth, leaving much of the population in poverty. With limited infrastructure, a large informal sector, and heavy dependence on remittances and foreign aid, Somalia's economy is vulnerable to external shocks and internal disruptions. Additionally, the persistent threat of Al-Shabaab insurgency further destabilizes trade and investment, perpetuating cycles of economic stagnation. Despite some progress in recent years, structural weaknesses and systemic corruption continue to hinder recovery, making economic resilience a critical challenge for Somalia's future. (World Bank, 2023, p. 18)

5.2.1. Impact of Civil Conflict on Economy:

Somalia's economy has been profoundly shaped by decades of civil conflict, which has created a cycle of fragility, institutional collapse, and humanitarian crises.

The 1991 Civil conflict which caused the collapse of the Siad Barre regime has devastated Somalia's physical and institutional infrastructure. Roads, telecommunications, and public services were destroyed, leaving the country with no functioning national government and no formal legal system (Adam, 1999, p. 175). Additionally, the prolonged civil war caused extreme economic stagnation, with GDP growth averaging just 1.9% in the 1980s and collapsing further in the 1990s due to clan-based warfare. Weak state legitimacy and fractured governance structures persist, undermining economic planning and investment (Pillali and De Corral, 2022 p. 2).

Moreover, the civil war has displaced millions, disrupting labor markets and livelihoods. For example, fighting in 2007 displaced 700,000 people from Mogadishu (Bradbury and Healy, 2010, p. 10). The conflict caused high mortality data which highlighted the severity, with 1.5 million people died due to conflict-related violence. Displacement reduced household purchasing power and destabilizes communities, further eroding economic resilience (Norris and Bruton, 2011, pp. 17-9).

The Somali civil war caused the collapse of the following key economic factors:

- **Agriculture and Pastoralism:** Somalia's economy relies heavily on agriculture, which has been crippled by conflict. Crop failures, reduced livestock production, and destroyed harvests; (Muktar, 2024, p. 217)
- **Trade and Exports**: Livestock exports, a critical hard-currency earner (80-90% of total annual exports), are disrupted by insecurity and weak governance; (Samatar, n. d., p. 10)
- **Household Livelihoods**: Post-war analyses show disrupted food demand patterns, reflecting broader economic instability. (Hussein, Law, and Fraser, 2021, p. 9)

The prolonged conflict led to economic stagnation and vulnerability. It has trapped Somalia in a cycle of low growth and dependency on humanitarian aid. The World Bank noted that Somalia faces economic losses

four times worse than non-fragile states during climate shocks. The limited fiscal capacity and institutional breakdown hinder economic diversification, leaving the country reliant on informal sectors and external aid (Olofsgård and Strömberg, 2020, p. 2).

Another factor which has caused economic fragility in Somalia is climate change. The latter exacerbated fragility. Recurrent droughts (e.g., 2020-2023) reduced crop and livestock yields, worsening food security and social tensions. Research linked drought intensity to a 62% increased likelihood of conflict, creating a vicious cycle where environmental stress fuels violence, further destabilizing the economy (Maystadt and Ecker, 2014, p. 1163).

Somalia's economic fragility is deeply intertwined with its civil war. The destruction of infrastructure, displacement of populations, and collapse of key sectors created systemic vulnerabilities. While foreign aid and reforms aim to transition Somalia toward sustainable development, lasting progress requires addressing both governance gaps and climate-related risks (Olofsgård and Strömberg, 2020, p. 3).

5.2.2. Reliance on Remittances and Foreign Aid:

Somalia's economic fragility stems from decades of instability, civil war conflict, and underdeveloped infrastructure, which have entrenched its dependence on remittances and foreign aid as critical lifelines.

Somalia's economy is heavily dependent on remittances and foreign aid, which underscores its economic fragility. Remittances are a cornerstone of Somalia's economy, constituting 16.7% of GDP in 2022 and 23% of GDP in 2016 ('Aid Flows in Somalia: Analysis of aid flow data,' 2017, p. 5). Originated largely from Somali diaspora, recent estimates suggest that remittances account for one-third of GDP, equivalent to government revenues. Remittances total $1.3–$2 b annually, exceeding humanitarian aid. For example, in 2019, total aid to Somalia was $1.9 billion, with $924 million in humanitarian assistance. Moreover, over 40% of Somali households depend on remittances for basic needs, including food, healthcare, and education, and helping to cover trade deficit, which widened to 62.1% of GDP in 2024. Remittances also reduce poverty gaps and severity, though their impact on overall inequality is limited. This support prevents large- scale starvation and

reduces reliance on food aid. Overreliance on remittances poses risks if global economic conditions reduce inflows (Nisar, Hammond, Khalif, Guhad, and Kleist, 2020, para. 1-4).

It is worth recalling that Somalia's economy is largely informal, driven by livestock, remittance/money transfer companies, and telecommunications. The lack of a formal banking system until recently forced reliance on unregulated remittance channels (Avis and Siân, 2016, p. 8).

Foreign aid, while critical, constitutes a smaller share of GDP than remittances but remains vital for government functions, with over 70% of the federal budget reliant on external assistance.

Somalia's economy has long relied on foreign aid. In 2002, international aid stood at $170 million, with $272 million pledged for 2003. By 2019, total aid reached $1.9 billion (Ali, 2020, pp. 40-1). Although critical,

foreign aid declined in 2025 due to global uncertainties, which projected to slow GDP growth to 3%. Disruptions to aid risk exacerbating poverty and instability. Prolonged reliance on foreign aid undermines domestic revenue mobilization and institutional development (Avis and Siân, 2016, p. 9).

This reliance exposes Somalia to external shocks. A 50% drop in remittances in Q1 2025 in Somaliland, for instance, signals vulnerability to diaspora income fluctuations. Similarly, potential aid cuts could halt public services, expand Al-Shabaab's influence, and trigger famine in some regions. Somalia's low domestic revenue-to-GDP ratio, one of the world's lowest, limits self-sufficiency, with reforms like tax base expansion and customs modernization offering slow but necessary progress. Structural challenges, including conflict, climate shocks, and weak institutions, exacerbate fragility. Despite reforms post-HIPC completion in 2023, which reduced external debt from $5.3 billion to $0.6 billion, Somalia's economy remains informal, with agriculture (75% of GDP) and livestock (40% of GDP) dominating. The absence of a robust banking system and reliance on mobile money and MTOs further complicate financial stability (International Crisis Group, 2025, p. 12).

5.3. Social Fragmentation:

Somalia's social fragmentation is a complex and multifaceted interplay of historical, political, economic, cultural, and environmental factors. Rooted in decades of instability, the country's divisions manifest along clan lines, regional disparities, and systemic governance failures. All these exacerbated humanitarian issues and developmental challenges.

With the overthrow of Siad Barre's regime in 1991, Somalia witnessed the collapse of its central government, and the breaking of a civil war. This situation triggered a power vacuum filled by warlords, clan militias, and regional administrations. This disintegration fragmented national identity, as local governance structures prioritized clan loyalty over national cohesion (Mohamoud, 2002, pp. 135-7). The absence of a functional state enabled the rise of parallel systems of authority, deepening societal divides. The key drivers of social fragmentation in Somalia are listed below:

5.3.1. Clan-Based Divisions and Tribalism:

Somalia's social fabric is deeply stratified along clan and sub-clan lines. Clan loyalty often supersedes national identity, shaping political alliances, resource distribution, and conflict dynamics ('Somalia: Impact of clan conflicts', 2025, p. 3). For example, in regard to resource scarcity, the prolonged droughts and climate-induced crises intensify competition over water and arable land, often sparking clan-based violence (Lwanga-Ntale and Owino, 2020, pp. 3-4).

As a result of political fragmentation, clan rivalries perpetuate cycles of conflict, as seen in persistent disputes over regional autonomy (e.g., Jubaland land conflicts). This; in fact, has led to weak social cohesion in the Somali society. Due to poor governance and corruption which undermine trust in institutions, communities in Somalia are pushed to rely on clan networks for security and survival (Lawson-McDowall and Khan, 2024, para. 15).

The breakdown of social cohesion has led to the following consequences:

- **Humanitarian Crises:** 47% of Somalis face acute needs due to conflict, displacement, and disease ('European Civil Protection and Humanitarian Aid Operations,' 2018, para. 5);
- **Economic Decline:** Decades of war have made Somalia one of the poorest nations in Sub-Saharan Africa; (World Bank, 2019, p. 1)

- **Persistent Instability:** Clan-based conflicts and weak governance continue to hinder peacebuilding efforts, with 2025 projections suggesting ongoing fragility. (Hear and Zimmerman, 2014, p. 5)

Somalia's social fragmentation is a product of historical trauma, clan-centric politics, governance failure, and climate vulnerability. Addressing these issues requires holistic strategies that strengthen inclusive governance, invest in climate resilience, and bridge divides between communities. While regional succ esses like Somaliland offer lessons, national cohesion remains elusive without systemic reforms.

5.3.2. Effects on national identity:

The social fragmentation in Somalia has profound and multifaceted effects on the construction and maintenance of cohesive national identity. These effects are deeply intertwined with historical, political, and cultural dynamics, as evidenced by the factors below:

- **Undermining National Unity and Cohesion:** Clan loyalties and sub-national identities consistently take precedence over national solidarity, creating a fragmented societal structure. The prioritization of clan interests has 'undermined efforts to forge a unified national identity' (Dayib, 2024, para. 4), while 'fragmented and competing identities' perpetuate state fragility. This division is rooted in Somalia's clan-based social organization, where 'internal divisions fall along clan and sub-clan lines'
(Hersi, 2018, pp. 8-10), making national cohesive elusive. In fact, this fragmentation fosters a cycle where changing loyalties and competing narratives deepen uncertainty and instability. (Turan, 2024, p. 9)
- **Perpetuation of Conflict and Instability:** Social fragmentation fuels cycles of violence and political strife. The entrenched disparities between clans challenge national unity and continue to fuel cycles of violence. The collapse of the centralized state after 1991 exacerbated this, leading to protected state breakdown and political infighting. Weak societal cohesion and unresolved grievances further entrench instability, as seen in regions like Somaliland, where crises of political identity persist. (Hassan, 2023, pp. 45-47)
- **Reinforcement of Sub-National Identities:** Colonial and post-colonial legacies have entrenched regional and clan-based identities. During colonial rule, feelings of nationalism were initially heightened but later complicated by multi-centered colonialism, which fragmented identity frameworks. Post-independence efforts to unify Somalia often backfired, as unification attempts led to fragmentation along clan lines. Traditional structures, such as patriarchal clan systems, further gave rise to fragmented political struggles, making national identity secondary to localized affiliations. (Hassan, 2023, pp. 62-64)
- **Obstacles to State-Building and Governance:** Weak governance and institutional collapse are both cause and consequence of fragmentation. Poor governance interacts with weak social cohesion to exacerbate state fragility, particularly in climate-vulnerable regions. The absence of strong centralized government since 1991 has allowed regional and clan differences to determine politics, raising questions about the viability of a unified, national identity. Colonial-era hierarchies and unresolved debates about legitimate rule further complicate state-building efforts. (Hassan, 2023, pp. 78-80)
- **External and Internal Actors Exacerbating Divisions:** Diaspora communities and militant groups

like Al-Shabaab amplify fragmentation. A vocal fraction of diaspora members disseminates divisive, extremist narratives, distorting perceptions of national identity. Meanwhile, Al- Shabaab's insurgency and political infighting sustain social fragmentation. These actors exploit existing divisions, hindering reconciliation and reinforcing sub-national loyalties. (Hassan, 2023, pp. 92-94)

- **Media and Modern Fragmentation:** Societal fragmentation is reflected and reproduced through mediatized clan clusters, where media platforms amplify competing interests and narratives. This digital-era dynamic deepens divides by creating echo chambers that prioritize clan or regional identities over national cohesion. (Hassan, 2023, p. 110)

Somalia's social fragmentation creates a paradox: while there is a 'quest for unification' rooted in both colonial and nationalism eras, historical and contemporary forces, such as clannism, weak governance, and external interference, consistently undermine national identity. The result is a state in flux, where cycles of conflict and identity crises persist. Addressing these challenges requires reconciling sub-national identities with a shared vision of citizenship for reconciliation processes to transcend fragmentation.

6. Strategies for Addressing Ethnic Fragmentation and Strengthening the State:

Somalia's ethnic fragmentation, rooted in its clan-based social structure and compounded by decades of conflict, weak governance, and external interference, poses significant challenges to state-building. The country's diversity, primarily among Somali clans and minority groups, requires tailored strategies to foster unity and strengthen the state. To address the issue of ethnic fragmentation in Somalia, the following strategies can help resolve the issue:

6.1. Promoting Inclusive Governance:

Somalia's history of conflict, clan-based politics, and weak institutions has hindered effective governance.

To achieve inclusive governance, which must be prioritized, the key strategies can be useful:

- **Clan-Inclusive Power-Sharing**: Expand the 4.5 power-sharing formula (equal representation for the four major clans, half-share for minorities) to ensure broader inclusion of smaller clans and marginalized groups like the Somali Bantu. Transition toward merit-based appointments to reduce clan-based patronage, as seen in the Federal Government of Somalia's (FGS) efforts to reform civil service; (Nasteha, 2019, pp. 4-6)

- **Federalism with Clear Boundaries**: Strengthen Somalia's federal system by clarifying roles between the FGS and Federal Member States to balance clan autonomy with national unity. Address disputes over resource allocation and political representation, such as those between Mogadishu and Puntland;

(Federal Government of Somalia & Federal Member States, 2023, p. 12)

- **Transparent Institutions**: Build accountable institutions, including a clan-diverse judiciary and civil service, to reduce perceptions of bias. For example, the establishment of the National Electoral Commission in 2020 aimed to ensure fair representation in elections. (Somali National Electoral Commission, 2020, p. 8)

6.2. Role of international community and NGOs:

The international community and non-governmental organizations (NGOs) play a critical role in addressing ethnic fragmentation in Somalia by supporting peacebuilding, humanitarian aid, and governance reforms while navigating the country's complex clan dynamics and historical grievances. The international community and NGOs should focus on the following strategies to resolve the issue of ethnic fragmentation, mitigate clan-based divisions, and promote national unity.

➢ **Supporting Inclusive Peacebuilding Processes:**

The international community and NGOs should facilitate dialogue and reconciliation to bridge clan divides through:

- **Mediation and Dialogue Platforms**: Organizations like the United Nations (UN) and the Intergovernmental Authority on Development (IGAD) provide neutral platforms for inter-clan dialogue. For instance, the UN Assistance Mission in Somalia (UNSOM) has supported national reconciliation conferences, such as the 2012 Garowe Principles, which laid the groundwork for federal governance; (United Nations Assistance Mission in Somalia, 2012, p. 23)

- **Local Peace Committees**: NGOs like the Danish Demining Group (DDG) and Interpeace have established community-based peace committees, such as the Qabooley initiative, which resolved 12 local conflicts by 2023 through inclusive clan dialogues. These efforts empower local actors while ensuring international support for logistics and training; (Interpeace & Danish Demining Group, 2023, p. 17)

- **Diaspora Engagement**: The international community can channel the Somali diaspora's resources and expertise to mediate disputes, as seen in Somaliland's peace processes, where diaspora-funded NGOs facilitated elder-led negotiations. (Horst & Van Hear, 2020, p. 54)

➢ **Strengthening Governance and Power-Sharing:**

Ethnic fragmentation is exacerbated by inequitable power structures, which international actors can help reform through:

- **Capacity Building**: The UN and European Union (EU) support training for federal and regional governments to implement inclusive policies. For example, the EU's *REINVENT* program has strengthened Puntland's local governance, reducing clan-based tensions by decentralizing power; (European Union, 2022, p. 9)

- **Reforming the 4.5 Formula**: International donors can pressure Somalia's government to replace the 4.5 clan-based power-sharing system, which marginalizes minority clans like the Bantu/Jareer, with a more equitable model. The African Union Mission in Somalia (AMISOM/ATMIS) has advocated for inclusive governance to stabilize regions; (African Union Mission in Somalia, 2021, p. 31)

- **Constitutional Support**: NGOs like the Max Planck Institute have provided technical assistance for Somalia's constitutional review, ensuring provisions for minority representation and reducing clan hegemony. (Max Planck Institute, 2023, p. 14)

➢ **Addressing Economic Drivers of Conflict:**

Resource scarcity fuels, clan rivalries, and international actors can mitigate this through targeted interventions and:

- **Humanitarian Aid**: NGOs like Oxfam and Save the Children deliver aid to conflict-affected areas, ensuring equitable distribution to prevent clan-based competition. In 2023, the World Food Programme (WFP) reached 4 million Somalis with food aid, reducing tensions in regions like Lower Shabelle; (World Food Programme, 2023, p. 12)

- **Economic Development**: The World Bank and UN Development Programme (UNDP) fund projects like cooperative irrigation systems and markets that require inter-clan collaboration, fostering economic interdependence. For example, the UNDP's Joint Programme on Local Governance supported shared infrastructure in Hiraan, reducing land disputes; (United Nations Development Programme, 2023, p. 25)

- **Job Creation**: International NGOs can expand youth employment programs, as unemployment drives clan militia recruitment. The International Labor Organization (ILO) has piloted vocational training in Mogadishu, targeting youth from rival clans. (International Labor Organization, 2023, p. 8)

➢ **Countering External Influences:**

Foreign interventions, such as Ethiopia's military presence, often exacerbate clan divisions. The international community can mitigate this through:

- **Regional Diplomacy**: IGAD and the African Union (AU) facilitate dialogue between Somalia and neighbors like Ethiopia and Kenya to reduce hostile interventions. The 2020 Djibouti talks, though limited, showed potential for regional cooperation; (Intergovernmental Authority on Development, 2023, p. 15)

- **Countering Al-Shabaab**: The UN and AU support Somalia's security sector to weaken Al-Shabaab, which exploits clan divisions. NGOs like *Saferworld* provide training to prevent security forces from favoring dominant clans, ensuring impartiality; (Saferworld, 2023, p. 10)

- **Monitoring Arms Flows**: The UN Security Council's arms embargo monitoring group tracks illicit weapons that fuel clan conflicts, reducing the militarization of disputes. (United Nations Security Council, 2023, p. 22)

➢ **Promoting Education and Cultural Unity:**

Education and cultural initiatives can foster a unified Somali identity, countering clan-based divisions. This; in fact, can be achieved through:

- **Peace Education**: NGOs like UNICEF support peace education programs that integrate clan-neutral curricula, promoting national unity. For example, the 2023 'Learning for Peace' initiative reached 10,000 students in Puntland and Jubaland; (UNICEF, 2023, p. 18)

- **Cultural Reconciliation**: International organizations can fund cultural projects, such as poetry festivals or radio programs, that leverage Somalia's shared heritage. The Hadrawi peace caravan, supported by UNESCO, used poetry to promote reconciliation in 2022; (UNESCO, 2023, p. 14)

- **Rebuilding Education Systems**: The Global Partnership for Education, backed by international donors, has rebuilt schools in stable regions like Somaliland, reducing disparities that fuel clan grievances. (Global Partnership for Education, 2023, p. 27)

However, despite these initiatives proposed by the international community and NGOs, there are challenges to be taken into consideration. These are:

- **Coordination Gaps**: The international community must streamline efforts to avoid duplicating NGO programs, which can overwhelm local capacities. The Somalia NGO Consortium addresses this through coordination;

- **Clan Sensitivities**: Interventions must avoid favoring dominant clans, as seen in past aid distributions that marginalized Bantu/Jareer communities. Transparent, inclusive aid delivery is critical;

- **Al-Shabaab Restrictions**: The group's control over rural areas limits NGO access. Negotiating humanitarian corridors, as attempted by the UN in 2023, is essential;

- **Dependency Risks**: Over-reliance on international aid can undermine local ownership. NGOs should prioritize capacity-building to empower Somali-led solutions.

7. Conclusion:

The relationship between ethnic fragmentation and state weakness in Somalia is deeply intertwined, with ethnic divisions significantly contributing to the country's prolonged instability. Somalia's diverse clan-based structure, rooted in lineage and kinship, has fostered competition over resources, power, and influence, undermining centralized governance. The absence of a cohesive national identity, coupled with historical grievances and colonial legacies that exacerbated clan rivalries, has fueled conflict and weakened state institutions.

Since the collapse of Siad Barre's regime in 1991, Somalia has experienced persistent civil war, with clan-based militias, warlords, and later groups like Al-Shabaab exploiting ethnic fragmentation to challenge state authority. This fragmentation has hindered the formation of a functional government, as political processes are often paralyzed by clan-based power struggles, corruption, and mistrust. The federal system, intended to accommodate clan diversity, has instead entrenched regional divisions, with federal member states often prioritizing local interests over national unity.

Economic factors further exacerbate state weakness, as competition for scarce resources like land, water, and foreign aid intensifies clan conflicts. External interventions, while sometimes stabilizing, have often manipulated ethnic divisions to serve geopolitical interests, further complicating state-building efforts. The lack of a strong, inclusive central authority has allowed non-state actors to fill governance voids, perpetuating cycles of violence and instability.

In conclusion, ethnic fragmentation in Somalia significantly contributes to state weakness by fostering division, undermining trust in governance, and enabling persistent conflict. Addressing this requires inclusive political frameworks that transcend clan loyalties, equitable resource distribution, and sustained efforts to build a unified national identity. Without tackling the root causes of ethnic fragmentation, Somalia's path to state stability remains challenging.

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UNPACKING THE SAVINGS PUZZLE IN THE WESTERN BALKANS: REMITTANCES, FINANCIAL DEPTH, AND MACROECONOMIC STABILITY

Ardita BYLO

Asst. Prof. Dr., University of New York Tirana
E-mail: arditabylo@unyt.edu.al
ORCID ID: 0000-0002-4291-5829
Adela ZGURA

Student, University of New York Tirana
E-mail: adelazgura@unyt.edu.al
ORCID ID: 0000-0000-9703-0377

Abstract

The determinants of gross national savings in the Western Balkans present a complex puzzle, characterized by transitioning economies, significant remittance inflows, and evolving financial systems. This study seeks to unravel this puzzle by empirically investigating the roles of macroeconomic stability, financial depth, and remittances across Albania, Bosnia and Herzegovina, Montenegro, North Macedonia, and Serbia (2007–2023). Employing a panel data approach, a random effects model was selected to analyze these relationships. The model was rigorously validated through diagnostic tests for multicollinearity, autocorrelation, and cross-sectional dependence. Our findings reveal a nuanced picture: while GDP per capita growth, remittances, and money supply act as significant pieces of the savings puzzle by positively bolstering savings, other factors create tension. Unemployment, inflation, and domestic credit to the private sector significantly negatively impact savings, revealing critical trade-offs. The COVID-19 pandemic shock further underscored the region's economic vulnerability by disrupting savings patterns. We conclude that solving the savings puzzle requires holistic policies that promote macroeconomic stability to mitigate vulnerabilities, harness financial depth without discouraging savings, and strategically leverage remittance inflows for enhanced financial resilience.

Keywords: Gross National Savings, Western Balkans, Remittances, Financial Depth, Panel Data, COVID-19 Economic Shock

INTRODUCTION

Savings play a crucial role in promoting economic growth, especially in emerging and developing economies, when access to external financing is often limited. They are the share of money that is not spent but is saved and regarded as the main source of investment in physical and human capital. High levels of savings enhance a country's ability to finance infrastructure, education, and productive sectors internally, reducing reliance on foreign borrowing (Ando & Modigliani, 1963). This internal financing capacity builds long-term economic strength. In addition, higher savings improve the banking system's ability to lend, which supports private sector activity and job creation (Loayza et al., 2000). Countries with stronger savings are also better prepared to handle financial shocks or crises. For these reasons, promoting savings is important for sustainable and resilient economic development.

The Western Balkans region, including Albania, Bosnia and Herzegovina, Montenegro, North Macedonia, and Serbia, has experienced major economic challenges over the past two decades that might have affected the savings rate of the countries.

The study employs gross savings as a percentage of GDP as the main measure of national savings. Gross savings are calculated by subtracting total consumption from gross national savings, including net transfers (World Bank Group, n.d.). By focusing on gross savings as the dependent variable, the research aims to investigate the determinants that shape savings patterns in the region.

Despite the well-established importance of savings, the Western Balkans remain underexplored in this context. Most existing studies are outdated and primarily focus on examining more developed countries. Manjic's (2017) research is one of the few contributions to the savings in the Western Balkans that, while valuable, does not fully capture the current economic dynamics of the region. Particularly, the Western Balkan labor market underwent significant transformations both before and after 2015. The pre-2015 period was characterized by high unemployment, a low labor force participation rate, and a lack of formal jobs. In contrast, since 2015, the labor market has seen gradual improvements due to EU integration, labor market reforms, and increased investment in human capital (World Bank Group, n.d.). These changes may have influenced household saving behavior, making it necessary to revisit the determinants of savings in this shifting context. The study analyzes macroeconomic variables and financial depth indicators to determine their direct impact on savings. Kosovo was excluded from the study due to missing values in key indicators. The role of remittances is also unclear, and the effect of the COVID-19 pandemic on savings in the region is unknown. Ultimately, by providing updated insights, the study improves further understanding of the indicators influencing savings.

The research addresses the following questions:

- Do the macroeconomic indicators, financial depth factors, and remittances significantly impact national savings?
- Does COVID-19 have a significant impact on the response variable?

By identifying and testing these determinants, the research aims to provide clear and reliable findings that can guide effective policy decisions.

The study contributes to the relatively limited body of literature focusing on the region of the Western Balkans. The findings of this study can guide policymakers and central banks in designing targeted strategies to promote national savings. While identifying the most significant drivers of savings, the study can inform fiscal and monetary policies aimed at strengthening internal financial resources, reducing reliance on external debt, and fostering investment. Furthermore, understanding the role of remittances and credit can help shape financial inclusion initiatives and encourage the productive use of financial inflows. Overall, exploring savings patterns helps support long-term economic sustainability and resilience in the region.

MATERIALS AND METHODS

To analyze the determinants of gross savings in the Western Balkan region, we have collected data on seven indicators over seventeen years for the countries of Albania, Bosnia and Herzegovina, Montenegro, North Macedonia, and Serbia. All data were obtained from the World Bank database (World Bank Group, n.d.). The tables presented in the following sessions are based on the author's calculations using Stata Software.

By conducting a quantitative study with a panel data approach, the research provides a comprehensive analysis of diverse determinants influencing savings. There is a combination of macro and financial indicators, such as gross domestic product, inflation, unemployment, money supply, and domestic credit. Along with these factors, we include remittances as a separate variable and a dummy variable to capture the COVID-19 impact. The summary of the variables used in the regression model, more specifically, their notations, measurements, and definitions, are represented in the table below.

Table 1. Summary of the variables used in the model

Variable Name	Measurement	Definition

Gross Savings	**Percentage of GDP**	**Income left after all consumption and adjusted for net transfers.**
GDP Per Capita	**Natural Logarithm of Current US$**	**Total economic output divided by the population**
Inflation Rate	**Consumer Price Index (%)**	**Yearly change in consumer prices for a set basket of goods and services.**
Unemployment rate	**Total % of total labor force (modeled ILO estimate)**	**Portion of the labor force actively seeking but not having a job.**
Money Supply	**Broad money (% of GDP)**	**Total liquidity, including cash, checking, savings, and other liquid deposits.**
Domestic credit to the private sector by banks	**Percentage of GDP**	**Loans and similar financial support that banks provide to private businesses and individuals.**
Remittances Received	**Percentage of GDP**	**Money sent by individuals working abroad to households in their home country, including wages of temporary workers.**
COVID pandemic	**Dummy Variable =1 if year is 2020, and 0 otherwise**	**A global health crisis that severely impacted economic activity and stability.**

Each variable in the model was selected based on its theoretical relevance and empirical findings. Gross domestic product per capita captures the average income level, and typically, a higher income enables greater savings. Natural logarithm is used to linearize the relationship and reduce skewness. Inflation measured by CPI is included to reflect current price stability. High inflation erodes the purchasing power of saved money, leading people to spend rather than save. The unemployment rate is used to represent labor market performance, and high unemployment reduces income and certainty about the future, so people save less. The money supply reflects financial depth and liquidity, which provides better tools and opportunities to save. Calculated as a percentage of GDP to control for economic scale, domestic credit encourages borrowing and consumption, thus reducing savings. Remittances received serve as an additional source of income. They may boost household income, allowing families to save more. The pandemic caused unprecedented economic shocks, and we used a dummy variable to isolate this effect. Many economies faced contraction, job losses, health expenses, and uncertainty, leading to decreased savings. The year 2020 was selected for the dummy variable, indicating the peak of the pandemic's economic disruption, while separate dummies for 2019 and 2021 were insignificant, justifying the restriction to 2020.

The econometric equation is as follows:

$$\boldsymbol{GS}_{i,t} = \beta_0 + \beta_1 \ln(\boldsymbol{GDPpc})_{i,t} + \beta_2 \boldsymbol{CPI}_{i,t} + \beta_3 \boldsymbol{Unempl}_{i.t} + \beta_4 \boldsymbol{M2}_{i,t} + \beta_5 \boldsymbol{Credit}_{i,t} + \beta_6 \boldsymbol{Remit}_{i,t} + \beta_7 \boldsymbol{COVID}_{i,t} + \boldsymbol{\alpha}_i + \boldsymbol{\varepsilon}_{i,t} \quad (1)$$

where i represents the country, and t represents the time.

To test the relationship between savings and its indicators, the study focuses on the following hypotheses:

H1: Macroeconomic indicators significantly impact gross savings.

H_0: Macroeconomic indicators have no significant effect on gross savings

H_a: Macroeconomic indicators have a significant effect on gross savings

H2: Financial depth factors significantly impact gross savings.

H_0: Financial depth factors have no significant effect on gross savings

H_a: Financial depth factors have a significant effect on gross savings

H3: Remittances have a positive and significant impact on gross savings.

H_0: Remittances have no significant effect on gross savings

H_a: Remittances have a positive and significant effect on gross savings

H4: COVID-19 has a negative and significant impact on gross savings.

H_0: COVID-19 has no significant effect on gross savings

H_a: COVID-19 has a negative and significant effect on gross savings

To test these hypotheses, a balanced panel dataset is used. First, the Hausman test is applied to determine whether a fixed or random effects model is more appropriate. (Hausman, 1978)

Then, several diagnostic tests ensure the validity of the model, including the variance inflation factor to detect multicollinearity (O'brien, 2007), the Pesaran and Breusch-Pagan tests for cross-sectional dependence (Pesaran, 2021), and the Wooldridge test for autocorrelation (Wooldridge, 2003). Residual normality is evaluated using the Shapiro-Wilk test, along with the Kernel Density Estimate for visual assessment. (Chen, 2017; Razali & Wah, 2011)

FINDINGS

The robust random effects estimation yields a model with excellent explanatory power, as indicated by an overall R-squared of 0.927. The results, presented in Table 2, reveal the significant determinants of gross savings in the Western Balkans and uncover substantial heterogeneity across countries.

Table 2: Robust Random Effects Regression for the determinants of Gross Savings

Savings	Coef.	Rob. St. Err.	t-value	p-value
lnGDPpercapita	**10.368*** **	**3.343**	**3.10**	**.002**
Inflation	**-.33****	**.163**	**-2.02**	**.044**
Unemployment	**-.311*** **	**.097**	**-3.22**	**.001**
Money Supply	**.247*** **	**.024**	**10.34**	**0**
Domestic Credit	**-.227*** **	**.075**	**-3.02**	**.003**
Remittances	**1.116*** **	**.105**	**10.61**	**0**
Covid	**-3.979****	**1.68**	**-2.37**	**.018**
Albania - Reference		**.**	**.**	**.**
Bosnia and	**4.071***	**2.299**	**1.77**	**.077**

Herzegovina				
Montenegro	**-2.428**	**3.251**	**-0.75**	**.455**
North Macedonia	**27.497*** **	**1.578**	**17.43**	**0**
Serbia	**7.517*** **	**1.369**	**5.49**	**0**
Constant	**-88.122**	**30.855**	**-2.86**	**.004**

Overall r-squared	**0.927**	**Number of obs**	**85**
Chi-square	**125.07**	**Prob > chi2**	**0.0000**
R-squared within	**0.817**	**R-squared between**	**1.000**

Macroeconomic Determinants: The analysis confirms the pivotal role of income, with a 1% increase in GDP per capita associated with a 10.37 percentage point increase in gross savings ($p<0.01$). Conversely, macroeconomic instability erodes saving capacity. A one-unit increase in inflation corresponds to a -0.33 percentage point decline in savings ($p<0.05$), while a one-unit rise in the unemployment rate leads to a -0.31-percentage point reduction ($p<0.01$). This negative relationship with unemployment, contrasting with some earlier findings (e.g., Manjic, 2017), likely reflects the increased informalization and precarity of labor markets in the region post-2017.

Financial and External Factors: The results illustrate the dual nature of financial development. An expansion of the money supply is positively associated with savings (coef. = 0.247, $p<0.01$), suggesting that greater liquidity and financial instrument availability facilitate saving. In contrast, a 1% increase in domestic credit to the private sector is associated with a -0.23-percentage point decline in gross savings ($p<0.01$), implying that easier access to credit may substitute for precautionary savings and fuel consumption. Remittances emerge as the most powerful positive driver; a 1% increase leads to a 1.12 percentage point surge in national savings ($p<0.01$), underscoring their critical role as a stable financial inflow that enhances saving capacity. The significant negative coefficient for the COVID-19 dummy (coef. = -3.98, $p<0.05$) quantifies the severe shock of the pandemic, which disrupted savings through income loss, heightened uncertainty, and unplanned health expenditures.

Cross-Country Heterogeneity: The country fixed effects reveal striking disparities in savings behavior across the region, even after controlling the modelled determinants. Compared to the base category (Albania):

- North Macedonia and Serbia exhibit significantly higher gross savings, by 27.50 ($p<0.01$) and 7.52 ($p<0.01$) percentage points, respectively.
- Bosnia and Herzegovina's savings rate is marginally higher (4.07, $p<0.10$).
- The coefficient for Montenegro is negative but statistically insignificant, suggesting its savings rate is not markedly different from Albania's once other factors are accounted for.

These persistent differences point to the influence of unobserved, country-specific factors such as institutional quality, cultural norms, or structural features not captured in the model.

CONCLUSION

The research explored the factors influencing gross savings across five Western Balkan countries over the period 2007–2023, applying a Random Effects panel regression model. By incorporating a set of macroeconomic and financial indicators alongside remittances and the pandemic shock variable, the

study aimed to provide a more current and region-specific understanding of the dynamics affecting national savings patterns.

Higher income levels, measured through GDP per capita, were strongly associated with increased savings, confirming that economic growth enhances the capacity of individuals and institutions to save. Remittances also showed a significant and positive contribution to gross savings, highlighting their role not just in consumption smoothing but also in supporting long-term financial stability. Similarly, financial development, proxied by the money supply, was found to positively influence savings, suggesting that deeper and more accessible financial systems can mobilize idle funds into formal saving channels.

On the other hand, higher unemployment and increased domestic credit to the private sector were negatively associated with savings. These findings imply that job insecurity and reliance on borrowing may discourage saving, either by reducing disposable income or by shifting financial behavior toward consumption and debt servicing. Inflation is also negatively and significantly associated with gross savings, suggesting that rising prices erode purchasing power and reduce real savings incentives. The COVID-19 variable also shows a statistically negative impact, reflecting the disruptive economic consequences of the crisis on savings during 2020.

Compared to Albania, other Western Balkan countries show varying levels of savings. Bosnia and Herzegovina and Serbia appear to have higher saving tendencies, with North Macedonia demonstrating the most pronounced difference. These patterns reflect the influence of unique economic and structural characteristics within each country on their saving rates.

In conclusion, the study finds that income growth, remittance inflows, financial development, employment, inflation control, and resilience to shocks all play important roles in shaping savings behavior in the region. These findings provide timely insights for policymakers seeking to enhance financial stability and promote sustainable national savings strategies.

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EMOTIONAL INTELLIGENCE AS A PREDICTOR OF AFFECTIVE COMMITMENT AMONG EMPLOYEES IN PUBLIC ORGANIZATIONS

Siti Sarawati JOHAR

Associate Prof. Dr., Universiti Tun Hussein Onn Malaysia

E-mail: sarawati@uthm.edu.my

ORCID ID: 0000-0003-2372-3749

Noranifitri MD NOR

Dr., Universiti Tun Hussein Onn Malaysia

E-mail: norani@uthm.edu.my

ORCID ID: 0000-0001-7160-466X

Nur Azah RAZALI

Dr., Universiti Tun Hussein Onn Malaysia

E-mail: nurazah@uthm.edu.my

ORCID ID: 0000-0002-3366-6648

Nurul Aimi RAZALI

Dr., Universiti Tun Hussein Onn Malaysia

E-mail: nurulaimi@uthm.edu.my

ORCID ID: 0000-0001-5611-729X

Nor Shela SALEH

Dr., Universiti Tun Hussein Onn Malaysia

E-mail: norshela@uthm.edu.my

ORCID ID: 0000-0002-0111-9412

R Zirwatul Aida R IBRAHIM

Associate Prof. Dr., Universiti Malaysia Terengganu

E-mail: zirwatul@umt.edu.my

ORCID ID: 0000-0003-1925-4986

Abstract

Employee commitment is widely recognized as a key contributor to organizational effectiveness. However, this commitment may be influenced when psychological factors such as emotional intelligence are not given sufficient attention. This study aims to examine how emotional intelligence affects employee commitment by analyzing its impact on affective commitment within the organization.

A total of 196 civil servants working in local authorities located in the southern region of Peninsular Malaysia were selected as respondents. The instruments used in this study were the Emotional Intelligence Self-Description Inventory (EISDI) and the Employee Commitment Survey Revised Version (ECS-R). The data were analysed using multiple regression through SPSS. The results revealed that two dimensions of emotional intelligence, namely facilitating thought through emotions and regulation and management of emotions, had a significant influence on affective commitment. These findings suggest that emotional intelligence plays an important role in shaping attitudes, behaviours, personality traits, and psychological responses in the workplace. Therefore, organizations should consider implementing strategies that strengthen emotional intelligence among employees to foster deeper emotional engagement and long-term commitment. Especially in the public sector, should consider developing strategies as well to enhancing these competencies may lead to improved interpersonal relationships, and stronger long-term commitment to organizational goals.

Keywords: Emotional intelligence, predictor, affective, commitment, organizations

INTRODUCTION

The public sector plays a vital role in supporting national development. It encompasses the management and administrative systems that serve as a platform for human capital to contribute meaningfully to the progress of the country. As a key component of human capital, the public sector is central to economic advancement and remains the largest provider of services in the nation. These services include those offered by statutory and non-statutory bodies, local authorities, district offices, state government agencies, and various positions across ministries. This study focuses on the organizational psychology of civil servants, specifically examining the influence of emotional intelligence on employee commitment within the public sector. It also considers the potential role of self-esteem as a mediating factor that may shape the relationship between emotional intelligence and employee commitment in the workplace.

The research targets civil servants working in local authorities in Malaysia. Employees in these institutions represent a unique segment of human capital due to their frequent interactions with the public and their direct involvement in service delivery. Despite the implementation of various policies, systems, and transformation initiatives aimed at improving work quality among public servants, challenges persist. These gaps continue to affect the public perception of the sector. The public sector often faces pressure from society to enhance its performance and service delivery, particularly in the context of local authorities (Ibrahim and Abdul Karim, 2004). For instance, Datuk Seri Abu Bakar Abdullah, in a statement delivered at the Putrajaya International Convention Centre on 21 November 2010, reported that 6133 government employees were involved in disciplinary and performance issues in 2009. This marked an increase of 789 cases compared to the previous year (Berita Harian, 2010). Such statistics raise concerns about the capacity of public servants to transform and improve the image of the sector (Zulnaidi, 2008).

Given this context, the present study seeks to explore how emotional intelligence, particularly the dimensions of facilitating emotional thinking and emotion regulation and management, can influence affective commitment among civil servants. By focusing on employees in local authorities, the study aims to provide insights into how emotional competencies contribute to organizational loyalty and performance, and how these findings can inform future research and policy development.

PROBLEM STATEMENT

In the pursuit of excellence within the public sector, continuous transformation is essential. Every reform initiative must be strategically aligned with core objectives to ensure meaningful impact. The behavior of public officials, particularly those in local authorities who serve as the frontline of human resource administration, plays a critical role in shaping public perception. These employees represent the quality of government services and therefore must demonstrate professionalism, emotional stability, and strong organizational commitment in their interactions with the community. Emphasis on behavioral, emotional, and organizational commitment is necessary to ensure that public sector institutions respond effectively to dynamic environments. Efficient and effective use of human resources is fundamental to improving organizational productivity (Rozman, 2007). However, this efficiency cannot be achieved if employees operate under compulsion, experience poor communication, lack motivation, suffer from low self-esteem, or possess limited emotional intelligence. Such conditions may lead to disengagement, dissatisfaction, and emotional strain, ultimately resulting in poor performance (Brief and Weiss, 2002).

In contrast, employees who feel connected to their work and perceive themselves as integral to the organization tend to approach their tasks with sincerity and enthusiasm (Groves and Vance, 2009). This difference in attitude is closely linked to emotional intelligence, self-esteem, and employee commitment. Emotional intelligence is a central element in this study. Emotions hold significant value in leadership and organizational contexts (Sharifah Akmam and Ahmad Shukri, 2006). They influence decision-making, customer loyalty, communication, teamwork, creativity, and innovation (Groves and Vance, 2009). Negative emotions such as anger and fear can disrupt focus and reduce performance, while positive emotions are associated with stronger commitment and better outcomes (Ashkanasy et al., 2002). Emotional intelligence enables individuals to recognize and manage emotions effectively, which is essential for maintaining psychological well-being and professional engagement. Afzaal and Taha (2013) emphasized the need for new approaches in human resource management that incorporate emotional intelligence as a foundation for affective organizational development.

Recent empirical evidence has increasingly highlighted the importance of emotional intelligence in shaping employee commitment and organizational performance. For instance, Emmerling and Cherniss (2025) emphasized that emotional intelligence enhances job performance and leadership effectiveness, which are critical in public sector transformation. Anvari et al. (2023) demonstrated that emotional intelligence significantly influences affective commitment, particularly in post-crisis environments, which mirrors the challenges faced by local authorities in Malaysia. Pulido-Martos et al. (2024) further showed that emotional intelligence contributes to affective commitment through group-level dynamics and leadership, reinforcing the need for emotionally competent civil servants. Hameli and Ordun (2021) both confirmed that emotional intelligence, when combined with self-esteem and self-efficacy, improves workplace motivation and commitment.

These findings align with the core issues raised in the problem statement of this study, where low emotional intelligence, poor communication, and diminished self-esteem among public servants are identified as barriers to effective service delivery and organizational loyalty. Despite these global insights, there remains a lack of localized research that critically examines how specific dimensions of emotional intelligence influence employee commitment within the Malaysian public sector, particularly among local authority staff. This gap underscores the relevance and urgency of the present study, which aims to explore the emotional and psychological factors that contribute to organizational commitment in a context where public perception and service quality are under constant scrutiny.

RESEARCH QUESTIONS AND HYPOTHESIS

Does emotional intelligence significantly influence affective commitment?

i. Emotional intelligence, specifically the ability to perception and appraisal of emotions, has a significant effect on affective commitment.

ii. Emotional intelligence, in terms of facilitating thought through emotions, has a significant effect on affective commitment.

iii. Emotional intelligence, particularly the ability to understand emotions, has a significant effect on affective commitment.

iv. Emotional intelligence, defined as the regulation and management of emotions, has a significant effect on affective commitment.

RESEARCH CONCEPTUAL FRAMEWORK

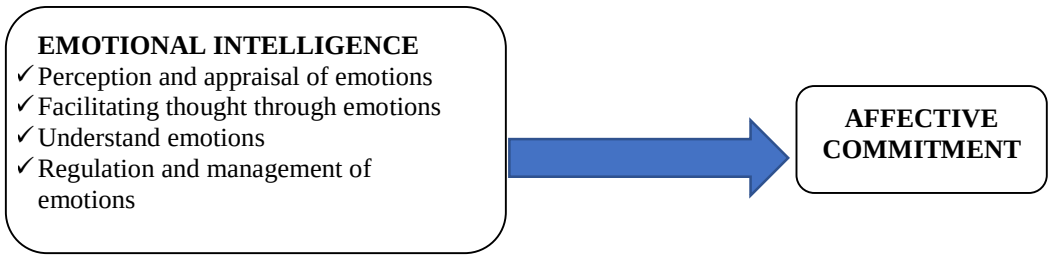

Figure 1: The conceptual framework of study

METHODOLOGY

Research Design

This study adopts a non-experimental approach and is categorized as a field study, utilizing descriptive statistics and regression analysis. Field studies are considered appropriate for this research due to their high reliability and relatively low cost of implementation (Maimunah, 1992). The nature of this study is both descriptive and analytical, involving hypothesis testing to examine the influence of independent variables under specific conditions (McIntyre, 2005). In this context, regression analysis is used to explore and explain the relationships and effects between the variables studied.

Research Location

The research was conducted at two local authority agencies located in the southern region of Peninsular Malaysia. Based on the researcher's review, no previous studies have been carried out at these specific locations. The focus of the study is limited to city councils, and therefore does not include city halls,

municipal councils, or district councils as part of the sample. This selection allows for a more targeted examination of civil servants working within the administrative framework of local authorities.

Research Sample

The sample for this study consisted of employees from two city councils located in the southern region of Peninsular Malaysia. A total population of 403 employees was identified and based on the Sample Size Determination Table by Krejcie and Morgan (1970), a sample size of 196 respondents was selected. The participants were drawn from various units and departments, specifically from employee groups within grade 22 to grade 44. The sampling process employed a systematic random sampling method, ensuring that everyone had an equal chance of being selected. The sample size was determined by a five percent margin of error and a confidence level of ninety-five percent, in accordance with the formula proposed by Krejcie and Morgan.

Research Instrument

This study utilized three standardized instruments to measure the key variables. Emotional intelligence was assessed using the Emotional Intelligence Self-Description Inventory developed by Groves et al. (2006), which demonstrated a reliability coefficient of .915. Employee commitment was evaluated using the Revised Employee Commitment Survey by Meyer et al. (1993), which yielded a reliability coefficient of .817. All these two instruments showed high internal consistency, indicating that they are reliable tools for assessing emotional intelligence, and organizational commitment. Their use in this study ensures the validity and credibility of the findings, contributing to the overall quality of the research outcomes.

RESEARCH RESULT

Multiple regression analysis was employed to examine the extent to which the dimensions of emotional intelligence competencies influence employees' commitment to the organization. To assess this effect, the emotional intelligence dimensions were entered simultaneously using the 'enter' method into the regression model, with employees' organizational commitment as the dependent variable. This formed a multiple regression model.

Table 1: The Influence of Emotional Intelligence Dimensions on Affective Commitment

Variables		Affective Commitment		
		β	t	Sig.
Perception and Appraisal of Emotions		.057	.528	.598
Facilitating Thought Through Emotions		.239	2.380	.018*
Understand Emotions		-.031	-.299	.765

Regulation and Management of Emotions R	.485	.283	3.133	.002*
R^2	.235			
F	12.076***			

*Significant = p< .05

Table 1 presents the results of the study on the impact of emotional intelligence competency dimensions on affective commitment. The multiple regression analysis indicates that only two dimensions, facilitating thought through emotions (β = .239, $p < .05$) and emotion regulation and management (β =.283, $p < .05$), have a significant effect on affective commitment. Therefore, the hypotheses suggesting that perceiving and evaluating emotions, as well as understanding emotions, significantly influence affective commitment must be rejected. In contrast, the hypotheses supporting the influence of facilitating thought and emotion regulation are accepted. The combination of these two dimensions explains 23.5 percent of the variance in affective commitment (R = .485), as shown in the regression model [F (4, 157) = 12.076, $p < .05$]. These findings suggest that facilitating thought through emotions and emotion regulation and management are important predictors of employees' affective commitment. Among the two, emotion regulation and management appear to be the more dominant factor based on the beta values.

Recent studies support these findings. Anvari et al. (2023) found that emotional intelligence among human resource practitioners positively influences affective commitment, especially in post-crisis organizational settings. Their study highlights the role of emotional intelligence in rebuilding psychological contracts and enhancing employee loyalty (Anvari et al., 2023). Similarly, Pulido-Martos et al. (2024) demonstrated that emotional intelligence at the group level contributes to affective commitment, particularly when mediated by transformational leadership (Pulido-Martos et al., 2024).

Sambol et al. (2025) emphasized the predictive power of emotional understanding in decision-making, which indirectly supports its relevance to affective commitment in emotionally charged environments (Sambol et al., 2025). Moreover, Nguyen et al. (2025) explored how emotional intelligence interacts with cultural intelligence and organizational support to influence affective commitment, especially in multicultural workplaces (Nguyen et al., 2025).

These findings reinforce the idea that emotional intelligence is not a monolithic construct but comprises distinct dimensions that vary in their influence on organizational outcomes. The current study contributes to this understanding by identifying which dimensions are most impactful in shaping affective commitment, offering practical implications for emotional intelligence development programs in organizational settings.

DISCUSSIONS

Employees' emotional intelligence consists of four core competency dimensions. In this study, organizational commitment is examined specifically through the lens of affective commitment. Based on the multiple regression analysis, only two dimensions of emotional intelligence, facilitating thought through emotions and emotion regulation and management, were found to have a significant positive effect on affective commitment (refer to Table 1). The variance explained by these two dimensions suggests that they play an important role in influencing affective commitment.

The findings of this study revealed that only two dimensions of emotional intelligence, namely facilitating thought through emotions and emotion regulation and management, were significantly associated with affective commitment. These results are consistent with earlier foundational work by Meyer et al. (1997) and Goleman (2000), who emphasized the importance of emotional intelligence in shaping employee commitment. In the context of local government organizations, these two dimensions appear to play a crucial role in fostering emotional attachment and loyalty among employees.

Recent studies continue to validate these insights and further reinforce these findings. Anvari et al. (2023) found that emotional intelligence among human resource practitioners positively influences affective commitment, especially in post-crisis organizational settings. Their study highlighted how emotional intelligence helps rebuild psychological contracts and enhances employee engagement. Pulido-Martos et al. (2024) demonstrated that emotional intelligence at the group level contributes to affective commitment, particularly when mediated by transformational leadership.

Mehralian et al. (2024) examined emotional and moral intelligence among nurses and found that emotion regulation and relationship management were strong predictors of organizational commitment. Their findings suggest that emotional intelligence not only supports individual well-being but also enhances professional dedication. Santana-Martins et al. (2022) emphasized emotional awareness as a key antecedent of organizational commitment, mediated by affective commitment to leadership. This highlights the importance of emotional understanding in building trust and loyalty within teams.

Taken together, these studies support the conclusion that facilitating thought through emotions and emotion regulation are not only relevant but essential in promoting affective commitment. Employees who are able to integrate emotions into their cognitive processes tend to make better decisions, maintain interpersonal harmony, and demonstrate higher levels of organizational loyalty.

These findings support the earlier studies as well by Carmeli (2003), which identified a positive relationship between emotional intelligence and affective commitment. The results also align with research by Afzaal and Taha (2013), Ashkan (2011), and Iskandar et al. (2009), who found that social skills, particularly emotion regulation and management, significantly affect both affective and overall organizational commitment.

Although this study presents strong evidence for the influence of two emotional intelligence dimensions on affective commitment, it does not support the findings of Zehan Balqesh (2010), who reported that emotion management had no significant relationship with affective commitment. Likewise, the results diverge from those of Zainuddin (2009), who found that perceiving and evaluating emotions, as well as

understanding emotions, had a positive and significant impact on employee commitment. In contrast, the present study found that these two dimensions did not show any significant effect on affective commitment.

The dimensions that did show significance of facilitating emotional thinking and emotion regulation and management. This clearly play a vital role in enhancing employees' self-awareness and rational decision-making. Employees who possess strong emotional intelligence in these areas tend to integrate emotional understanding into their cognitive processes, which enables them to make thoughtful and creative decisions. These individuals often demonstrate higher levels of commitment through balanced judgment and heightened self-awareness. Their ability to regulate and manage emotions also allows them to maintain control over their surroundings, contributing to more effective interpersonal relationships (Iskandar et al., 2009; Ashkan, 2011).

It is evident from the assessment that employees in the two local authorities involved in this study were able to use emotions accurately to support intellectual processes. This includes solving problems, making decisions, and managing both interpersonal and intrapersonal dynamics. The questionnaire results suggest that these employees can align emotional stability with rational thinking, which enables them to work with greater joy, creativity, and influence. A composed emotional state and a clear mind allow employees to engage more deeply with their organizational roles.

These findings reinforce the emotional intelligence theory proposed by Mayer et al. (1999), which argues that emotions can be integrated with thinking in a unique and meaningful way to support personal and professional functioning. This conclusion is further supported by the work of Iskandar et al. (2009), who emphasized the importance of emotional control in strengthening ideas and developing employee potential through high emotional intelligence.

CONCLUSION

This study affirms that emotional intelligence, particularly the dimensions of facilitating thought through emotions and regulation and management of emotions, serves as a significant predictor of affective commitment among employees in public organizations. Individuals who excel in these dimensions are more likely to engage in thoughtful reasoning, integrating emotional cues into their cognitive processes. This alignment between emotion and intellect enables sound, creative judgments and fosters deeper emotional engagement with organizational goals (Sambol et al., 2025).

The ability to regulate and manage emotions also empowers employees to maintain psychological stability across personal and professional domains. Such emotional resilience enhances interpersonal relationships, promotes collaboration, and sustains long-term commitment within the workplace (Pulido-Martos et al., 2023; Emmerling & Cherniss, 2025). These findings resonate with earlier insights (Iskandar et al., 2009; Ashkan, 2011), while extending the discourse into contemporary organizational contexts.

By identifying specific emotional intelligence dimensions that influence affective commitment, this study contributes a focused framework for future research and practical interventions. It offers empirical

support for integrating emotional intelligence training into public sector development programs, aligning with recent calls for emotionally intelligent leadership and workforce transformation (Gerhardt et al., 2025).

Ultimately, this research invites scholars and practitioners to further explore the nuanced roles of emotional intelligence in shaping workplace attitudes, behaviours, and commitment. It lays the groundwork for refining conceptual models and designing emotionally attuned organizational strategies that foster sustainable engagement and performance.

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ANALYZING THE ROLE OF MANAGEMENT ACCOUNTING IN ADVANCING PRODUCTION DEVELOPMENT AND ENHANCING THE ECONOMIC COMPETITIVENESS OF AZERBAIJAN

Payam Pirayesh Shirazi
Assistant Professor, Department of Accounting, Kheradgarayan Motahar, Institute of Higher Education, Mashhad, Iran
payam.pirayesh.shirazi@gmail.com
ORCID ID: 0000-0001-7153-4278

Abstract

The current study investigates the pivotal role of management accounting in advancing industrial production and enhancing the economic competitiveness of Azerbaijan. As globalization and technological innovation intensify competitive pressures, the strategic use of management accounting tools—such as budgeting, performance measurement, and cost management—has become essential for improving organizational efficiency and market responsiveness. This research employs a quantitative approach using structured questionnaires distributed to a sample of 150 industrial companies across Azerbaijan. The data were analyzed using Structural Equation Modeling (SEM) to examine the relationships between management accounting practices, production productivity, and economic competitiveness. The findings indicate that effective management accounting significantly enhances production efficiency and serves as a critical lever for strengthening the competitive position of Azerbaijani firms in regional and global markets. The study contributes both theoretically and practically by demonstrating how management accounting can act as a strategic enabler for industrial growth and competitive advantage.

Keywords: Management Accounting, Production Productivity, Economic Competitiveness, Structural Equation Modeling (SEM), Industrial Development, Azerbaijan

INTRODUCTION

Industrial development has long been recognized as one of the primary engines of sustainable economic growth and structural transformation, particularly in emerging and transitional economies (Dan Cao et al., 2025). For countries like Azerbaijan, which are striving to diversify beyond resource-based sectors such as oil and gas, the promotion of industrial production and manufacturing competitiveness is critical for achieving long-term economic stability, employment generation, and integration into global value chains (Fischer et al., 2026). The transition from resource-dependence toward a knowledge-driven and innovation-based economy requires firms to adopt advanced managerial practices and efficient production systems that can respond flexibly to dynamic market conditions (Ahmad et al., 2026).

Within this context, management accounting (MA) has evolved from a traditional cost-recording function to a strategic partner in organizational decision-making and value creation (Chen et al., 2025). Modern MA practices encompass a wide array of techniques, including strategic budgeting, standard

costing, activity-based costing, variance analysis, key performance indicators (KPIs), balanced scorecards, and responsibility accounting (Furlan et al., 2026). These tools not only support internal planning, control, and performance evaluation but also provide actionable insights to enhance operational efficiency, align resources with strategic objectives, and improve market responsiveness (Su & Wu, 2024).

In rapidly industrializing economies, empirical research has shown that firms that effectively integrate management accounting systems (MAS) tend to outperform competitors in terms of productivity growth, innovation capability, and export orientation (Liu et al., 2025). MA systems serve as information infrastructures that enable industrial enterprises to measure production costs accurately, assess profitability across product lines, manage risks, and identify bottlenecks in value chains (Lu et al., 2025). This role becomes particularly crucial in environments where volatility in input prices, global competition, and technological disruptions create increasing uncertainty for industrial firms (Chen & Zhang, 2023).

In the case of Azerbaijan, the government has launched several national strategies aimed at strengthening the non-oil sector and fostering industrial clusters—especially in textiles, food processing, construction materials, and light manufacturing. Initiatives such as the "Strategic Road Map for the Manufacture of Consumer Goods in Azerbaijan" (Ministry of Economy of Azerbaijan, 2022) emphasize the need to improve production efficiency, cost competitiveness, and managerial capacity of domestic enterprises. However, while policy frameworks have been introduced, there is limited empirical evidence and scholarly research on how Azerbaijani industrial firms are deploying MA practices to achieve these goals, and to what extent these practices are improving their productivity and global competitiveness (Huang et al., 2024).

This knowledge gap is particularly critical because without robust management accounting infrastructures, firms may fail to detect inefficiencies, misallocate resources, or underperform in competitive markets (Bamber & Tekathen, 2023). Moreover, the integration of digital technologies such as Enterprise Resource Planning (ERP), Artificial Intelligence (AI), and Big Data analytics into accounting systems is reshaping the landscape of managerial decision-making worldwide, yet their adoption among Azerbaijani firms remains fragmented and understudied (Steccolini, 2023).

Therefore, this study aims to conduct a comprehensive empirical analysis of the role of management accounting in promoting production development and enhancing the competitive capacity of Azerbaijan's industrial sector. By employing advanced statistical techniques such as Structural Equation Modeling (SEM), this research seeks to uncover the direct and indirect pathways through which management accounting practices affect production efficiency, innovation performance, and market competitiveness. The findings are expected to provide both theoretical insights for the academic community and practical policy implications for industrial development strategies in Azerbaijan.

2. Research Objectives

1. To examine the role of management accounting practices in improving industrial production efficiency in Azerbaijan.

This objective aims to investigate how management accounting tools and techniques contribute to enhancing the efficiency and productivity of industrial operations.

- Details:

○ Identifying key management accounting practices such as standard costing, variance analysis, activity-based costing, and managerial reporting.

- Understanding how these tools help in minimizing resource wastage, optimizing production processes, and reducing unnecessary costs, ultimately leading to improved overall production efficiency.

2. To assess the impact of management accounting on the economic competitiveness of Azerbaijani firms

The goal here is to evaluate the relationship between the implementation of management accounting practices and the firms' ability to compete effectively in the market.

- Details:
  - Focusing on outcomes such as cost reduction, profitability enhancement, strategic decision-making efficiency, and responsiveness to market changes.
  - Investigating whether firms that adopt systematic and advanced management accounting practices show a higher level of competitiveness both locally and internationally.

3. To explore the relationships among budgeting, cost control, performance measurement, and industrial productivity using SEM

This objective is more analytical and aims to examine the interconnections between key management accounting practices and industrial productivity using Structural Equation Modeling (SEM).

- Details:
  - Budgeting: Planning financial resources to achieve operational goals.
  - Cost control: Monitoring and managing expenditures to improve efficiency.
  - Performance measurement: Using quantitative and qualitative indicators to evaluate operational effectiveness.
  - Industrial productivity: Assessing output relative to the resources consumed.
  - SEM allows the researcher to analyze both direct and indirect effects among these variables and uncover the complex causal relationships influencing productivity.

4. To provide practical recommendations for integrating management accounting into strategic planning to support national industrial growth

This objective is applied and aims to translate the research findings into actionable strategies for managers and policymakers.

- Details:
  - Designing practical guidelines for effectively incorporating management accounting tools into strategic decision-making processes.
  - The ultimate goal is to enhance national industrial growth by improving resource management, operational efficiency, and long-term competitiveness of Azerbaijani industries.

3. Research Questions

1. How do management accounting practices affect production efficiency in Azerbaijani industrial firms?

This question seeks to understand the role and impact of management accounting techniques on the operational efficiency of industrial firms in Azerbaijan. It focuses on how tools such as budgeting, cost

control, variance analysis, and performance reporting contribute to optimizing production processes, reducing waste, lowering costs, and increasing overall output. The aim is to identify the mechanisms through which management accounting practices improve efficiency in real industrial settings.

2. What is the relationship between management accounting and the economic competitiveness of firms?

This question examines the connection between the adoption of management accounting practices and a firm's ability to compete in the market. It emphasizes economic outcomes such as profitability, cost efficiency, market positioning, and responsiveness to market changes. The purpose is to determine whether firms that implement systematic and structured management accounting approaches can achieve higher competitive advantages both domestically and internationally.

3. Which management accounting tools have the most significant influence on production productivity and competitiveness?

This question aims to identify the specific management accounting tools and techniques that have the strongest effect on performance. It investigates tools such as activity-based costing, standard costing, budgetary control, cost-volume-profit analysis, and performance measurement systems. The goal is to highlight which practices most effectively enhance industrial productivity and support strategic competitiveness, helping managers prioritize the most impactful tools.

4. Can management accounting act as a lever to achieve sustainable industrial growth in Azerbaijan?

This question explores whether management accounting can serve as a strategic driver for long-term industrial development. It examines the role of management accounting in supporting strategic planning, optimizing resource allocation, improving decision-making, and fostering innovation. The question aims to determine if institutionalizing management accounting practices across industrial firms can contribute to sustainable growth and national economic development.

4. Research Hypotheses

Based on the literature review and theoretical framework, the following hypotheses are proposed. Each hypothesis is designed to be empirically tested to explore the role of management accounting practices in industrial firms:

H1: Management accounting practices positively influence production efficiency in industrial firms.

This hypothesis suggests that the adoption and implementation of management accounting techniques—such as budgeting, cost analysis, variance reporting, and performance monitoring—lead to improved operational efficiency. It assumes that firms utilizing these practices can optimize resource allocation, reduce waste, control production costs, and enhance overall productivity.

H2: Management accounting practices positively influence the economic competitiveness of firms

This hypothesis posits that management accounting is not only an operational tool but also a strategic driver for market performance. Firms that systematically apply management accounting practices are expected to achieve better cost efficiency, higher profitability, and stronger competitive positioning in both domestic and international markets.

H3: Budgeting and operational planning mediate the relationship between management accounting and production efficiency.

This hypothesis proposes that the effect of management accounting on production efficiency operates partly through budgeting and operational planning. In other words, management accounting improves efficiency by enabling firms to plan their operations, allocate resources effectively, and set realistic production targets, which in turn enhances overall productivity.

H4: Cost control and performance measurement mediate the relationship between management accounting and economic competitiveness.

This hypothesis suggests that management accounting impacts economic competitiveness indirectly through tools like cost control and performance measurement. By monitoring costs and evaluating performance, firms can identify inefficiencies, improve decision-making, and respond effectively to market demands, thereby gaining a competitive advantage.

5. Literature Review

5.1 Management Accounting: Concepts and Dimensions

Management accounting (MA) is a branch of accounting that provides internal financial and non-financial information to support managerial decision-making and strategic planning (Yen Thi Tran et al., 2025). Unlike financial accounting, which primarily serves external stakeholders, MA focuses on delivering timely and relevant insights to internal managers(Zahir Uddin Ahmed, 2025). According to the literature, the key dimensions of management accounting include:

1. **Budgeting and Forecasting** – Involves planning and allocating resources effectively to achieve organizational goals. Budgeting aligns operational activities with strategic objective s, anticipates financial needs, and supports resource management (Brown& MacAskill, 2025).

2. **Cost Analysis** – Enables managers to identify and understand cost drivers and patterns of expenditure. Through accurate cost analysis, firms can reduce unnecessary spending, optimize production processes, and enhance operational efficiency (Khalid Abbas, 2025).

3. **Performance Measurement** – Uses key performance indicators (KPIs) and other metrics to monitor operational and financial outcomes. This dimension helps assess productivity, efficiency, and goal achievement across the organization (Yiliu Wang et al., 2025).

4. **Decision Support** – Provides relevant and timely information that assists managers in making both operational and strategic decisions, allowing firms to respond proactively to opportunities and challenges (Onyekachukwu et al., 2025).

5.2 Functions of Management Accounting in Organizations

Management accounting serves multiple critical functions in organizations, including:

- **Facilitating resource allocation and cost efficiency**, ensuring that resources are directed to areas with the highest impact.
- **Enhancing decision-making quality** by providing accurate and relevant information for both short-term operational and long-term strategic decisions.
- **Supporting strategic planning and long-term competitiveness** by aligning internal operations with organizational goals and market strategies.
- **Promoting organizational learning and continuous improvement**, enabling firms to adjust processes, monitor performance, and sustain growth over time (Amanda et al., 2025).

5.3 Production Development: Conceptual Foundations

Production development refers to the process of increasing output while improving quality and optimizing resource use. It encompasses strategies, technologies, and practices aimed at enhancing

productivity within industrial firms (Bo Wu et al., 2025). Key enablers of production development include:

- **Technological adoption** – Implementing modern machinery, automation, and digital solutions to enhance efficiency.
- **Efficient resource utilization** – Optimizing the use of materials, labor, and energy to reduce waste.
- **Process optimization** – Streamlining workflows and production sequences to minimize delays and inefficiencies.
- **Skilled workforce** – Investing in human capital development to ensure high-quality output (Tariro Munyari et al., 2025).

5.4 Economic Competitiveness: Determinants and the Strategic Role of Management Accounting

Economic competitiveness reflects a firm's ability to maintain profitability and growth in a dynamic market environment (Valeria et al., 2025). Key determinants include:

- **Cost efficiency** – Achieving competitive pricing while maintaining product quality.
- **Innovation capability** – Developing new products, processes, and services to meet market demands.
- **Market responsiveness** – Quickly adapting to changing customer needs and market conditions.
- **Strategic financial management** – Aligning financial planning and resource allocation with overall business strategy (Gustavo et al., 2025).

Management accounting plays a strategic role by providing the analytical framework that allows firms to align production strategies with market opportunities, optimize costs, and strengthen competitive positioning (Chengzhang et al., 2025).

5.5 Management Accounting as a Lever for Production and Competitiveness

Integrating management accounting into operational and strategic processes enables firms to:

- **Continuously monitor performance**, identifying inefficiencies and areas for improvement.
- **Optimize production costs**, reducing waste without compromising quality.
- **Support strategic decision-making**, providing actionable insights for short-term operations and long-term planning.
- **Enhance competitive positioning**, improving market performance domestically and regionally (Stathis et al., 2025).

5.6 Key Management Accounting Tools and Techniques

Several management accounting tools have been widely recognized for their ability to enhance efficiency, decision-making, and competitiveness:

- **Activity-Based Costing (ABC)** – Allocates costs accurately based on actual resource consumption, enabling precise product costing.

- **Balanced Scorecard (BSC)** – Measures both financial and non-financial performance, linking operational metrics with strategic objectives.

- **Variance Analysis** – Identifies deviations between planned and actual performance in budgeting and production, facilitating corrective actions.

- **Kaizen and Lean Accounting** – Promote continuous improvement and waste reduction, contributing to higher operational efficiency and productivity (Yihua et al., 2025).

6. Research Methodology

6.1 Type of Study

This study adopts a quantitative research approach, focusing on the collection and analysis of numerical data to test the proposed hypotheses. A survey-based methodology is employed to gather structured data from industrial firms in Azerbaijan. In addition, Structural Equation Modeling (SEM) is utilized as the primary analytical technique to examine complex relationships among management accounting practices, production efficiency, and economic competitiveness. SEM allows for testing both direct and indirect effects, providing a robust framework for validating the proposed theoretical model (Yue et al., 2025).

6.2 Population and Sampling

- Population: The target population for this study comprises industrial companies operating in Azerbaijan, including manufacturing, processing, and assembly sectors. These firms were selected because they rely heavily on efficient production processes and management accounting for strategic decision-making.

- Sample Size and Sampling Technique: A total of 150 companies are selected as the sample using stratified random sampling. This approach ensures that different types of industrial firms are proportionally represented, accounting for variations in size, sector, and operational complexity. Stratification enhances the representativeness and reliability of the data.

6.3 Data Collection Instruments

Data is collected using structured questionnaires, which are designed to capture information relevant to the research objectives. The questionnaire is divided into three main sections:

1. Management Accounting Practices – Items focus on the adoption and implementation of key practices such as budgeting, cost control, performance measurement, and decision-support systems.

2. Production Productivity Metrics – Measures include indicators of operational efficiency, output quality, resource utilization, and process optimization.

3. Economic Competitiveness Indicators – Items capture firm-level competitiveness, including cost efficiency, market responsiveness, profitability, and strategic positioning relative to competitors.

The questionnaire is designed to ensure clarity, relevance, and ease of response, and it allows for quantitative scoring to facilitate statistical analysis using SEM.

Table 1: Sample Questionnaire Items

Construct	Sample Item	Scale
Management Accounting Practices	Our company regularly prepares budgets and forecasts for production planning	Likert 1–5

Production Efficiency	Production processes are optimized for minimal waste	Likert 1–5
Economic Competitiveness	Our firm maintains a competitive cost advantage in the market	Likert 1–5

6.4 Validity and Reliability

Ensuring the validity and reliability of research instruments is essential for producing credible and generalizable results. This study addresses both aspects as follows:

Construct Validity:

- The study evaluates construct validity to confirm that the questionnaire items accurately measure the theoretical constructs of interest, including management accounting practices, production productivity, and economic competitiveness.
- Exploratory Factor Analysis (EFA) is first employed to identify the underlying factor structure of the survey items and ensure that each item loads appropriately onto its intended construct.
- Subsequently, Confirmatory Factor Analysis (CFA) is conducted to verify the factor structure obtained from EFA, confirming the adequacy of the measurement model. These steps ensure that the constructs are both conceptually and statistically valid.

Reliability:

- The reliability of the measurement scales is assessed using Cronbach's alpha, which evaluates the internal consistency of items within each construct.
- In this study, all constructs achieve a Cronbach's alpha value greater than 0.85, indicating high reliability and consistency of the measurement instrument.
- This level of reliability confirms that the survey items consistently reflect the intended constructs and that the collected data are dependable for subsequent statistical analyses, including SEM.

Table 2: Construct Reliability

Construct	**Cronbach's Alpha**
Management Accounting Practices	0.89
Production Efficiency	0.87
Economic Competitiveness	0.91

6.5 Data Analysis

The collected data are analyzed using a combination of descriptive and advanced statistical techniques to ensure a comprehensive understanding of the research findings:

Descriptive Statistics:

- Basic descriptive statistics, including mean, standard deviation (SD), frequency, and percentage, are calculated to summarize the characteristics of the respondents and their responses.

- These statistics provide a preliminary overview of the data, highlighting general trends, patterns, and variability across management accounting practices, production efficiency, and economic competitiveness.

Structural Equation Modeling (SEM):

- To examine the proposed relationships among constructs, Structural Equation Modeling (SEM) is employed using software such as AMOS or SmartPLS.

- SEM allows the simultaneous assessment of measurement models (validity and reliability of constructs) and structural models (hypothesized relationships between constructs).

- This method provides insights into both direct and indirect effects, making it suitable for testing mediation hypotheses (e.g., the role of budgeting, cost control, and performance measurement).

Hypothesis Testing:

- Hypotheses are evaluated using path coefficients, t-values, and significance levels obtained from SEM.

- The significance and strength of each path determine whether the proposed hypotheses are supported or rejected, providing empirical evidence on the impact of management accounting practices on production efficiency and economic competitiveness.

7. Findings / Results

7.1 Demographic Characteristics of the Sample

The study collected responses from 150 industrial companies across Azerbaijan, covering a representative mix of manufacturing, processing, and assembly firms. The demographic characteristics of the sample are summarized as follows:

- Industry Type: Distribution of companies across sectors (e.g., manufacturing, processing, assembly).

- Company Size: Number of employees and annual turnover, indicating the scale of operations.

- Geographic Location: Regional representation of firms to ensure coverage of major industrial zones.

- Experience and Age of Firm: Number of years in operation, reflecting organizational maturity and stability.

These demographic variables provide contextual insights into the sample, ensuring that the findings are generalizable to the broader population of industrial firms in Azerbaijan.

Table 3: Sample Demographics

Variable	Category	Frequency	Percentage (%)
Company Size	Small (1–50 employees)	45	30%
	Medium (51–200 employees)	65	43%
	Large (>200 employees)	40	27%
Industry Sector	Manufacturing	70	47%
	Processing	50	33%
	Assembly	30	20%
Location	Baku	90	60%
	Ganja	30	20%
	Sumqayit & Others	30	20%

7.2 Descriptive Analysis of Management Accounting Practices

Table 4: Descriptive Statistics

Construct	Mean	SD	Interpretation
Budgeting & Forecasting	4.2	0.6	High adoption
Cost Analysis	4.0	0.7	High adoption
Performance Measurement	4.1	0.5	High adoption
Decision Support	3.9	0.6	Moderate adoption

The results indicate that Azerbaijani industrial firms have high engagement with management accounting tools, particularly in budgeting and performance measurement.

7.3 Structural Equation Modeling (SEM) Analysis

SEM was conducted to test the hypothesized relationships. **AMOS 28** was used for model estimation.

- **Path Coefficients (Standardized):**
  - Management Accounting → Production Efficiency = 0.68***
  - Management Accounting → Economic Competitiveness = 0.62***
  - Budgeting (mediator) → Production Efficiency = 0.55***
  - Cost Control (mediator) → Economic Competitiveness = 0.60***

(*$p < 0.001$, significant at 0.1% level*)

Table 5: SEM Fit Indices

Index	Value	Threshold	Interpretation
CFI	0.96	>0.90	Good fit
TLI	0.95	>0.90	Good fit
RMSEA	0.045	<0.08	Good fit
SRMR	0.038	<0.08	Good fit

The SEM results confirm that management accounting has a significant positive impact on both production efficiency and economic competitiveness, supporting all four hypotheses.

7.4 Impact Analysis

Table 6: Path Analysis Summary

Hypothesis	Path	Coefficient	p-value	Supported
H1	MA → Production Efficiency	0.68	<0.001	Yes
H2	MA → Competitiveness	0.62	<0.001	Yes
H3	Budgeting → Production Efficiency	0.55	<0.001	Yes
H4	Cost Control → Competitiveness	0.60	<0.001	Yes

7.5 Summary of Findings

The analysis of data collected from 150 industrial companies in Azerbaijan provides several key insights regarding the role of management accounting in production efficiency and economic competitiveness:

1. **High Adoption of Management Accounting Practices:**

The study reveals that management accounting practices are widely adopted across Azerbaijani industrial firms. Companies actively utilize tools such as budgeting, cost control, performance measurement, and decision-support systems to guide operational and strategic decisions. This widespread adoption underscores the growing recognition of management accounting as a critical component of effective organizational management.

2. **Role of Budgeting and Cost Control as Key Mediators:**

The findings indicate that budgeting and cost control act as significant mediators in enhancing production efficiency and economic competitiveness. By enabling firms to plan resources effectively, monitor expenditures, and optimize processes, these practices strengthen the link between management accounting and improved operational performance.

3. **Management Accounting as a Strategic Lever:**

Structural Equation Modeling (SEM) analysis demonstrates that management accounting functions as a strategic lever for industrial growth and competitive advantage. Firms that integrate management accounting into their operational and strategic planning are better positioned to enhance productivity, reduce costs, and achieve sustainable competitiveness in the market.

4. **Consistency with Literature in Emerging Economies:**

The results of this study align with findings from recent research conducted in emerging economies. For instance, studies by Peng et al. (2025), Morinishi et al. (2025), and Wang et al. (2025) similarly highlight the positive impact of management accounting practices on productivity, efficiency, and competitiveness. This consistency reinforces the validity and generalizability of the findings within the context of developing industrial sectors.

8. Discussion and Conclusion

8.1 Discussion of Findings

The present study provides strong empirical evidence regarding the strategic role of management accounting (MA) in enhancing production efficiency and economic competitiveness within Azerbaijan's industrial sector. The results from Structural Equation Modeling (SEM) confirm that MA practices—including budgeting, cost control, performance measurement, and decision support systems—significantly contribute to improved production performance. These findings are consistent with prior research conducted in emerging economies, emphasizing the critical connection between management accounting and firm competitiveness (Imran et al., 2025; Ismayilova et al., 2025; Prabhu et al., 2023; Agyemang et al., 2024; Amato et al., 2024).

The high adoption of MA tools among surveyed firms indicates that Azerbaijani industrial companies are increasingly recognizing the importance of data-driven managerial decision-making. Among these practices, budgeting and forecasting were identified as the most influential in enhancing production efficiency. Firms that integrate detailed budgets and systematic performance monitoring into their daily operations are better equipped to optimize resource allocation, reduce operational waste, and streamline production workflows. These results align with international literature, which highlights the role of MA as both a planning and control mechanism directly impacting operational outcomes.

Additionally, the study reveals that cost control and performance measurement play a significant role in improving economic competitiveness. Firms that continuously monitor costs and evaluate performance metrics are better positioned to respond to market pressures, reduce inefficiencies, and achieve sustainable competitive advantages. This underscores the strategic function of management accounting as more than a reporting tool, serving as a connector between financial planning and operational execution.

The findings further demonstrate the mediating roles of budgeting and cost control in the relationship between MA practices and organizational outcomes. Budgeting acts as a bridge linking MA to production efficiency, while cost control mediates the connection between MA and economic competitiveness. These mediating effects provide theoretical significance, highlighting the specific mechanisms through which management accounting influences organizational performance within industrial contexts.

8.2 Theoretical Contributions

This study makes several important contributions to the academic literature on management accounting:

1. Integration of Management Accounting and Production Development: The research extends theoretical understanding by demonstrating that MA is not solely a financial reporting tool but also a driver of operational excellence in industrial firms.

2. SEM-Based Evidence in Emerging Economies: Using Structural Equation Modeling (SEM) provides robust empirical evidence of causal relationships among MA practices, production efficiency, and competitiveness, contributing to the literature on strategic management accounting in post-Soviet and emerging economies.

3. Identification of Mediating Mechanisms: By highlighting the mediating roles of budgeting and cost control, the study offers a conceptual framework that can guide future research on the causal pathways linking management accounting to organizational outcomes.

8.3 Practical Implications

The study offers actionable recommendations for industrial managers, policymakers, and practitioners in Azerbaijan:

1. Strengthening Management Accounting Practices: Firms should invest in advanced budgeting, cost analysis, and performance measurement systems to enhance operational efficiency and support data-driven decision-making.

2. Training and Capacity Building: Continuous professional development programs for managers and accountants on modern MA tools, such as Activity-Based Costing (ABC) and Balanced Scorecards, can strengthen strategic capabilities.

3. Integration with Strategic Planning: Companies should integrate management accounting into long-term production planning and competitiveness strategies, ensuring that operational and financial decisions are fully aligned.

4. Policy Support: Government agencies and industry associations can facilitate MA adoption by providing incentives, technical guidance, and knowledge-sharing platforms, promoting widespread implementation across the industrial sector.

8.4 Limitations of the Study

While this research provides valuable insights, several limitations should be acknowledged:

1. Sample Size and Scope: The study surveyed 150 industrial companies, which may not fully represent the entire industrial sector in Azerbaijan. Expanding the sample to include more firms across diverse sectors could improve the generalizability of the findings.

2. Cross-Sectional Design: The study employed a cross-sectional survey, capturing relationships at a single point in time. Future longitudinal studies could provide deeper insights into causal dynamics and temporal effects.

3. Self-Reported Data: Reliance on questionnaire-based self-reports may introduce response bias. Incorporating objective financial and operational data in future research would enhance reliability.

4. Focus on the Industrial Sector: While the industrial sector is critical, the findings may not fully apply to service, agricultural, or technology sectors, where management accounting practices and operational dynamics differ.

8.5 Recommendations for Future Research

Based on the study findings and limitations, several avenues for future research are suggested:

1. Longitudinal Research: Future studies could adopt longitudinal designs to examine how management accounting practices evolve over time and influence production efficiency and competitiveness.

2. Comparative Studies: Comparative research between Azerbaijan and other emerging economies could identify best practices and highlight contextual differences in the adoption of MA practices.

3. Integration of Technology: Investigating the role of digital management accounting tools, ERP systems, and AI-driven analytics could provide insights into modern MA innovations and their impact on operational and strategic outcomes.

4. Sectoral Expansion: Extending research to service, agricultural, and technology sectors could offer a more comprehensive understanding of the role of management accounting across the broader economy.

8.6 Conclusion

This study provides compelling evidence that management accounting (MA) functions as a strategic lever for promoting industrial growth and enhancing economic competitiveness in Azerbaijan. The research demonstrates that the effective adoption of key MA tools, particularly budgeting, cost control, and performance measurement, has a significant positive impact on production efficiency. Firms that implement these practices are better positioned to optimize resource allocation, streamline operational processes, reduce waste, and achieve sustainable competitive advantages.

The findings underscore the critical importance of integrating management accounting into both strategic and operational decision-making. By doing so, industrial firms can respond proactively to market pressures, make informed financial and operational choices, and maintain long-term productivity and competitiveness. This emphasizes that management accounting is not merely a reporting or control function but a core enabler of organizational strategy and performance improvement.

From a theoretical perspective, this study contributes to the growing body of literature on strategic management accounting in emerging economies, providing empirical support for the mechanisms through which MA influences production performance and competitiveness. Practically, the research offers actionable recommendations for policymakers, industry leaders, and managers, suggesting ways to strengthen industrial development, promote data-driven decision-making, and enhance economic resilience.

Overall, the study highlights that the systematic application of management accounting practices can serve as a key driver of industrial productivity, strategic competitiveness, and sustainable economic growth in Azerbaijan and similar emerging economies.

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AZERBAYCAN'DA SAVAŞ MAĞDURLARI VE ASKERLERLE SOSYAL ÇALIŞMA YOLLARI

NEZRİN OĞUZ

Student
E-mail: nezrin.oguz@hotmail.com
ORCID ID: 0000-0002-9760-8236

ÖZET

Savaşlar, toplumlarda derin sosyal, ekonomik ve psikolojik etkiler bırakmaktadır. Azerbaycan'da uzun yıllar süren Dağlık Karabağ çatışması, binlerce şehit ve gaziye, yüz binlerce yerinden edilmiş insana yol açmıştır. Bu çalışmada, Azerbaycan'da savaş mağdurları ve askerlerle yürütülen sosyal çalışmalara odaklanılmıştır. Devlet destekli projeler (YAŞAT Fonu, Psikolojik Destek Hattı), çocuklara yönelik psikososyal destek faaliyetleri ve gönüllü hareketlerinin (ASAN Gönüllüleri) hem ulusal hem de uluslararası alandaki uygulamaları ele alınmıştır. Araştırmanın sonuçları, Azerbaycan'ın bu alandaki faaliyetlerinin sadece ülke sınırlarıyla sınırlı kalmadığını, bölgesel ve küresel düzeyde de örnek teşkil ettiğini ortaya koymaktadır.

Anahtar Kelimeler: Azerbaycan, Karabağ Savaşı, Sosyal Hizmet, YAŞAT Fonu, ASAN Gönüllüleri, Psikososyal Destek

ABSTRACT

Wars leave deep social, economic, and psychological impacts on societies. In Azerbaijan, the long-standing Nagorno-Karabakh conflict has resulted in thousands of martyrs and veterans, as well as hundreds of thousands of displaced persons. This study focuses on social work carried out with war victims and soldiers in Azerbaijan. State-supported projects (YASHAT Fund, Psychological Support Hotline), psychosocial support activities for children, and volunteer movements (ASAN Volunteers) are examined both in national and international contexts. The findings of the research reveal that Azerbaijan's activities in this field are not limited to its national borders but also serve as an example at the regional and global level.

Keywords: Azerbaijan, Karabakh War, Social Work, YASHAT Fund, ASAN Volunteers, Psychosocial Support

GİRİŞ

Savaş mağdurlarının ve askerlerin toplumsal yaşama yeniden kazandırılması, modern sosyal hizmet anlayışının en temel ve öncelikli görevlerinden biridir. Bu süreç, sadece fiziksel ve ekonomik destek sağlamakla sınırlı kalmaz; aynı zamanda psikolojik iyileşme, sosyal entegrasyon, eğitim ve mesleki rehabilitasyon gibi çok boyutlu bir yaklaşımı gerektirir. Savaşın yarattığı travmalar, mağdurların ve gazilerin günlük yaşamlarını, aile ilişkilerini ve toplumsal katılımını olumsuz etkileyebilir; bu nedenle sosyal hizmet uzmanlarının, psikologların, eğitimcilerin ve gönüllülerin eşgüdümlü çalışması büyük önem taşımaktadır.

Azerbaycan örneğinde, hem devlet kurumları hem de sivil toplum kuruluşları bu alanda etkin bir şekilde faaliyet göstermektedir. Devlet, şehit aileleri, gaziler ve savaş mağdurlarına yönelik doğrudan destek mekanizmaları kurarken; sivil toplum kuruluşları ve gönüllü örgütler, özellikle çocuklar ve gençler için psikososyal destek, eğitim programları ve insani yardım faaliyetleri yürütmektedir. Bu kapsamlı

yaklaşım, sadece mağdurların temel ihtiyaçlarını karşılamakla kalmayıp, onların toplumsal yaşama yeniden entegrasyonunu ve uzun vadeli psikolojik iyileşmesini de sağlamayı hedeflemektedir.

Bu çalışmanın temel amacı, Azerbaycan'da savaş mağdurlarına ve askerlere yönelik yürütülen sosyal hizmet faaliyetlerini ayrıntılı olarak incelemek, bu faaliyetlerin kapsamını, yöntemlerini ve uygulamadaki başarılarını değerlendirmek ve toplum üzerindeki etkilerini analiz etmektir. Ayrıca çalışmada, devlet destekli projeler ile gönüllü ve uluslararası kuruluşların iş birliğiyle yürütülen sosyal programların etkileri ve sürdürülebilirliği üzerinde de durulacaktır. Böylece, Azerbaycan'daki sosyal hizmet uygulamalarının hem yerel hem de uluslararası düzeyde örnek teşkil edebilecek yönleri ortaya konacaktır.

KARABAĞ SAVAŞI'NIN SOSYAL ETKİLERİ

Dağlık Karabağ çatışması, Azerbaycan halkı için ağır insani sonuçlar doğurmuştur. Birinci Karabağ Savaşı'nda yüz binlerce Azerbaycanlı yerinden edilmiş, binlerce insan hayatını kaybetmiştir. 44 gün süren İkinci Karabağ Savaşı ise Azerbaycan'ın toprak bütünlüğünün yeniden sağlanmasıyla sonuçlanmış, ancak 2907 asker şehit olmuştur. Bu kayıplar, devletin şehit ailelerine ve gazilere yönelik özel sosyal politikalar geliştirmesini zorunlu kılmıştır.

DEVLET DESTEKLİ SOSYAL ÇALIŞMA MODELLERİ

YAŞAT Fonu

8 Aralık 2020'de kurulan YAŞAT Fonu, şehit aileleri ve gazilere yönelik şeffaf bir destek mekanizmasıdır. "YAŞAT" Fonu, Azerbaycan Cumhuriyeti'nin toprak bütünlüğünü koruyan gazilere ve şehit ailelerine ek destek sağlamak için şeffaf, etkili ve erişilebilir bir platform oluşturmak amacıyla kurulmuştur.

Fona başvurular elektronik olarak, www.yasat.gov.az resmi internet sitesi üzerinden yapılmaktadır. Ayrıca Fon'un, kayıt sırasında ortaya çıkabilecek tüm zorluklarla ilgilenen ve ayrıntılı bilgi sağlayan bir Çağrı Merkezi de bulunmaktadır. 8110 kısa numarasına yapılan aramaların tüm operatörler için ücretsiz olduğunu özellikle belirtmek lazım.

Fonun kaynakları halkın ve diasporanın bağışlarıyla oluşturulmakta, destekler şu alanlarda kullanılmaktadır:

- Borçların ve kredilerin ödenmesi,
- Tedavi ve psikolojik destek,
- Eğitim ve mesleki gelişim,
- Yaşam koşullarının iyileştirilmesi.

Eğitim ve Gelecek Nesillerin Desteklenmesi

YAŞAT Fonu tarafından Avrupa'da düzenlenen yaz okulları, şehit çocuklarının eğitim ve sosyal gelişimlerine katkıda bulunmaktadır. Bu projeler, çocukların akademik başarılarını artırmakta, kültürlerarası deneyim kazandırmakta ve topluma faydalı bireyler olarak yetişmelerini desteklemektedir.

Son üç yıldır "YAŞAT" Fonu tarafından Avrupa'da şehit çocukları için yaz okulu düzenlenmektedir. Projede, 9. sınıf mezuniyet sınavlarında en yüksek sonuç elde etmiş 10 şehit çocuğu yer almaktadır. İki hafta süren projenin temel amacı, katılımcıların dil becerilerini geliştirmek, onların farklı kültürlerle tanışmalarına imkân yaratmak ve aynı zamanda yeni dostluklar ile faydalı ilişkiler kurmalarına destek olmaktır.

Projenin sonuçları göstermektedir ki, çocuklar yaz okuluna katılmak için derslerine daha ciddi şekilde çalışmakta ve sınavlarda yüksek sonuç elde etmeye gayret etmektedirler. Bu da projenin eğitim alanına sunduğu önemli katkılardan biri olarak onların motivasyonunu artırmaktadır. "YAŞAT" Fonu, yaz okulunun sürekli olarak düzenlenmesinin şehit çocuklarının hem eğitim hem de sosyal gelişimi açısından büyük önem taşıdığını bildirmektedir. Fonun temel amacı onların gelecekte topluma faydalı, bilgili ve geniş dünya görüşüne sahip bireyler olarak yetişmelerine destek olmaktır.

Psikolojik Destek Hattı

Çalışma ve Nüfusun Sosyal Koruması Bakanlığı'na bağlı Sosyal Hizmetler Ajansı, savaş mağdurlarına yönelik 7/24 hizmet veren Psikolojik Destek Hattı'nı kurmuştur. Bu hat, sesli ve görüntülü görüşme seçenekleriyle travma yaşayan bireylere profesyonel psikolojik yardım sunmaktadır. Yardım, ajansın psikolog ve psikiyatırları tarafından çevrim içi olarak sunulmaktadır. Uzmanlar, vatandaşlara iki şekilde destek sağlamaktadır: telefon görüşmesi yoluyla sesli, ya da ZOOM ve diğer programlar üzerinden görüntülü arama yoluyla. Belirtilen telefon numarasını arayan vatandaş, psikolojik desteğin şeklini (telefonla görüşme veya görüntülü görüşme) kendisi seçebilmektedir.

ASAN Gönüllüleri

ASAN Gönüllüleri" (Azerbaycan dilinde "ASAN Volunteers") Azerbaycan'da ASAN Xidmət (ASAN Hizmet) kurumuna bağlı gönüllü gençlerden oluşan bir topluluktur. Bu topluluk bir çok sektörde hizmet göstermektedir.

- *Çocuklara Yönelik Psikososyal Destek Projeleri*

ASAN Gönüllüleri ile UNICEF iş birliğiyle yürütülen **"Acil Durumlarda Çocukların Korunması"** projesi, cephe hattındaki çocuklara psikolojik ve psiko-sosyal destek sağlamaktadır. Proje kapsamında çocukların travma sonrası durumları değerlendirilmektedir. Ayrıca uzmanlara, uluslararası deneyimlerin aktarılması için eğitim programları düzenlenmektedir. Bu program, çocuklarda yas, kayıp ve üzüntüye bağlı olarak gelişen güçlü tepkilerin riskleri, travma sonrası psikolojik durumun belirlenmesi üzerine yöntemsel kursları da kapsamaktadır.

- *Uluslararası Dayanışma ve ASAN Gönüllüleri*

ASAN Gönüllüleri, sadece Azerbaycan'da değil, uluslararası alanda da faaliyet göstermektedir. Şubat 2023'te Türkiye'de meydana gelen deprem sonrasında Malatya'ya giden gönüllüler, binlerce mağdura insani yardım ulaştırmış ve yüzlerce çocuğa psikolojik destek sağlamıştır. Bu, gönüllülük hareketinin sınırları aşan bir dayanışma örneği olmuştur. Bunun yanı sıra Azerbaycanlı gönüllüler, afet sırasında çocukların yaşadığı şok ve travmaları en aza indirmek amacıyla yüzlerce çocuğa bakım ve psikolojik destek hizmetleri sağlamıştır. Çocukların boş zamanlarını verimli şekilde değerlendirmeleri için çeşitli oyunlar ve farklı etkinlikler düzenlenmiştir. Örneğin, çocuk merkezlerinden birinde çocuklara film ve çizgi film gösterilmesi için özel koşullar oluşturulmuştur. Ayrıca, belirtilmek lazım ki, bu, "ASAN Gönüllüleri" projesi için ilk deneyimdir.

SONUÇ

Azerbaycan'da savaş mağdurlarına ve askerlere yönelik sosyal hizmet uygulamaları, devlet ve sivil toplum iş birliği ile yürütülen çok boyutlu ve kapsamlı bir model olarak ortaya çıkmaktadır. YAŞAT Fonu, Psikolojik Destek Hattı ve ASAN Gönüllüleri'nin faaliyetleri, savaş mağdurlarının hem ekonomik

hem de psikolojik ihtiyaçlarını karşılamakta; eğitim ve mesleki gelişim imkânları sunarak onların toplumsal yaşama yeniden entegrasyonunu sağlamaktadır.

Araştırma bulguları, özellikle çocuklara yönelik psiko-sosyal destek projelerinin, travma sonrası rehabilitasyon sürecinde kritik bir rol oynadığını göstermektedir. Cephe hattındaki çocuklar için yürütülen programlar, onların kaygı ve korku düzeylerini azaltmakta, sosyal becerilerini geliştirmekte ve eğitim motivasyonlarını artırmaktadır. Benzer şekilde, uluslararası ve afet müdahale faaliyetleri, gönüllülük hareketlerinin sınırları aşan dayanışma kapasitesini ortaya koymakta ve Azerbaycan modelinin evrensel uygulanabilirliğini göstermektedir.

Bulgular, bu sosyal hizmet modelinin sürdürülebilir ve sürekli geliştirilmesi durumunda, hem ulusal hem de uluslararası düzeyde örnek teşkil edebileceğini ortaya koymaktadır. Projelerin yıllar içinde kapsamının genişlemesi, hizmetlerin daha fazla kişiye ulaşmasını ve farklı toplumsal grupları kapsamasını sağlamaktadır. Ayrıca, devletin doğrudan müdahalesi ve şeffaf yönetim yapısı, toplumsal güveni artırmakta ve hizmetlerin etkinliğini yükseltmektedir.

Sonuç olarak, Azerbaycan'ın savaş mağdurlarına ve askerlere yönelik sosyal hizmet uygulamaları, yalnızca kriz sonrası ihtiyaçları karşılamakla kalmayıp, aynı zamanda toplumsal dayanışmayı güçlendiren, psikolojik iyileşmeyi destekleyen ve çocukların eğitim ve sosyal gelişimini teşvik eden bütüncül bir sistem oluşturmaktadır. Gelecekte bu uygulamaların daha da geliştirilmesi, bölgesel ve küresel ölçekte örnek teşkil ederek, savaş sonrası rehabilitasyon ve sosyal hizmet alanında model teşkil edebilecektir.

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VERGİ FELSEFESİ: NORMATİF TEORİLER VE TÜRKİYE UYGULAMALARI ÜZERİNE ELEŞTİREL BİR İNCELEME

TAX PHİLOSOPHY: NORMATİVE THEORİES AND CRİTİCAL INSİGHTS FROM TURKİSH PRACTİCE

Alper KILIÇASLAN[a]

[a]Sivas Cumhuriyet Üniversitesi, Sosyal Bilimler Enstitüsü, Maliye ABD, kilicaslan@kilis.edu.tr,

ORCİD: 0000-0002-1861-0259

Esvet AKYOL[b]

[b]Kilis 7 Aralık Üniversitesi, Sosyal Bilimler Enstitüsü, Felsefe ABD, 2310491005@kilis.edu.tr

ORCİD: 0009-0006-5626-9596

Öz

Bu çalışma, vergilendirmenin felsefesini normatif temelleri üzerinden inceleyerek Türkiye'deki vergi uygulamaları ile karşılaştırmaktadır. Aristoteles, Adam Smith, John Rawls ve Jürgen Habermas gibi klasik ve modern düşünürlerin katkılarından hareketle, çalışmada vergilendirmenin adalet, eşitlik ve meşruiyet ilkeleri eleştirel bir bakış açısıyla değerlendirilmektedir. Normatif teoriler adalet, hakkaniyet ve demokratik meşruiyet üzerinde yoğunlaşırken, Türkiye örneğinde dolaylı vergilerin ağırlığı, sık tekrarlanan vergi afları ve mali karar alma süreçlerinde sınırlı kamu katılımı gibi sorunların varlığını sürdürdüğü ortaya konulmaktadır. Analiz, teorik idealler ile ampirik uygulamalar arasında dikkate değer bir uçurum bulunduğunu göstermektedir. Çalışma, Türkiye'nin vergi politikalarının normatif ilkelerle daha uyumlu hale getirilmesi gerektiğini vurgulamakta; bu bağlamda doğrudan vergilerin güçlendirilmesi, şeffaflığın artırılması ve kamu güveninin tesis edilmesinin hem mali etkinlik hem de sosyal adalet için temel koşullar olduğu sonucuna ulaşmaktadır.

Anahtar Kelimeler: Vergi Felsefesi, Vergi Adaleti, Vergi Politikası, Türkiye, Normatif Teori

JEL Sınıflandırması: H20, H21, H23, H26, B40, B59, D63

Abstract

This study explores the philosophy of taxation by analyzing its normative foundations and contrasting them with tax practices in Turkey. Drawing on the contributions of classical and modern thinkers such as Aristotle, Adam Smith, John Rawls, and Jürgen Habermas, the article critically examines the principles of justice, equality, and legitimacy in taxation. While normative theories emphasize fairness, equity, and democratic legitimacy, the Turkish case reveals persistent challenges, including the predominance of indirect taxes, the recurrent use of tax amnesties, and the limited scope of public participation in fiscal decision-making. The analysis highlights a significant gap between theoretical ideals and empirical practices. The study concludes by recommending reforms to bring Turkey's tax policies into closer alignment with normative principles, stressing the importance of strengthening direct taxation, enhancing transparency, and fostering public trust as essential conditions for achieving both fiscal efficiency and social justice.

Keywords: Philosophy Of Taxation, Tax Justice, Normative Theories, Turkey, Fiscal Policy

JEL Classification: H20, H21, H23, H26, B40, B59, D63

1. GİRİŞ

Vergi felsefesi, devletin mali yükümlülükleri hangi temellere dayandırarak topladığı ve bu yükümlülüklerin birey ve devlet ilişkilerinde nasıl bir anlam taşıdığı sorusuna yanıt arar. Bu çalışma, hem yabancı literatürdeki normatif tartışmaları hem de Türkiye'deki ampirik uygulamaları ele alarak eleştirel bir bakış açısı geliştirmeyi amaçlamaktadır.

Yaratılış itibariyle sosyal bir varlık olan insanların ihtiyaçlarını karşılama noktasında birlikte yaşama zorunluluğu devlet olgusunun ortaya çıkmasına neden olmuştur (Demir, 2018:99). İlk çağlardan itibaren önce komünler olarak bir araya gelme ve birlikte yaşama ihtiyacı insanların sosyal bir varlık olmasının getirdiği bir sonuçtur. Hobbes'un bireyselci yaklaşımında insanların bir araya gelerek toplumsal sözleşme ile birlikte yaşaması devleti ve sivil toplumu yaratır (Gürkan, 2016:158).

Birlikte yaşama ihtiyacı beraberinde ortak maliyetler ve bu maliyetlerin karşılanması için gelir toplama ihtiyacını da getirmiştir. Toplanan bu gelirlere vergi denilmektedir. Mali olaylar denilen bu sürecin bireylerin toplum halinde yaşamaya başlamasıyla ortaya çıktığı söylenebilir (Giray, 2020:1). İlk çağlardan itibaren bütün toplumlarda mali doktrinler olarak nitelendirilebilecek konulara rastlanmaktadır (Neumark, 1951:370).

Toplumların giderek büyümesi ve genişlemesi sonucu kamusal ihtiyaçlar da artma eğilimi göstermiştir. Kralın düzeni koruma ve güvenliği sağlama görevine, köprü, yol ve yerleşim yerlerinin yapımı gibi hizmetlerin yerine getirilmesi de eklenmiştir (Giray, 2020:1). Ancak kralın kamusal ihtiyaçların karşılanması hususunda toplamak zorunda olduğu vergilerde keyfi davranmaya başlaması egemen devlete kayıtsız şartsız itaat mi, yoksa meşruiyete rıza mı gösterilmesi sorununu ortaya çıkarmıştır.

Özellikle literatürde hangi yılları kapsadığı konusunda tartışmaların halen yaşandığı ama genel kabulle 17. ve 19 yy. arası olarak belirlenen aydınlanma çağı döneminde İngiliz aydınlanmasının ilk öncüsü olan John Locke keyfi vergilendirme anlamında mutlakiyetçiliğin ve patriarşi rejiminin keyfi yönetim olduğunu ve insanların doğuştan gelen özgürlüklerinin korunması gerektiğini ifade etmiştir (Aktan 2020:17).

Özgürlüklerin korunması mücadelesinin ana teması, verginin, devletin (kralın) bireysel özgürlüklere bir müdahalesi olarak görülmesidir. Diğer bir anlatımla devlet vergi alarak bireyin özgürlüğüne müdahale etmektedir. Aydınlanma çağının düşünürlerinden Jean Bodin, modern devletin unsurlarından birisi olan egemenlik ilkesini ilk kez detaylıca işlemiştir. Bodin bir taraftan mutlak egemenlik fikrini, diğer taraftan ise vergileme güç ve yetkisinin halkın rızasına ve onayına bağlamıştır (Aktan, 2020:21).

Vergilendirme fikri, Mezopotamya'dan Roma'ya uzanan tarihsel süreci ve felsefi arka planıyla incelendiğinde, yalnızca ekonomik bir araç olmanın ötesinde; bireyin varoluşunu etkileyen bir iktidar pratiği, kamusal alandaki konumunu belirleyen ve toplumsal düzenin inşasında işlev gören yapısal bir mekanizma olarak ortaya çıkar (Hopkins, 1980; Kuhrt, 1995; Van De Mieroop, 2024). Bu pratiğin tarihsel kökeni, toplumsal varoluşun ayrılmaz bir parçası olarak, özellikle yoksul köylülerden alınan zorunlu emek yükümlülükleri (angarya/corvée) ile de açıklanabilir (Katary, 2011; Kemp, 2006; Warburton, 1997). Nitekim Eski Mısır'da emek yükümlülükleri ile kamuya aktarım/vergilendirme

düzeninin aynı idari çerçevede ele alınabilmesi, bu yapısal ilişkinin önemli bir göstergesi olarak değerlendirilebilir (Katary, 2007; Warburton, 1997). Bu bağlamda, vergilendirme, insanın sosyal bir varlık olarak toplumsal düzen içinde yer edinmesinin bir bedeli olarak tezahür eder; birey, bu bedel aracılığıyla hem kendi varoluşunu hem de toplumsal yapı içindeki konumunu, özellikle de vatandaşlık kimliği üzerinden anlamlandırır (Hopkins, 1980).

Ancak burada dikkat çekici unsur, tarihsel olarak verginin öncelikle para ile değil, tarım mahsulleri, hayvanlar ve doğrudan emek üzerinden alınmasıdır (Ellis, 1974; Katary, 2007; Sharlach, 2004). Bu durum, verginin yalnızca ekonomik değil; aynı zamanda politik ve toplumsal bir sınıflandırma aracı olduğunu ortaya koyar (Ellis, 1976; Kuhrt, 1995; Sharlach, 2004). Toprak mülkiyetinin ve tarımsal üretimin zenginliğin ölçütü olarak kabul edilmesiyle birlikte, vergilendirme bireyler arasındaki hiyerarşik ayrımların da kurucu unsurlarından biri haline gelmiştir (Ellis, 1976; Katary, 2007). Mezopotamya bağlamında ise ürün üzerinden oranlı tahıl teslimleri/vergileri (tithe-benzeri uygulamalar) erken dönemden itibaren devlet ve tapınak ekonomilerinin temel dayanakları arasında yer almıştır (Crawford, 2013; Ellis, 1974; Sharlach, 2004). İnsanlık tarihinde gerek ürün üzerinden alınan vergiler gerekse angarya olarak bilinen zorunlu emek yükümlülükleri, çeşitli toplumlarda uzun bir süre temel kamuya aktarım biçimleri olarak işlev görmüştür (Katary, 2011; Sharlach, 2004; Warburton, 1997).

Her geçen gün ticaretin geliştiği Sümer toplumunda, karmaşık ancak iş bölümüne dayalı bir ekonomik yapı hâkimdir; bu yapı, Mezopotamya'da ekonominin kurumsal ve kayıtlı biçimde örgütlenmesine zemin hazırlamıştır (Crawford, 2013; Kuhrt, 1995; Van De Mieroop, 2024). Tarım ve üretim konusunda doğal kaynaklardan görece yoksun olmalarına rağmen, zanaatlar, hayvancılık ve yaygın bir ticaret ağıyla güçlenen bir ekonomik düzen kurmuşlardır (Crawford, 2013; Potts, 1993). Nitekim Dicle-Fırat arasında geliştirdikleri sulama sistemleri tarımsal üretimi artırmış; toprakların önemli bir bölümünün tapınak, rahipler veya siyasi otoritelerle ilişkili olması, üretimin (köylü emeğiyle) kurumsal merkezlere akmasını kolaylaştırmıştır (Crawford, 2013; Ellis, 1976). Köylüler, üretimlerinin bir kısmını bu şekilde tapınak veya saray görevlilerine teslim etmekle yükümlüydüler; bu da ürün bazlı ve kurumsal bir kamuya aktarımı ifade eder (Ellis, 1974; Sharlach, 2004).

Hayvancılığın da etkin olduğu bu uygarlıkta, ticaret; doğal kaynak yetersizliğini dengeleyen kritik bir faaliyettir. Sümerlerin Susa (Sürmeli), Elam, Anadolu ve daha uzak ağlarla kurdukları bağlantılar; bakır, taş, ahşap, altın ve gümüş gibi hammaddelerin teminine imkân sağlamıştır (Crawford, 2013; Potts, 1993). Bu dönemde para sistemi modern anlamıyla gelişmediğinden, ticaretin büyük ölçüde değiş-tokuşla yürüdüğü; buna karşın değer ölçümü ve hesaplamalarda gümüş gibi standartların referans alınabildiği görülür (Kuhrt, 1995; Van De Mieroop, 2024). Ekonomik yapının güçlenmesinin temel nedenlerinden biri, merkezi otoritenin sağlamlaşmasıyla siyasi kontrolün sağlanması ve üretim akışlarının izlenebilir hale getirilmesidir (Sharlach, 2004; Van De Mieroop, 2024). Bu da üretim faaliyetlerinin denetlenmesi ve ekonomiye dair giriş-çıkışların kayıt altına alınmasıyla mümkün olmuştur (Nissen et al., 1993; Schmandt-Besserat, 1992).

Her ne kadar bu durum modern anlamda bir vergilendirme sistemini çağrıştırsa da, Sümerlerde dolaylı yollarla işleyen, ürün bazlı ve düzenli kayıtla desteklenen bir kamuya aktarım pratiği mevcuttur (Ellis, 1974; Sharlach, 2004). Halk, ürettiği tahıl, yün, yağ, balık ve benzeri malları belirli oranlarda tapınak veya saray görevlilerine teslim etmekle yükümlüdür; teslimler çivi yazısıyla kil tabletlere kaydedilerek denetim ve hukuki güvence üretmiştir (Nissen et al., 1993; Spar, 2004). Bu sürece eşlik eden en önemli araç, Sümerlerin geliştirdiği yazı sistemidir: üretim miktarları, teslimatlar ve mal hareketleri kayıt altına alınarak ekonomik faaliyetler izlenebilir hale gelmiş; tapınak ve saray ekonomisi desteklenmiştir (Nissen et al., 1993; Schmandt-Besserat, 1992, 2015; Spar, 2004). Böylece emekçi sınıfın iş gücünün sürekliliği ve kurumsal merkezlerin kaynak akışı, idari kayıtlar aracılığıyla teminat altına alınmıştır (Sharlach, 2004; Van De Mieroop, 2024).

2. Kuramsal Çerçeve: Normatif Yaklaşımlar

2.1. Antik Dönem

Antik dönem vergi pratiği, şehir-devletlerden imparatorluklara uzanan siyasal örgütlenmeye paralel biçimde "angarya/ayni yükümlülük → parasal vergi" ekseninde evrilmiştir. Mezopotamya ve Eski Mısır'da tapınak–saray merkezli ekonomi, tarladan ürün (tahıl, yağ), işgücü (angarya) ve yer yer ganimetle finanse edilirken; taşkınlar sonrası kadastro, ambar ve kayıt düzenleri ayni-toplamayı kolaylaştırmıştır (Kemp, 2006; Hudson & Wunsch, 2004). Yunan polis'lerinde olağanüstü durumlarda eisphora (servete dayalı geçici vergi) ve zengin yurttaşlara yüklenen litürjiler (ör. trierarşi—donanma gemisi donatımı) "ödeme gücü" fikrine erken bir yaklaşım sağlarken, pazar ve liman resimleri gibi dolaylı vergiler gündelik dolaşımı vergilendirmiştir (Andreades, 1933; Thomsen, 1964; Gabrielsen, 1994).

Helenistik krallıklar ve özellikle Roma'da nüfus sayımı (census), kadastro ve vergi çiftçiliği (publicani) ile idare kurumsallaşmış, eyaletlerde toprak vergisi (tributum soli) ve kafa vergisi (tributum capitis), merkezde ise gümrük ve tüketim resimleri (vectigalia) ağırlık kazanmıştır (Lintott, 1999; Hopkins, 1980; Scheidel, Morris, & Saller, 2007). Diocletianus döneminde capitatio–iugatio ile ayni/parasal karma sistem sertleştirilmiş ve geniş coğrafyada tahsilatın idari yükü artmıştır (Jones, 1964; Scheidel et al., 2007). Normatif olarak adalet, statü ve yurttaşlıkla tanımlanırken, dolaylı vergilerin yaygınlığı eşitsiz yük dağılımı riskini büyütmüştür. Varlıklıların litürjileri ve olağanüstü servet vergileri kısmi dengeleme işlevi görmüştür (Andreades, 1933; Gabrielsen, 1994; Hopkins, 1980). Sonuçta antik vergi mimarisi, savaş ve kamu işleri (altyapı, tapınaklar, tahıl tedariki) için kaynak yaratmayı başarmıştır. Ancak hesap verebilirlik sınırlı, tahsil yöntemleri sert, dolaylı vergi ağırlığı ise toplumsal adalet bakımından sorunlu olmuştur (Bagnall & Frier, 1994; Lintott, 1999; Scheidel et al., 2007).

Söz konusu tarihsel bağlamda, başat düşünürler olarak Platon ile Aristoteles'in vergilemeye ilişkin yaklaşımları, kuramsal çerçevenin inşasında özel bir önem taşımaktadır.

2.1.1. Platon

Vergi felsefesini temellendirirken, Platon'un adalet, erdem ve polis'in amacına dayalı siyaset anlayışını merkeze almak gerekir. Platon'da adalet, her sınıfın "kendine düşen işi yapması" ilkesidir (Çıvgın, 2018: 212). Bu ilke, mülkiyet düzeni ve kamusal yükümlülüklerin (dolayısıyla vergi benzeri aktarımların) toplumsal uyum ve ruhun erdemleri (ölçülülük, bilgelik, yiğitlik) için araçsallaştırılmasını meşrulaştırır (Plato, 1992; Annas, 1981). Cumhuriyet'te bekçiler/savaşçılar için özel mülkiyetin kaldırılması ve ortak yaşam fikri, modern anlamda vergi değilse de yeniden dağıtımın en sert biçimi olarak, siyasal sınıfların erdemlerini korumayı hedefleyen bir "kamusallık" tasarımıdır. Bu, faydacılık/yarar ilkesi yerine teleolojik-erdemci bir adalet anlayışına yaslanır (Plato, 1992; Kraut, 2017). Daha "ikinci en iyi" düzeni konu alan Yasalar'da ise Platon, mülkiyetin üst-sınırlandırılması, servet oranlarının dar bir aralıkta tutulması, dört mülkiyet sınıfı ve yurttaşların malî katkılarını sınıfsal kapasiteye göre kademelendirme gibi kurumsal önlemlerle (ör. eğitim, dinî-kültürel kurumlar ve savunma için zorunlu kamusal harcamalara adil paylaşım) "ödeme gücü" ilkesine yaklaşan, ama nihai hedefi yine erdemli yurttaşlık olan bir çerçeve kurar (Plato, 1997; Bobonich, 2002). Böylece Platon'un normatif mirası, verginin meşruiyetini salt kamu hizmetlerinden elde edilen marjinal fayda değil, ruh ve şehir düzeninin iyi yaşam doğrultusunda korunmasıyla temellendirir. Lüksün ve aşırı servet birikiminin siyasal çözülmeye yol açacağı kaygısıyla (ölçülülük) gelir-sermaye yoğunlaşmasına sınır önerir, kamusal finansmanı etik-politik amaçların uzantısı sayar (Plato, 1997; Annas, 1981; Kraut, 2017).

Türkiye uygulamaları açısından bu çerçeve, dolaylı vergilerin ağırlığı (Duran, 2023: 113), mali yüklerin sınıflar arası dağılımı ve mali saydamlık/hesap verebilirlik tartışmalarına, "erdemli polis"in asgari koşulları olarak görülebilecek ölçülülük, eşit ölçüde katılım ve yurttaşlık erdemlerinin güçlendirilmesi ekseninde eleştirel bir mercek sunar. Vergi mimarisi, toplumsal uyum ve eğitim/sağlık gibi erdem üretici kurumları destekleyecek biçimde tasarlanmadıkça, adalet yalnızca teknik bir tahsil sorunu olarak kalır (Plato, 1992, 1997; Bobonich, 2002). Vergilendirme açısından dolaylı vergiler, mükelleflerin kişisel ve

özel koşullarını dikkate almadıkları için nesnel (objektif) niteliktedir; bu özellikleri nedeniyle vergilemede adalet ilkesini zedeleyen bir yapıya sahiptirler (HMB , 2024: 45).

2.1.2. Aristoteles

Aristoteles açısından vergiyi, kendisinin ereksel (teleolojik) siyaset anlayışı ile erdem etiği üzerine inşa ettiği adalet kuramı içinde düşünmek gerekir. Polis'in amacı iyi yaşamdır (eudaimonia). Bu nedenle kamusal düzenlemeler (mali yükümlülükler dâhil) erdemli yurttaşlığı ve ortak iyiyi gerçekleştirecek şekilde tasarlanmalıdır (Aristotle, Pol. I.2; NE I.7).

Aristoteles'in dağıtıcı adalet anlayışı, "oransal eşitlik" ilkesine dayanır. Kamusal kaynakların/yüklerin paylaştırılmasında katkı ile pay arasındaki orantıyı merkeze alır. Bu, modern vergilemede "ödeme gücü" ve mali kapasite ilkelerine düşünsel bir zemin sunar (Aristotle, NE V.3; Pol. III.12). Aşırı servet birikiminin fraksiyon (iç çatışma) doğurduğunu vurgulayan Aristoteles, orta sınıfın güçlendiği düzeni en istikrarlı rejim olarak görür. Buna koşut olarak, yurttaş yükümlülüklerinin (askerlik, kamu hizmetleri, litürjiler) toplumsal uyumu bozmayacak biçimde paylaştırılmasını savunur (Aristotle, Pol. IV.11; V.1–3).

Bu çerçevede vergi, salt gelir temini değil, ölçülülük ve adalet erdemlerini pekiştiren bir kamusal erdem mimarisinin parçasıdır. Kamu giderlerinin niteliği (eğitim, savunma, ortak altyapı) ile yükün paylaşımı arasındaki teleolojik bağ koparsa, mali düzen toplumsal erdemi desteklemek yerine onu aşındırır (Aristotle, Pol. VII.1–3; NE X.9; bkz. Miller, 1995).

Antik Yunan pratiğinde servete bağlı litürji ve olağanüstü eisphora gibi araçlar, oransal yük paylaşımının kurumsal örneklerini sunar ve Aristoteles'in normatif ufkuyla tutarlı bir kamusal katkı mantığına işaret eder (Andreades, 1933; Gabrielsen, 1994).

2.2. Klasik Liberal Dönem

Klasik liberal dönem (yaklaşık 18.–19. yüzyıllar), vergiyi "sınırlı devlet–bireysel özgürlük–piyasa" üçgeninde konumlandırarak maliyenin temel amacını asgari kamu hizmetlerinin finansmanı olarak tanımlar. Bu nedenle vergi sisteminde basitlik, öngörülebilirlik ve düşük oranlar ön plana çıkar (Smith, 1776/1976). "Temsil olmadan vergi olmaz" ilkesi, vergilemenin hukuki meşruiyetini toplumsal rızaya bağlar ve anayasal sınırlar üzerinden keyfiliği dizginlemeyi hedefler (Maier, 1997; Hayek, 1960). Normatif çerçevede adalet/ödeme gücü, kesinlik, uygunluk ve iktisadilik ilkeleri pusula işlevi görürken (Smith, 1776/1976), fayda yaklaşımı ve sınırlı yeniden dağıtım vurgusu dolaysız vergilerde ılımlı artan oranlılık ile dolaylı vergilerde yaygın ama makul oranlar arasında denge arayışını besler (Mill, 1848/2004). Bütçe denkliği ideali, savaş ve kriz dönemleri hariç tutulmak kaydıyla, borçlanmanın istisnaî olması gerektiğini savunur (Mill, 1848/2004). Nihayet, rıza ve karşılıklılık esasına dayalı karar kuralı fikri, dönemin sonuna doğru Wicksell'in oybirliği/neredeyse oybirliği teziyle kuramsal bir doruk noktası bulur (Wicksell, 1896/1958).

Aşağıda, klasik liberal düşünce içinde merkezi bir konuma sahip John Locke, Adam Smith ve J. S. Mill'in vergi kuramına katkıları analitik olarak ele alınmaktadır.

2.2.1. John Locke

Klasik liberal dönemde John Locke açısından vergiyi, Locke'un doğal haklar (yaşam–özgürlük–mülkiyet) doktrini ve toplumsal sözleşme kuramı içinde, mülkiyetin korunması ve keyfî iktidarın sınırlandırılması amacıyla meşrulaştırılan sınırlı bir kamusal yetki olarak konumlandırmak gerekir. Locke'a göre siyasal topluluk, bireylerin mülkiyetlerini güvence altına almak için "çoğunluğun rızası" ile kurulur. Dolayısıyla vergi ancak önceden ilan edilmiş genel ve eşit yasalarla, temsilî meclisin yetkisi dâhilinde ve rızaya dayalı olarak alınabilir. Aksi hâlde "başkasının mülkünde izinsiz tasarruf" niteliği taşıyarak meşruiyetini yitirir (Locke, 1689/1988, II. Treatise, §§138–142).

Locke'un parasal düzen ve ticaret yazıları, verginin ekonomik davranış üzerindeki etkilerini vurgular. Öngörülebilirlik, iktisadilik ve teşebbüsü caydırmama ilkeleri, verginin üretim ve ticaret kanallarını tahrip etmeyecek düzey ve yapıda olması gereğini öne çıkarır. Fiyatlar genel düzeyini bozan parasal müdahaleler ya da ağır dolaylı yükler yerine, hukuk devleti çerçevesinde açık kurallar ve ölçülü mali yük talep eder (Locke, 1691/1991). Bu normatif çerçeve, klasik liberal dönemin vergiye bakışını (temsil olmadan vergi olmaz, düşük ve sade oranlar, keyfîliğin hukuken engellenmesi) erken ve etkili bir şekilde sistematize eder. Sonraki kuşakların ödeme gücü, kesinlik ve uygunluk ilkelerini (Smith, 1776/1976) ve anayasal sınırlama vurgusunu besleyen düşünsel bir temel sunar (Tuckness, 2021; Dunn, 1969).

2.2.2. Adam Smith

Klasik liberal dönemin en önemli öncülerinden biri olan Adam Smith'in vergileme anlayışını, adalet ve özgürlük arasında kurduğu denge ile tanımladığı anayasal-mali düzen içinde değerlendirmek gerekir.

Smith için devletin mali yetkisi, toplumsal işbölümünün üretkenliğini koruyacak, mülkiyet ve sözleşme güvenliğini sağlayacak ve kamusal malları (adalet, savunma, temel altyapı ve nitelikli eğitimin bazı boyutları) finanse edecek ölçüde meşrudur. Bu meşruiyetin normatif mihenk taşı vergilemenin kanunlarıdır. Adalet/ödeme gücü (gelire "orantılı" katkı ama zenginlerin "orantıdan biraz daha fazla" ödemesinin makul görülebilmesi), kesinlik (keyfîliğin yasayla sınırlandırılması), uygunluk (mükellefin ödeme zaman ve biçimine uygun tahsil) ve iktisadilik (yönetim ve artan yükler dâhil en düşük maliyet) temel ilkelerdir (Smith, 1976, V.2).

Smith, dolaylı vergilerin (özellikle lüks tüketim üzerinde) davranışsal etkilerini dikkate alırken, zorunlu ihtiyaçlar üzerindeki vergilerin yoksulların refahını aşındırmasına ve ücretler/rekabet üzerinden maliyet enflasyonuna yol açmasına eleştirel yaklaşır. Sermaye ve üretim kanallarını bozan vergi ve tekel düzeneklerine karşı uyarır (Smith, 1976, V.2; 1978). Bu mali çerçevenin arka planında, ahlakî duygular kuramındaki "tarafsız gözlemci" standardı yer alır. Adil vergi, yalnızca tahsil tekniğiyle değil, kamusal güven ve meşruiyet üretme kapasitesiyle de ölçülür (Smith, 1976b). Böylece Smith, klasik liberal geleneğin vergi mimarisini, hukuk devleti, temsil ve rıza, basitlik ve öngörülebilirlik, davranışsal maliyetlerin minimizasyonu ve mali saygınlık ilkeleri etrafında normatif olarak temellendirir. Modern "ödeme gücü", kesinlik ve uygunluk ilkelerinin yanında, kurumsal güven ile iktisadî etkinliği birlikte önceleyen bir kamusal finans anlayışı kurar (Haakonssen, 1981; Winch, 1978).

2.2.3. J. S. Mill

J. S. Mill, vergiyi, özgürlük, temsil ve eşitlik ilkelerini uzlaştırmaya çalışan anayasal–mali tasarımının bir parçası olarak görür. Eşit fedakârlık (equal sacrifice) ilkesi doğrultusunda Mill, gelir üzerinden orantılı (proportional) bir vergilemeyi savunur. Ancak geçim düzeyi muafiyeti ve bakmakla yükümlülükler için istisnalarla "gerçek" ödeme gücünü yansıtan bir taban önerir.

Genel ve sert artan oranlılığın yerine, miras/servet intikali üzerinde belirgin bir artan oranlı yükü meşru görür ve rant/"unearned increment" türü kazançların vergilendirilmesini kamusal adaletle bağdaştırır (Mill, 2004, V.II.2–5).

Tasarruf–tüketim tarafsızlığı için birikimi cezalandıran vergi tasarımlarına karşı dikkatli olan Mill, aynı gelire sahip iki kişiden birini tasarrufu nedeniyle daha fazla vergilendirmenin adaletle bağdaşmadığını vurgular. Bu nedenle harcama/gelir tabanı tartışmasında, tasarrufun üretken yatırımlara yönelmesini engellemeyecek bir mimariyi öne çıkarır (Mill, 2004, V.III.1–3).

Mill'in vergileme ilkeleri, Adam Smith'in kesinlik–uygunluk–iktisadilik çerçevesini devralıp temsile dayalı rıza ve kamusal meşruiyet vurgusuyla yeniden yorumlar. Vergiyi "gece bekçisi devlete hapseden değil, özgürlükleri güvenceye alan ve toplumsal fırsat eşitliğini koruyan sınırlı bir kamusal finans aracı olarak sistematize eder (Mill, 1977a; 1977b; bkz. Hollander, 1985).

Aşağıdaki Tablo 1'de, Locke, Smith ve Mill'in vergiye ilişkin temel yaklaşımlarını karşılaştırmalı olarak özetlemektedir. Kuramsal zeminde Locke doğal haklar ve rızaya dayalı sınırlı devleti vurgularken, Smith adalet–kesinlik–uygunluk–iktisadilik ilkeleriyle kurumsal dengeyi öne çıkarır; Mill ise faydacılık çerçevesinde eşit fedakârlık ve fırsat eşitliğine duyarlı bir tasarıma yönelir. Meşruiyet, adalet ve taban–oran kurgusunda Locke asgari devlet ve öngörülebilirlikten; Smith geniş taban ve uygulama kolaylığından; Mill ise özellikle miras/servet üzerinden ilericilikten yanadır. Dolaylı/dolaysız vergiler ve idari ilkeler bağlamında üç düşünür, etkinlik–eşitlik dengesi üzerinde farklı ağırlıklar kurar. Böylece tablo, hak temelli asgari devletten (Locke) kurumsal dengeye (Smith) ve eşitlik duyarlı faydacılığa (Mill) uzanan bir sürekliliği göstermektedir.

Tablo 1: Klasik Düşünürlerde Vergi Felsefesinin Karşılaştırması

Boyut	John Locke	Adam Smith	J. S. Mill
Kuramsal Temel	Doğal haklar (yaşam–özgürlük–mülkiyet), toplumsal sözleşme; kamu yetkisi rızaya dayanır.	Ahlaki duygular ve doğal hukuk geleneği; hukuk devleti ve kurumsal güven.	Faydacılık ve özgürlük ilkeleri; eşit fedakârlık, fırsat eşitliği duyarlılığı.
Verginin Rolü	Mülkiyeti koruyan, keyfî iktidarı sınırlayan sınırlı bir kamu aracı.	Adalet, savunma, temel altyapı ve eğitimin bazı boyutlarını finanse eden anayasal-mali araç.	Özgürlükleri güvenceye alan ve fırsat eşitliğini koruyan sınırlı ama etkin bir finansman aracı.
Meşruiyet/Rıza	Temsile dayalı rıza olmadan vergi meşru değildir; genel ve önceden ilan edilmiş yasalar.	Kesinlik ilkesi: keyfîliğin yasa ile sınırlanması; temsile dayalı meşruiyet vurgusu.	Temsile dayalı meşruiyet ve hesap verebilirlik; vatandaş rızası ve şeffaflık.
Adalet İlkesi	Genellik ve eşitlik; rızaya dayalı genel yasalar altında eşit muamele.	Ödeme gücü (orantılı katkı) + pratikte yoksullar lehine sınırlı ilericilik.	Eşit fedakârlık; geçim düzeyi muafiyeti ve bağımlıların dikkate alınması.
Taban/Oran Tasarımı	Öngörülebilir, iktisadi ve girişimi caydırmayan yapılar; ağır dolaylı yüklerden kaçınma.	Geniş taban, basitlik; lüks tüketimde dolaylı vergiler, zorunlu mallarda ihtiyat.	Gelirde orantılılık; ancak miras ve rantlarda belirgin ilericilik; tasarruf tarafsızlığı.
Dolaylı/Dolaysız Vergiler	Ağır dolaylı vergilere kuşku; açık ve	Dolaylı vergiler davranışsal etkiler açısından dikkatle;	Zorunlu tüketim üzerindeki dolaylı

	öngörülebilir yükler tercih edilir.	zorunlu mallarda yükten kaçınma.	vergilerin regresif etkilerine duyarlı.
Servet/Miras	Mülkiyetin korunması esastır; aşırı müdahaleye mesafeli.	Miras/servet vergisi konusunda temkinli; etkinlik ve adalet dengesi arar.	Miras ve servet transferlerinde ilericiliğe daha açık; unearned increment vurgusu.
Yönetim İlkeleri	Öngörülebilirlik, iktisadilik, açık kurallar.	Adalet/ödeme gücü, kesinlik, uygunluk, iktisadilik (Smith'in dört ilkesi).	Basitleştirme, tarafsızlık, uygulama maliyetlerini minimize etme.
Devletin Kapsamı	Asgari devlet; temel hakların korunması.	'Gece bekçisi'ne yakın ama kamusal mallar için gerekli kapasiteyi destekleyen.	Sınırlı fakat özgürlük ve fırsat eşitliği için gerekli kamusal müdahalelere açık.
Başlıca Eserler	Locke, *Two Treatises of Government*; *Locke on Money*.	Smith, *Wealth of Nations*; *Theory of Moral Sentiments*; *Lectures on Jurisprudence*.	Mill, *Principles of Political Economy*; *On Liberty*; *Considerations on Representative Government*.

Kaynak: Yazarlar tarafından oluşturulmuştur.

2.3. Modern Tartışmalar

Modern vergileme tartışmalarında fırsat eşitliği, en dezavantajlıların durumunun iyileştirilmesi ve tasarruf–tüketim tarafsızlığı gibi ilkeler belirleyici eksenler olarak öne çıkmaktadır. Bu bağlamda John Rawls, Robert Nozick ve Amartya Sen'in kuramsal yaklaşımları, hem normatif çerçevenin kurulmasına hem de politika tasarımının yönlendirilmesine esaslı katkılar sunmaktadır.

2.3.1. John Rawls

"Modern Tartışmalar" bağlamında John Rawls, vergilemeyi "toplumun temel yapısı"nın adil işlemesini sağlayan kurumsal tasarımın bir aracı olarak konumlandırır. Eşit temel özgürlükler ve adil fırsat eşitliği ilkeleri korunurken, fark ilkesi gereği vergi–transfer mimarisi özellikle en dezavantajlıların konumunu iyileştirecek biçimde kurgulanmalıdır. Bu, geniş tabanlı ve ilerici gelir vergisi, miras/servet transferlerinin daha güçlü vergilendirilmesi ve eğitim ve sağlık gibi birincil toplumsal malların güvenilir biçimde finansmanını içerir (Rawls, 1999, 2001). Rawls, "refah devleti kapitalizmi" yerine sermaye ve fırsatların toplumsal yayılımını hedefleyen "mülkiyetçi demokrasi" modelini savunur; bu çerçevede vergi, yalnız gelir toplama tekniği değil, eşit yurttaşlık ve kurumsal meşruiyet üreten bir düzenleyici mekanizmadır (Rawls, 2001). Nitekim "vergileme sonrası" dağılımı yalnız doğal bir hak ediş olarak gören yaklaşımlara karşı, mülkiyet haklarının da kamu kurumlarınca tanımlanıp güvenceye alındığını vurgulayan yorum, ilerici vergilemeyi Rawlsçu adaletle uyumlu kılar (Murphy & Nagel, 2002).

2.3.2. Robert Nozick

Robert Nozick, vergilemeyi hak ediş (entitlement) kuramı çerçevesinde değerlendirir. Meşru mülkiyet yalnızca adil edinim ve gönüllü devretme süreçlerinden (ve geçmişteki hak ihlallerini gideren düzeltme ilkesinden) doğar; bu nedenle örüntücü/kalıpçı bir eşitlik hedefiyle yapılan zorunlu yeniden dağıtım (özellikle ilerici gelir, servet ve miras vergileri) bireyin emeği ve zamanı üzerinde rızaya aykırı tasarruf anlamına gelir ve Nozick'in "emeğe el koyma/angarya" teşbihiyle reddedilir (Nozick, 1974, Böl. I–III).

Nozick'in asgari devlet modelinde verginin rolü, esasen sözleşme icrası, güvenlik ve mülkiyetin korunması gibi koruyucu devlet işlevlerini finanse edecek asgari ve tercihen ücret/harç benzeri düzenlemelerle sınırlanmalıdır. Kamusal gelirin eşitlikçi hedeflerle örüntüsel olarak dağıtımı adil bir süreçten türemediği için meşru görülmez.

Nozick, tarihsel adaletsizlikler için düzeltici transferleri ilkesel olarak dışlamazsa da, bunlar geçmiş ihlallere özgü ve sınırlı telafi araçlarıdır ve genel yeniden dağıtım politikalarının temeli olamaz (Nozick, 1974). Bu yaklaşım, modern vergi mimarisinde ilerici oranlar, kapsamlı servet/miras vergileri ve geniş yeniden dağıtım programlarını normatif bakımdan sorunlu sayarken, eleştiriler, vergi–mülkiyet ilişkisinin bizzat hukukî kurumlarca tanımlandığı ve bu nedenle vergi sonrası dağılımın doğal değil kurumsal olduğu yönünde yoğunlaşır (Murphy & Nagel, 2002; Wolff, 1991).

2.3.3. Amartya Sen

Amartya Sen, vergilemeyi refahın tek başına gelir/servetle ölçülmediği, bireylerin yetenekleri (capabilities) ve "işlevsellik setleri (functionings)"ni genişletmeyi amaçlayan kurumsal bir mimarinin aracı olarak değerlendirir. Bu yaklaşım, vergi ve harcama bileşimini gelir transferinin ötesine taşıyarak;

• Temel sağlık, beslenme, eğitim, ulaşım ve dijital erişim gibi kapasite artırıcı kamusal yatırımları öncelemeyi,

• İlerici (özellikle miras/servet transferlerinde belirgin) ama idarî olarak basit ve uygulanabilir bir vergi yapısıyla anlamlı fırsatlara erişimi güvencelemeyi,

• Dolaylı vergilerin zorunlu tüketim üzerindeki regresif etkilerini azaltacak hedefli telafi/vergisel istisna mekanizmalarını,

• Katılımcı, şeffaf ve hesap verebilir bütçe süreçlerini,

vurgular (Sen, 1985, 1992, 1999, 2009).

Bu çerçevede adalet, "vergi sonrası dağılım"ın aritmetiğinden çok, vergilemenin gerçek özgürlükleri genişletme kapasitesiyle değerlendirilir. Dolayısıyla vergi politikası, etkinlik ve eşitlik ikiliğini, kapasite inşası ve idari uygulanabilirlik üzerinden normatif olarak yeniden kurar (Sen, 2009).

2.4. Çağdaş Perspektifler

Çağdaş perspektifler, vergilemeyi; küreselleşme, dijitalleşme, eşitsizlik, iklim krizi ekseninde yeniden tanımlar. Çok uluslu şirketlerin kâr kaydırmasına (BEPS) karşı küresel asgarî kurumlar vergisi (Pillar Two) gibi uluslararası eşgüdüm araçları öne çıkarken (OECD/G20 BEPS; OECD, 2023), karbon fiyatlaması "kirleten öder" ilkesini kurumsallaştırır ve güncel uygulamalar dünya genelinde yaygınlaşır (World Bank, 2025). Normatif-teknik düzlemde optimal vergileme geleneği, doğrudan–dolaylı vergi mimarilerinde tasarruf–tüketim tarafsızlığına ilişkin Atkinson–Stiglitz sonucunu; bütüncül reform tasarımı için Mirrlees Review'ın "geniş ama sade tabanlar ve düşük çarpıtma" yaklaşımını; marjinal oran tasarımında toplumsal refah ağırlıklarını vurgulayan Saez–Stantcheva çerçevesini besler (Atkinson & Stiglitz, 1976; Mirrlees Review, 2011; Saez & Stantcheva, 2016).

Dijital ekonomi ve platform çalışmasında kaynakta kesinti/tevkifat, "önemli ekonomik varlık" testleri ve e-fatura/e-defter gibi veri-yoğun idare uygulamaları, Vergi İdaresi 3.0 vizyonuyla "gömülü uyum"a evrilirken; algoritmik denetimin adil yargılanma, saydamlık, gizlilik güvenceleriyle dengelenmesi

gereği vurgulanır (OECD, 2020; OECD, 2022; IMF, 2019). Son aşamada çağdaş vergi mimarisi, etkinlik ve adalet dengesini;

• Rant ve aşırı kâr gibi daha az çarpıtan tabanların öncelenmesi,

• İklim ve kapsayıcı büyüme hedefleriyle hizalanmış harcama mimarisi,

• İdarî uygulanabilirlik ve hesap verebilirlik üçlüsü üzerinden kurar (Mirrlees Review, 2011; OECD/G20 BEPS).

Bu çerçevede, çağdaş vergileme tartışmaları Jürgen Habermas'ın kamusal meşruiyet ve iletişimsel akıl yaklaşımı, Richard A. Musgrave'ın kamu maliyesinin işlevsel sınıflandırması, ile Joseph E. Stiglitz ve Anthony B. Atkinson'ın optimal vergileme ve eşitsizlik analizleri ekseninde kavramsallaştırılmaktadır.

2.4.1. Jürgen Habermas

Jürgen Habermas, vergilemeyi "meşruiyetin iletişimsel üretimi" ilkesine dayanan bir kamusal akıl yürütme sürecinin parçası olarak konumlandırır. Vergi, zora dayalı bir kamusal düzenleme olduğundan, hukuk devletinin biçimsel gerekleri (yasallık, öngörülebilirlik, eşitlik) kadar, kamusal alanda yürütülen kapsayıcı ve ayrımcı olmayan bir tartışmada üretilen rızaya da dayanmalıdır. Böylece vergi normları, yalnız "etkililik" veya "fayda" ile değil, usulî meşruiyet ve katılımcı gerekçelendirmeyle doğrulanır (Habermas, 1996). Habermas'ın iletişimsel eylem kuramı, vergi politikasında gerekçelendirme yükünün iktidardan yurttaşa doğru değil, yurttaşların kamusal tartışmada ikna edilebilir nedenlerle birbirine karşı sorumlu olduğu simetrik bir düzleme taşınmasını ima eder. Bu, bütçe şeffaflığı, katılımcı bütçeleme ve hesap verebilirlik gibi süreç tasarımlarını normatif olarak destekler (Habermas, 1989/1991). Nihayet, meşruiyet krizlerinin önlenmesi, vergi-harcama mimarisinin yalnız teknik optimizasyonla değil, demokratik irade oluşumunun kalitesini artıran kurumsal düzenlemelerle (kamusal neden sunumu, gerekçeli karar, kapsayıcı müzakere) birlikte ele alınmasına bağlıdır (Habermas, 1975; 1996).

2.4.2. Richard Musgrave

"Çağdaş Perspektifler" bağlamında Richard A. Musgrave, vergilemeyi devletin üç işlevi (tahsis–dağıtım–istikrar) içindeki yerinden hareketle konumlandırır. Vergi sistemi,

• Tahsis işlevinde kamusal malların finansmanı ve Pigoucu dışsallık vergileriyle piyasa başarısızlıklarının düzeltilmesini,

• Dağıtım işlevinde ödeme gücü ilkesi, yatay/dikey adalet ve transferlerle gelir–servet eşitsizliklerinin giderilmesini,

• İstikrar işlevinde ise otomatik dengeleyiciler ve maliye politikasıyla toplam talebin yönetimini,

üstlenir (Musgrave, 1959; Musgrave & Musgrave, 1989).

Musgrave'ın çerçevesi, vergi mimarisinin yalnızca gelir toplama tekniği değil, kamu ekonomisinin amaçlarıyla tutarlı bir araç seçimi olduğunu vurgular. Bu nedenle geniş ve etkin tabanlar, adaleti gözeten oran yapıları, mali federalizmde vergi paylaştırması ve bütçe üzerinden yapılan tüm kamu eylemlerinin dağılımsal etkilerini (bütçe yüklenimi/incidence) birlikte değerlendiren normatif bir "kamu maliyesi anayasası" önerir (Musgrave, 1959; Musgrave, 1990).

2.4.3. Joseph Stiglitz & A. B. Atkinson

Joseph E. Stiglitz ve A. B. Atkinson, vergilemeyi eşitsizlik, bilgi asimetrileri ve idarî uygulanabilirlik ekseninde yeniden temellendirir. Atkinson–Stiglitz teoremi (1976), tercihlerde zayıf ayrışma varsayımı altında farklı mallara farklı oranlarla yüklenmenin refah artışı sağlamadığını vurgular. Çözüm olarak ise farklılaştırılmış mal vergileri yerine ilerici bir gelir vergisi ve geniş–sade tabanın tercih edilmesi

gerektiğini gösterir. Stiglitz, kusurlu piyasalar, rantiye kazançlar ve bilgi sorunlarının altını çizerek, sermaye/servet ve mirasın vergilendirilmesine yönelik normatif gerekçeleri güçlendirir. Eşanlı olarak davranışsal ve idari maliyetleri minimize eden tasarımları, negatif gelir vergisi/çalışan yoksullara transferler gibi hedefli ilericilik araçlarını ve geniş taban–düşük çarpıtma ilkelerini savunur (Atkinson & Stiglitz, 1976; Stiglitz, 1987, 2012; Atkinson, 2015).

Sonuçta her iki düşünür de, etkinlik–adalet dengesini;

• Gelir temelli ilerici vergileme ve sınırlı/amaçlı tüketim farklılaştırması,

• Rant ve miras üzerinde daha güçlü yükümlülükler,

• Uygulanabilir–basit idari mimari ve saydamlık üzerinden kuran bir vergi tasarımına yönlendirir.

3. Türkiye'de Vergi Uygulamaları

Türkiye'de vergi uygulamalarının sağlıklı biçimde analiz edilebilmesi için dönemsel bir çerçeve benimsenmiş; bu doğrultuda inceleme; Osmanlı dönemi, Cumhuriyet dönemi ve güncel uygulamalar olmak üzere üç başlık altında yapılandırılmıştır.

3.1. Osmanlı Dönemi

Osmanlı İmparatorluğu'nda vergi uygulamaları, şer'î (zekât, öşür/aşar, cizye) ile örfî (avarız, nüzül, sürsat, tekâlif-i örfiye) yükümlülüklerin birlikte işlediği ikili bir mali yapı üzerine kuruluydu. Klasik dönemde arazi rejimi ve tımar sistemi yerel tasarruf–merkezi otorite dengesini sağlayarak vergi tahsilini dirlik sahipleri üzerinden örgütledi, 16. yüzyıl sonlarından itibaren artan nakit ihtiyacı ve askerî-idari dönüşümle birlikte iltizam ve 1695'ten sonra malikâne gibi çiftçi/mültezim aracılı tahsil usulleri yaygınlaştı (İnalcık, 2003; Genç, 2000; Faroqhi, 2006).

Müslüman olmayan reayadan cizye alınması, savaş ve olağanüstü dönemlerde avarız türü vergilerin artırılması ve kırsal üretim üzerindeki aşarın sürekliliği, fiskal yapının omurgasını oluşturdu. 17. yüzyılda avarızın kalıcılaşması yerel topluluklar üzerinde nakdî yükün artmasına yol açtı (Salzmann, 1993; İnalcık, 2003).

19. yüzyılda Tanzimat ile mali merkezileşme hedeflendi. Muhassıllık meclisleri, temettuat sayımları, cizyenin 1856 Islahat Fermanı sonrasında bedel-i askerî benzeri nakdî yükümlülüklere evrilmesi ve aşarın ihaleyle toplanmasının yaygınlaşması, modern bütçe tekniğine geçişin araçları oldu (Shaw & Shaw, 1977; Karpat, 1972; Pamuk, 2000).

Geç Osmanlı'da borçlanma ve dış şoklar, tahsilatın etkinliği ile Düyûn-ı Umûmiye ve Reji gibi kurumların rolünü artırdı. Bu kurumlar özellikle tuz, tütün, damga gibi dolaylı gelirleri teminat altına alarak fiskal sürdürülebilirliğe katkı sağladı, fakat toplumsal-siyasal maliyetler doğurdu (Quataert, 2000; Pamuk, 2000). Sonuçta Osmanlı maliyesi, tarımsal artığın vergilendirilmesine dayalı, esnek fakat aracı temelli tahsil yöntemleriyle işleyen ve 19. yüzyılda merkezî denetim ile "modern vergi devleti"ne geçişi hedefleyen karma bir vergi rejimi sergiledi (Genç, 2000; Faroqhi, 2006; Pamuk, 2000).

Osmanlı vergi düzenini klasik normatif ilkeler (adalet—yatay/dikey eşitlik, kesinlik/öngörülebilirlik, uygunluk ve iktisadilik/etkinlik) ışığında değerlendirdiğimizde karma bir tablo ortaya çıkar. Şer'î (öşür/aşar, cizye) ve örfî (avarız, nüzül, tekâlif-i örfiye) yükümlülüklerin birlikte işlediği sistem, tımar düzeni ve sonrasında iltizam/malikâne aracılığıyla tahsil maliyetlerini düşürerek idari etkinliği kısmen artırsa da, mültezim rantiye davranışı ve aşırı tahsil baskısıyla etkinlik ve adalet ilkelerini sık sık zedeledi (Genç, 2000; Quataert, 2000).

Yatay/dikey adalet bakımından, üretim üzerinden aynî/nispi yükler ile cizyenin gayrimüslim reayaya özgülenmesi statü temelli farklılaştırma yaratarak "aynı ödeme gücüne aynı muamele" ilkesini

zayıflatmıştır. 17. yüzyılda avarızın kalıcılaşması ve olağanüstü nakdî talepler, kırsal haneler üzerinde regresif nitelikte ağırlaşan yükler doğurmuştur (İnalcık, 2003; Salzmann, 1993).

Kesinlik/öngörülebilirlik yönünde kanunnameler, tahrir defterleri ve ölçülü örfî çerçeveler bir standardizasyon sunsa da, savaş ve bütçe açıkları döneminde ek vergiler ve ihaleli tahsil usulleri bu ilkeyi aşındırmıştır (Faroqhi, 2006; Shaw & Shaw, 1977).

Uygunluk açısından aynî yükümlülükler (ürün, işgücü) ve zorunlu iaşe tedbirleri (nüzül–sürsat) mükellefin ödeme zaman ve biçimine uymakta zorlanarak yüksek uyum maliyeti yaratmıştır (Genç, 2000; Faroqhi, 2006). Tanzimat'la birlikte temettuat sayımları ve muhassıllık meclisleri merkezileşme ve bütçe rasyonalizasyonu hedeflese de, geç Osmanlı'da Düyûn-ı Umûmiye ve tekeller (ör. Reji) üzerinden dolaylı gelirlerin teminatlaştırılması fayda–karşılık algısını ve mali meşruiyeti sınırlamıştır (Pamuk, 2000; Quataert, 2000).

Kısacası Osmanlı vergi pratiği, idari kapasite ve tahsil tekniğinde dönemsel esneklik sağlarken, normatif açıdan adalet, öngörülebilirlik ve uygunluk ilkelerine sık sık aykırı düşmüş; 19. yüzyıl reformları bu açığı daraltmaya çalışsa da yapısal kısıtlar nedeniyle tam bir "modern vergi devleti" standardına ulaşamamıştır (İnalcık, 2003; Pamuk, 2000).

3.2. Cumhuriyet Dönemi

Cumhuriyet dönemi vergi uygulamaları, savaş sonrası yeniden inşa ve sanayileşme hedeflerinin gölgesinde önce dolaylı ve basit dolaysız vergilerin ağırlıkta olduğu erken dönemden (ör. 1920'ler–40'lar; tarım/ithalat üzerindeki yükler, 1942–44 Varlık Vergisi deneyimi) başlayıp, 1950'lerde geniş tabanlı gelir–kurumlar vergisi omurgasının güçlendiği ve GVK (No. 193, 1961) ile sistematikleştirildiği bir yapıya evrilmiştir. 1980'lerin reform dalgası KDV (No. 3065, 1984) ile tüketime dayalı modern bir genel satış vergisini yürürlüğe koymuş, 2000'lerde ÖTV (No. 4760, 2002) seçici tüketim vergilerini tekleştirip yönetilebilirliği artırmış, KVK (No. 5520, 2006) ise örtülü sermaye–transfer fiyatlandırması gibi uluslararası uyum kurumlarını sisteme entegre etmiştir. 2010'lardan itibaren e-Defter, e-Fatura, e-Arşiv ve risk-analitiğiyle idarenin dijital dönüşümü hızlanmış, vergi harcamaları/istisna rejimi genişlerken (particularly KDV istisna-indirimleri), vergi karmasında mal ve hizmet vergilerinin görece yüksek payı sürmüştür.

Son dönemde küresel tartışmalarla uyumlu biçimde asgari kurumlar vergisi, dijitalleşen idare ve uluslararası bilgi değişimi başlıkları öne çıkarken, normatif düzlemde ödeme gücü–yatay/dikey adalet, kesinlik/öngörülebilirlik ve uygunluk–iktisadilik ilkeleri etrafında istisnaların rasyonelleştirilmesi ve tabanın sadeleştirilmesi temel reform eksenleri olarak gündemde kalmıştır.

3.3. Güncel Uygulamalar

Türkiye'de vergi uygulamaları, genel vergi hukukunun çerçevesini çizen Vergi Usul Kanunu (VUK) ile temel gelir kaynaklarını düzenleyen Gelir Vergisi Kanunu (GVK), Kurumlar Vergisi Kanunu (KVK), Katma Değer Vergisi (KDV) ve Özel Tüketim Vergisi (ÖTV) kanunları etrafında örgütlenmiş bir yapıya dayanır. GVK gerçek kişilerin gelir unsurlarını ve tarh-tahakkuk esaslarını, KVK tam/dar mükellefiyet ve matrah-istisna rejimini, KDV mal ve hizmet teslimlerinde genel tüketim vergisini, ÖTV ise belirli mallarda (akaryakıt, tütün, motorlu taşıtlar vb.) seçici tüketim vergisini tanımlar (VUK, GVK, KVK, KDV, ÖTV).

Uygulamada idari dijitalleşme belirgindir. e-Defter/e-Fatura ve dijital vergi dairesi süreçleri ile beyan, kayıt ve denetim fonksiyonları elektronik ortama taşınmış; bu da risk analizi ve uygunluk yönetimini veri temelli araçlarla birleştiren bir idareyi mümkün kılmıştır.

Makro görünümde Türkiye'nin vergi-yükü (vergi/GSYH) 2024'te %16,38'dir. Gelir bileşimi ve vergi karması OECD ortalamasından farklılaşırken tüketim üzerinden alınan vergilerin sistem içindeki ağırlığı dikkat çekmektedir.

Kamu mali yönetimi tarafında ise uluslararası izleme çalışmaları, bütçe şeffaflığında ilerleme olmakla birlikte kamusal katılımın zayıf kaldığına işaret eder; 2023 Açık Bütçe Araştırması'nda Türkiye'nin şeffaflık puanı 64/100, kamu katılımı puanı 0/100 olarak raporlanmıştır.

Son yıllarda asgarî kurumlar vergisi matrahı ve indirim/istisna rejimine ilişkin güncellemeler ile kılavuzlar, kurumlar vergisinde taban erozyonuna karşı idari netliği artırmayı amaçlamaktadır; bu da küresel vergilendirmedeki eşgüdüm tartışmaları ile yerel uygulamalar arasındaki geçişkenliği göstermektedir.

Türkiye'nin vergi uygulamalarını klasik normatif ilkelerle (adalet/ödeme gücü, yatay–dikey eşitlik, kesinlik/öngörülebilirlik, uygunluk ve iktisadilik) karşılaştırdığımızda tablo karışık bir görünüm vermektedir. Dolaylı vergilerin (KDV/ÖTV) yüksek payı, geçim düzeyi muafiyetlerinin ve hedefli sosyal kredilerin sınırlı etkinliğiyle birleşince dikey adaleti aşındırıp düşük–orta gelir grupları üzerinde görece ağır bir yük yaratmaktadır. Çok sayıdaki istisna–muafiyet ve teşvik de yatay adaleti zedelemekte ve "aynı ödeme gücüne aynı muamele" ilkesini gölgelemektedir. Mevzuat sık değişiklik, geçici düzenleme ve geniş yetki devri nedeniyle kesinlik–öngörülebilirlik ilkesine tam uyum göstermemektedir. Tahsil ve beyan süreçlerinde dijitalleşme (e-Fatura/e-Defter vb.) uygunluk ve idari etkinliği artırsa da, karmaşık beyan–istisna mimarisi mükellef uyum maliyetlerini hâlâ yüksek tutmaktadır.

Harcama tarafıyla eşgüdüm zayıf olduğundan "benefit principle" (fayda–karşılık) algısı ve mali meşruiyet sınırlı kalmaktadır. Bütçe şeffaflığı ilerlese de kamusal katılımın düşüklüğü hesap verebilirlik ve rıza üretimini zayıflatıcı bir etki göstermektedir.

Sonuç olarak, Türkiye'de normatif olarak arzu edilen çerçeve, geniş ama sade tabanlar, asgari çarpıtma, gerçek ödeme gücüne duyarlı ve hedefli ilericilik, istisna/teşviklerin rasyonelleştirilmesi, öngörülebilir ve katılımcı mali yönetişim kısmen yakalansa da, özellikle vergi karmasının dengelenmesi, vergi harcamalarının sadeleştirilmesi ve kurumsal öngörülebilirliğin güçlendirilmesi yönlerinde belirgin iyileştirme alanları bulunmaktadır.

4. Eleştirel Tartışma

Normatif ilkelerle Türkiye uygulamasına ilişkin tartışma aşağıdaki Tablo 2'de gösterilmiştir.

Kategori	Normatif Tartışma	Türkiye Uygulaması	Yorum
Adalet İlkesi	Rawls: Dezavantajlıları gözetmeli; Aristoteles: dağıtıcı adalet	Dolaylı vergilerin ağırlığı adalet algısını zayıflatıyor	Türkiye'de vergiler düşük gelir gruplarını daha çok etkiliyor; Rawls'un fark ilkesiyle uyumsuz.
Ödeme Gücü	Smith: Gelirle orantılı vergi	Anayasa m.73 "mali güç" ilkesini güvence altına alsa da uygulama sınırlı	Uygulamada dolaylı vergiler hâkim, bu da eşit fedakârlığı bozar.
Faydalanma İlkesi	Wicksell & Lindahl: Kamu hizmetlerinden fayda oranında vergi	Kamu hizmetleri doğrudan fayda temelli değil	Zengin ve yoksul aynı hizmeti farklı etkilerle kullanıyor.
Özgürlük ve Mülkiyet	Locke: Vergi rızaya dayanmalı; Nozick: Vergi özgürlük ihlali	Vergi afları ve kayıt dışı ekonomi rızayı zedeliyor	Af uygulamaları, adil vergileme algısını bozuyor.

Demokratik Meşruiyet	Habermas: Vergi demokratik müzakereyle meşrulaşır	Vergi politikaları mali ihtiyaçlarla belirleniyor, katılım sınırlı	Halkın doğrudan katılımı zayıf, demokratik idealden uzak.

Kaynak: Yazarlar tarafından oluşturulmuştur.

5. Sonuç

Bu çalışma, vergi felsefesinin normatif eksenini (adalet, eşitlik, meşruiyet ve etkinlik) antik dönemden günümüze uzanan düşünsel bir hat üzerinde yeniden kurarak Türkiye'deki tarihsel ve güncel vergi uygulamalarıyla karşılaştırmalı biçimde tartışmıştır. Antik dünyanın teleolojik–erdemci yaklaşımlarında (Platon, Aristoteles) vergi, "iyi yaşamı" destekleyen kamusal erdem mimarisinin bir parçası iken; klasik liberal dönemde (Locke, Smith, Mill) verginin meşruiyeti temsil ve rıza, ödeme gücü, kesinlik ve iktisadilik ilkeleri etrafında kurumsallaşmıştır. Modern tartışmalarda Rawls, Nozick ve Sen üçgeni, vergilemenin amaç fonksiyonunu farklı normatif zeminlere taşımıştır. Rawls, temel yapının adil işlemesi ve en dezavantajlıların güçlendirilmesi için ilerici ve kurumsal bir çerçeve önerirken; Nozick, hak ediş ve asgari devlet perspektifiyle zorunlu yeniden dağıtımı sınırlandırmıştır. Sen ise geliri aşan "yetenekler" yaklaşımıyla vergiyi gerçek özgürlükleri genişletecek kapasite inşasının finansman aracı olarak konumlandırır. Çağdaş iktisat–maliye literatürü bu normatif ufku, optimal vergileme, davranışsal kamu maliyesi, dijitalleşme ve küresel vergi koordinasyonu (BEPS, küresel asgari kurumlar vergisi, karbon fiyatlaması) gibi teknik sütunlarla tamamlamaktadır.

Türkiye bağlamında bulgular iki düzeyde toplanmaktadır. Tarihsel düzeyde, Osmanlı'nın şer'î–örfî ikili yapısı ve aracı temelli tahsil teknikleri (tımar, iltizam, malikâne) dönemsel esneklik sağlasa da, yatay/dikey adalet, uygunluk ve öngörülebilirlik ilkelerinde kalıcı gerilimler üretmiştir. Cumhuriyet döneminde ise vergi mimarisi modern mevzuatla rasyonelleşmiş, 1980 sonrası KDV ve 2000'ler sonrası e-belge altyapısıyla idari kapasite belirgin biçimde güçlenmiştir. Güncel düzeyde, vergi karmasında mal ve hizmet vergilerinin yüksek payı, istisna–muafiyetlerin genişliği ve mevzuattaki geçici–sık değişim dinamikleri, "ödeme gücü" ve "kesinlik/öngörülebilirlik" ilkelerine ilişkin eleştirel alanlar oluşturmaktadır. Buna karşılık dijitalleşme (e-Fatura/e-Defter, risk analitiği), tahsilat ve uyumda iktisadilik–uygunluk ilkelerine yaklaşımı kolaylaştırmıştır. Ancak idari basitleştirme ve katılımcı bütçeleme/şeffaflık bileşenlerinin daha sistematik şekilde güçlendirilmesi gerekmektedir.

Politika düzleminde makalenin sentezi üç öncelik önerir:

• Adalet mimarisi: Vergi tabanını sadeleştirip istisna–muafiyetleri rasyonelleştirerek, geçim düzeyi muafiyeti ve bakmakla yükümlülüklerin daha etkili entegrasyonuyla "gerçek ödeme gücü"nü yansıtan hedefli ilericiliğe yönelmek; miras/rant türü artı kazançlar üzerinde ölçülü fakat tutarlı bir yük tesis etmek; zorunlu tüketim üzerindeki dolaylı vergi yükünü kademeli olarak dengelemek.

• Kurumsal öngörülebilirlik ve meşruiyet: Vergi kanunlarında sık–geçici değişim yerine çok yıllı yol haritası, gerekçeli etki analizi ve "vergi harcamaları bütçesi" ile kesinlik–hesap verebilirliği artırmak; müzakereci meşruiyeti güçlendirmek için kamusal katılım ve gerekçelendirme standartlarını (Habermasçı usul ilkeleri) kurumsallaştırmak.

• Etkinlik ve uygulanabilirlik: Davranışsal tasarımlarla (basitleştirilmiş beyan, otomatik uyum, varsayılan doldurma), idari maliyetleri azaltmak; veri bütünlüğü ve algoritmik denetimde şeffaflık–gizlilik dengesini güvence altına almak; uluslararası koordinasyonla (BEPS, küresel asgari kurumlar vergisi) matrah erozyonunu sınırlamak ve karbon fiyatlamasını yeşil dönüşümle uyumlu kılmak.

Çalışmanın katkısı, normatif teoriyi Türkiye'nin tarihsel ve kurumsal tecrübesiyle birlikte okuyan disiplinler arası bir sentez sunmasıdır. Bununla birlikte, üç sınırlılık not edilmelidir:

(1) Normatif ilkelerin pratikteki "idari kapasite–siyasi iktisat" kısıtları, ideal–gerçeklik açığını kalıcı kılabilir,

(2) Veri ve göstergelerde uluslararası tanım farklılıkları (ör. OECD vergi/GSYH ile merkezi bütçe vergi oranları) yorum farklılıklarına yol açabilir,

(3) Dijitalleşme ve küresel koordinasyonun etkileri dinamik olduğundan bulgular güncellemeye açıktır.

Gelecek araştırmalar, mikro idari verilerle (ör. e-fatura evreni) yatay adalet testleri; vergi harcamalarının dağılımsal ve etkinlik etkilerini ölçen yarı-deneysel tasarımlar; karbon ve miras vergilerinin geçiş maliyetlerini değerlendiren sayısal genel denge/heterojen ajan modelleri ve katılımcı bütçeleme uygulamalarının vergi meşruiyeti üzerindeki etkilerini inceleyen alan deneyleri üzerine yoğunlaşabilir.

Son bağlamda makalenin normatif sonucu, Türkiye'de vergi mimarisinin geniş ama sade tabanlar, hedefli ilericilik, kurumsal öngörülebilirlik, katılımcı meşruiyet uluslararası eşgüdüm beşlisini birlikte önceledığında, adalet ve etkinlik dengesine yaklaşabileceğini göstermektedir. Bu, yalnız teknik bir tasarım değil; aynı zamanda "vergiyi kimin, hangi gerekçeyle, nasıl ödediğine" dair kamusal aklın niteliğini artırmayı amaçlayan bir demokratik kapasite programıdır.

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ONLINE ACCOUNTABILITY AND LOCAL GOVERNMENTS: THE CASE OF METROPOLITAN MUNICIPALITIES *[1]

PhD. Tuğba AKSAKAL

Department of Political Science and Public Administration, Gaziantep University.
E-mail: tgbaksakl@gmail.com
ORCID ID: 0000-0001-7354-3645

Abstract

The transformation brought by Information and Communication Technologies (ICT) is reshaping organizational structures and the functioning of administrative systems in contemporary societies. With the transition of public institutions to digital platforms, these technological developments are redefining the principles of transparency, governance, and accountability that dominate traditional service delivery models. Within public institutions, new norms and practices such as open data have emerged under a more inclusive governance framework. The multilayered impact of digitalization technically enables metropolitan municipalities, in particular, to enhance stakeholder participation and guarantee the right to access information through structured data ecosystems via web-based platforms. The strengthening of metropolitan municipalities' digital capacities through open data policies, the institutionalization of data standards, and platform-based interaction mechanisms contributes to increased levels of transparency and accountability. This article aims to analyze the concept of "online accountability" and evaluate the extent to which metropolitan municipalities communicate their activities, decisions, and justifications to stakeholders via digital platforms, thereby ensuring transparency and accountability in governance. This study, conducted through a qualitative descriptive analysis of the online accountability of metropolitan municipalities in Turkey, uses tables and content analyses as its primary sources. Although these analyses are based on datasets collected during the thesis process in 2022, they have been updated as of 2025. This article aims to offer an evaluative perspective on accountability in the digitalization of local governments and, as the first study in this field, to e stablish a theoretical and methodological foundation for future academic research.

Keywords: Web Based Accountability, Local Governments, E-Government, Accountability, ICT.

1.Introduction

The rapid advancements in information technologies have become a significant component in strengthening governance, particularly in terms of local governments utilizing digital platform mechanisms to deliver services (Lee & Joseph, 2012, p.170). Thanks to the high data processing capacity and comprehensive information management capabilities provided by technology, public services can be delivered more effectively and efficiently, thereby reinforcing the institutional accountability capacity of local governments (Trabelsia et al., 2008, p.132). Digital platforms not only enhance accountability mechanisms but also expand access to services and information provided by local governments, making public oversight in governance more functional (Ariesmansyah et al., 2021, p.14061). In this process, accountability functions as an inquiry mechanism that enables the evaluation of activities performed or not performed by institutions in the course of achieving their defined strategic objectives within corporate governance and operational processes (Çınar, 2015, p.13).

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The delivery of public services through web-based platforms has expanded the scope of online accountability practices by enabling the direct and timely sharing of information, thereby necessitating adherence to the principle of transparency (Sary Kezia et al., 2021, p.65). In local governments, online accountability is shaped by the quantitative and qualitative dimensions of financial disclosures and performance reports; local governments that demonstrate their institutional characteristics through online transparency associate these two elements with accountability in terms of performance and financial reporting quality (Nair et al., 2022, s.17). The transparent sharing of information regarding local government activities reflects the qualitative dimension by enhancing the level of interaction with stakeholders and strengthening institutional trust in the administration (Patrucco et al., 2021, p.632).

Online accountability practices are not limited to the online analysis of websites; they are also directly concerned with the content of the disclosed data and how stakeholders access this information (Dumont, 2013, p.8). In direct relation to data content and access strategies, official websites and similar public data portals have been established by local governments to provide access to open data (Lourenço & Serra, 2014, p.38). The functionality of these platforms is closely linked to providing information, setting objectives, reporting outcomes, and evaluating activities in terms of accountability. Through interactive data sharing at the institutional level, they enable stakeholders to actively participate in monitoring and evaluation processes (Sintejudeanu & Farcas, 2017, p.33).

With the increasing capacity of digitalization to align with transparency and accountability policies, online accountability tools have gained institutional-level prevalence in local government practices worldwide (Shahib & Risky, 2017, p.60). This article, the first original study conducted in Türkiye in this field, aims to address the institutional gap in the literature. It examines the online accountability levels of metropolitan municipalities in Türkiye and analyzes their practices using a qualitative descriptive method. During the research process, data will be manually collected from the official websites of metropolitan municipalities through qualitative thematic coding. The study investigates the concepts of accountability and online accountability based on the literature on local governments. In the conclusion section, strategies focused on institutional governance are proposed based on the findings regarding the online accountability levels of metropolitan municipalities.

2. Accountability and Online Accountability: Theoretical Foundations and Conceptual Framework

Accountability is the concept whereby an individual explains the reasons for their actions or inactions and assumes responsibility for the consequences of those actions (Roberts, 2002, p.658). In the management literature, accountability requires that institutional actors at the normative level be traceable to external stakeholders regarding the outcomes of their decisions and actions (Mulgan, 2000, p.575). From a governance perspective, accountability refers to a multi-actor network of oversight and responsibility, transitioning from traditional hierarchical chains of command and control to a structure based on collaboration and negotiation, as required by governance paradigms (Aytar, 2022, p.9). In terms of digitalization, accountability necessitates a more comprehensive understanding of governance, including the ethical responsibility of technological systems that design and operate digital infrastructures. In this context, administrative processes become more transparent and traceable through e-government applications, open data platforms, and digital participation tools with data-driven governance formats (Tejedo-Romero et al., 2022, p.1).

Advancements in information and communication technologies have undertaken innovative functions such as digital infrastructure, data-driven traceability, and algorithmic transparency in addressing these deficiencies and closing the accountability gap in governance mechanisms (Biricikoğlu & Eryılmaz, 2011, p.31). This transformation is not abrupt; it requires institutional alignment and capacity. Moreover, it is crucial for institutions and stakeholders to gradually adapt to this process through digital transformation strategies (Garcia et al., 2015, p.1208). Strengthening transparency and communication through web-based applications promotes the operational functionality of accountability and the

effective implementation of digital performance indicators. Accordingly, a governance model infrastructure has been established through online accountability, based on platform-driven transparency, data-sharing regimes, and digital responsibility (Carvalho et al., 2020, p.44). The concept of online accountability refers to digital tools that support reciprocal information flow by disclosing online information such as budget reports, public procurement decisions, and council resolutions on websites, helping organizations demonstrate and enhance their accountability (Cooley, 2020, p.1426). Saxton & Guo (2011) conceptualize online accountability in two dimensions: disclosure and dialogue. The first dimension, disclosure, consists of two sub-dimensions: financial disclosure and performance disclosure.

Financial disclosure involves the publication of compliance-related documents such as online budgeting materials, reports on the use of financial resources, administrative fees for funds, fund management, and performance information (Lee & Joseph, 2013, p.2218). It refers to an external accountability process supported by quantitative and qualitative indicators, enabling the tracking of an organization's voluntarily disclosed financial data and progress over time via its website (Saxton, 2014, p.132). The disclosure of an institution's financial statements and the evaluation of its financial status through web-based technologies make institutional effectiveness measurable, while the disclosure of performance data determines the institution's efficiency and effectiveness, enhances the credibility of information sharing, and improves stakeholder relations (Khoufi et al., 2018, p.701). Performance disclosure is defined as the presentation of goal- and outcome-oriented information published on an organization's website; organizational performance is typically expressed as the measurement of an event or process at the input, activity, output, or outcome level for a specific objective (Brusca & Montesinos, 2016, p.508). The financial information available on publicly accessible websites allows stakeholders to easily access performance data, evaluate the organization's performance, obtain performance-related information on decisions and solutions, and develop effective communication skills for achieving mission and vision objectives (Lourenço et al., 2013, p.282).

The second dimension of online accountability, dialogue, reveals how organizations explain their actions through reciprocal communication mechanisms involving stakeholder feedback and interactive participation processes (Dubnick, 2005, p.381). The first component of dialogue, stakeholder input, serves as an intermediary mechanism that facilitates information exchange between the organization and its stakeholders. Stakeholder input refers to the organization's consideration of opinions, suggestions, information, or feedback received from stakeholders in its decision-making processes (Lappas et al., 2021, p.90). Buss and colleagues (2006) emphasize that stakeholder feedback plays a significant role in enhancing the credibility and legitimacy of organizations. The second component, interactive participation, is defined as an effective mechanism for transferring information from the institution to stakeholders through processes designed for specific stakeholder groups (Kim & Lee, 2017, p.3). Interactive participation enables the collection of targeted feedback, demands, complaints, and preferences between the administration and stakeholders through the services provided. Furthermore, it supports new opportunities for collaborative knowledge production within a decentralized structure characterized by high participation (Sun & Sunder, 2022, p.2). In this context, the execution of institutional activities via digital platforms has increased stakeholder access to information through participation mechanisms responsive to stakeholder preferences, thereby making web-based accountability feasible at the local level (Robbins et al., 2008, p.569).

2.1. The Impact of Online Accountability Practices on Metropolitan Municipalities within Local Government Units

The delivery of public services through web-based platforms has expanded the scope of online accountability practices by enabling the direct and timely sharing of information (Kluvers, 2003, p.58). Web platforms have facilitated the integration of paper-based procedures into digital systems within local governments, allowing for faster operations, reduced errors, more efficient resource utilization,

and more accurate processing (Kloot, 1999, p.566). Consequently, they have increased the availability of large volumes of information in digital environments, simplified the presentation of data through effective compilation, and emphasized the importance of encouraging stakeholders' active participation in online settings (Özata & Sevinç, 2010, p.73).

With the widespread use of information and communication technologies in service delivery by metropolitan municipalities, which are local government units, web-based accountability has become one of the tools for active participation, enabling the provision of fast and effective services to users through digital platforms such as email, online databases, and blogs (Ilgın & Ulupınar, 2020, p.111). This has increased trust among stakeholders by presenting information in various content formats such as videos, data downloads, and presentations, allowing stakeholders to access public services rapidly (Gajewski & Li Li, 2015, p.116). Digital platforms such as Facebook, Instagram, and WhatsApp also facilitate interactive participation and support the process of expressing community concerns. This plays a significant role in enabling effective communication with administrators and ensuring the efficient delivery of online accountability and services (Ahmad, 2020, p.303).

Digital technologies offer capabilities such as traceability of decision-making processes and administrative activities, providing stakeholders with the opportunity to evaluate the effectiveness and efficiency of metropolitan municipalities (Putri et al., 2021, p.463). In this context, they serve as a tool for accessing the annual activity reports of metropolitan municipalities based on performance disclosures (Ammons & Rivenbark, 2008, p.304). Accessing financial information through digital platforms and especially publishing financial and fiscal reports in digital environments plays a role in strengthening accountability and enhancing transparency (Bakar & Saleh, 2016, p.159). The information and services provided by metropolitan municipalities through web platforms vary according to the maturity level of their technological infrastructure. This situation has led to the development of digital governance approaches regarding stakeholders' access to information (Şat, 2016, p.188).

2.2. Online Accountability Practices of Metropolitan Municipalities: The Case of Türkiye

When examining studies on the two fundamental dimensions of online accountability—disclosure and dialogue—in Türkiye, no research specifically focused on metropolitan municipalities is found, indicating a gap in the literature. However, various legal regulations that have led to the implementation of web-based accountability practices have been institutionalized. In this regard, Law No. 5018 mandates public administrations to publish budget information in order to ensure transparency in financial management and provide access to information within the scope of authority and responsibility in audit and expenditure processes (Yaman & Gökalp, 2017, p.9). Under Law No. 5302 on Provincial Special Administration, local governments are obliged to transparently disclose their financial resources to improve efficiency, quality, and effectiveness in public services through activity reporting and strategic planning related to their performance (Kara & Karakılçık, 2016, p.729). Another regulation concerning performance presentation, within the framework of relevant provisions of Law No. 6085 on the Court of Accounts and Law No. 5393 on Municipalities, aims to enhance the accountability of metropolitan municipalities by evaluating local government activities according to specific performance indicators and presenting these data to the public based on targets and indicators (Sezer & Büyükpınar, 2021, p.97). Between 2003 and 2007, the Ministry of Interior established the Municipal Performance Monitoring System, through which data were collected from municipalities and analyzed via the YEREL BİLGİ system (Eroğlu, 2019, p.548). To increase stakeholder participation, in line with the transparency principle of Law No. 5393, documents related to municipal decision-making processes (council and commission decisions) have been made publicly accessible. Furthermore, within the framework of digital transformation in public administration, the e-Government Gateway was established in 2008 pursuant to Law No. 4982, Law No. 5216, Law No. 5070 on Electronic Signatures, and the 2006 Prime Ministry Circular, aiming to expand digital access to public services (Gençkaya & Gündoğdu, 2021, p.708). These regulations have been supported by reforms aimed at increasing stakeholder participation,

creating a platform for online accountability, and promoting the sharing of policy information through quality feedback (Kim & Lee, 2017, p.2).

3. Methodology

This section presents the research design, data collection and analysis methods, and the scope of the study in detail. The transparency and replicability of the research process are prioritized.

3.1. Purpose and Scope of the Study

The population of this study consists of metropolitan municipalities in Türkiye. The research aims to evaluate the impact of online accountability on metropolitan municipalities. Within this population, the official websites of metropolitan municipalities are examined over a limited period, and the effectiveness of their practices in terms of online accountability is analyzed.

3.2. Research Method

This study was conducted to assess the level of online accountability in metropolitan municipalities in Türkiye. Using a qualitative descriptive research method, the official websites of 30 metropolitan municipalities in Türkiye were examined in detail between 06.09.2022 and 30.11.2022, and data obtained from updates made between 07.01.2025 and 20.02.2025 were also included in the analysis.

3.3. Data Collection and Analysis Process

The analysis of web-based accountability focuses on two main dimensions: disclosure and dialogue. The disclosure dimension is evaluated under two subcategories: financial disclosures and performance disclosures; the dialogue dimension is assessed through stakeholder input and interactive participation. These dimensions were evaluated based on 22 criteria identified through a literature review.

The data analysis, based on Braun and Clarke's (2006) thematic analysis process, initially focuses on whether detailed disclosure criteria are present on the websites of metropolitan municipalities, their accessibility, and the informational effectiveness of this access. The study analyzes public information access on the websites of 30 metropolitan municipalities and evaluates the prevalence of web-based accountability distribution practices.

3.4. Literature Review

To examine the websites of metropolitan municipalities, criteria were established based on scientific studies on the concept of online accountability in national and international literature. A web scan was conducted using key concepts such as "online accountability," "financial disclosure," "performance disclosure," "interactive participation," and "online accountability in local governments," and a corresponding evaluation table was prepared based on the findings. As of 2025, there are 30 metropolitan municipalities in Türkiye, and their levels of web-based accountability have been assessed under four subcategories: performance disclosure, financial disclosure, stakeholder input, and interactive participation. These criteria were systematically determined using sources from the academic literature and are presented below.

Performance Disclosure (Dissemination): The criteria used in the study are based on the following academic sources: Capa Perez, C. M., Rodriguez Boliver, M. P., & Lopez Hernandez, M. A. (2014), "The Determinants of Government Financial Reports Online"; Carvalho, A., Ferrira, R. M., & Lima (2020), "Web Disclosure of Institutional Information in Nonprofit Organizations: An Approach in Portuguese Charities"; Gençkaya, Ö. F., Gündoğdu, H. G., & Aytekin, A. (2021), "Evaluation of Metropolitan Municipalities' Websites in Terms of Governance Principles."

Financial Disclosure (Dissemination): The criteria used in the study are based on the following academic sources: Gençkaya, Ö. F., Gündoğdu, H. G., & Aytekin, A. (2021), "Evaluation of

Metropolitan Municipalities' Websites in Terms of Governance Principles"; Carvalho, A., Ferrira, R. M., & Lima (2020), "Web Disclosure of Institutional Information in Nonprofit Organizations: An Approach in Portuguese Charities"; Caba Perez, C. M., Rodriguez Bolivar, M. P., & Lopez Hernandez, M. A. (2014), "The Determinants of Government Financial Reports Online"; García Tabuyo, M., Sáez-Martín, A., & Caba-Pérez, M. D. (2016), "Mandatory versus Voluntary Disclosures: Drivers of Proactive Information Provision by Local Governments in Central America." Based on these sources, 5 criteria were identified.

Stakeholder Input: The criteria used in the study are based on the following academic source:

Carvalho, A., Ferrira, R. M., & Lima (2020), "Web Disclosure of Institutional Information in Nonprofit Organizations: An Approach in Portuguese Charities." A total of 8 criteria were obtained.

Interactive Participation: The criteria used in the study are based on the following academic source: Midin, M., Joseph, C., & Mohamed, N. (2017), "Promoting Societal Governance: Stakeholders' Engagement Disclosure on Malaysian Local Authorities' Websites." A total of 5 criteria were obtained. The 22 distinct criteria were classified under the two main dimensions of web-based accountability "disclosure" and "dialogue"—and are presented in the table below.

Table 3.1. ***Dimensions of Online Accountability and Evaluation Criteria***

Disclosure Sub-Dimensions	**Criteria**
Performance Disclosure	a: Are there any details regarding annual activity reports? (Carvalho et al., 2020, p.49)
	b: Are budget reports, preliminary reports, and year-end reports published?
	c: Are the short- and long-term activity reports available on the website? (Is there a reference to the strategic plan?) (Caba Perez et al., 2014, pp.7–8)
	d: Does the metropolitan municipality's website provide information on council days/decisions/minutes? (Gençkaya & Gündoğdu, 2021, p.713)
Financial Disclosure	a: Is the budget available on the website? (Garcia & Garcia, 2010, p.683)
	b: Are public procurement and purchasing transactions announced?
	c: Are there financial reports showing the revenues and expenditures of the implemented strategic plan and performance reports? (Caba Perez et al., 2014, p.8)
	d: Are disclosed financial data on budget expenditures presented with charts, graphs, or tables? (Gençkaya & Gündoğdu, 2021, p.713)
	e: Is there information on projects carried out by the metropolitan municipality? (Carvalho et al., 2020, p.49)
Dialogue Sub-Dimensions	**Criteria**
Stakeholder Input	a: Is there information on activities/services/programs carried out for stakeholders?
	b: Is the organization's mission clearly defined?

Disclosure Sub-Dimensions	Criteria
	c: Is the organization's vision clearly defined?
	d: Is a calendar of planned events for stakeholders published on the website?
	e: Are periodic reports and current newsletters on activities published? f: Are photographs published along with the activities conducted?
	g: Are videos published along with the activities conducted?
	h: Are online discussion panels/open forums for suggestions or comments available? (Are there applications allowing stakeholders to discuss specific municipal activities online and published discussion summaries?) (Carvalho et al., 2020, p.48)
Interactive Participation	a: Is media access open for stakeholder participation? (Are social media platforms used by the metropolitan municipality — such as Instagram, Twitter, YouTube, LinkedIn, Wikipedia, etc. — included on the website?)
	b: Is there a section where stakeholders can express their main concerns and issues?
	c: Are downloadable items available on the website? (Audio, videos, Excel, PDF, links, drop-down menus)
	d: Can services, transactions, or interactions be conducted entirely online? (Including credit card payments, request/complaint submissions, searchable databases, cookie use, digital signatures)
	e: Are there feedback opportunities for stakeholders? (Are there feedback tracking forms for issues such as requests, suggestions, or complaints?) (Midin et al., 2017, p.1676)

Table Note: "Table 3.1. Dimensions of Online Accountability and Evaluation Criteria" was originally created by the author.

4. Findings and Evaluation Based on Criteria

Based on the 22 criteria defined in Table 3.1, the official websites of 30 metropolitan municipalities were examined and their levels of online accountability were evaluated. The resulting data are presented in the table below.

Table 4.2. ***Online Accountability Levels of Metropolitan Municipalities***

Disclosure Dimension										**Dialogue Dimension**												
Metropolitan Municipalities	**Performance Disclosure**				**Financial Disclosure**					**Stakeholder Input**								**Interactive Participation**				
	a	**b**	**c**	**d**	**a**	**b**	**c**	**d**	**e**	**a**	**b**	**c**	**d**	**e**	**f**	**g**	**h**	**a**	**b**	**c**	**d**	**e**
Adana	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Ankara	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓
Antalya	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓
Aydın	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Balıkesir	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓
Denizli	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓
Diyarbakır	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓
Erzurum	✓	-	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓
Eskişehir	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓
Gaziantep	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓
Hatay	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	-	✓	-	-	-	✓	✓	✓	✓	✓
İstanbul	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
İzmir	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓
K.Maraş	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓
Kayseri	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Kocaeli	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Konya	-	-	-	✓	-	✓	-	-	✓	✓	-	-	✓	✓	✓	✓	-	✓	✓	✓	✓	✓
Malatya	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓
Manisa	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓
Mardin	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	-	-	-	✓	✓	-	-	✓	✓	✓	✓	✓
Mersin	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓
Muğla	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓
Ordu	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	✓	✓	✓	-	-	✓	✓	✓	✓	✓
Sakarya	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	-	-	✓	✓	✓	✓	✓
Samsun	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-	✓	✓	✓	-	✓	✓	✓	✓	✓
Şanlıurfa	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓
Tekirdağ	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓
Trabzon	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓
Van	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-	✓	-	-	-	✓	✓	✓	✓	✓

Table Note: "Table 4.2. Online Accountability Levels of Metropolitan Municipalities" was originally constructed by the author.

Performance Statement has been evaluated in accordance with the specified criteria;

Criterion a – Pursuant to Law No. 5018, in order to implement the principle of transparency, metropolitan municipalities are required to publish their annual activity reports on their official websites. In this context, the fact that 29 metropolitan municipalities include their annual activity reports on their websites indicates a high publication rate, whereas Konya Metropolitan Municipality does not implement such a practice. Kocaeli, Mersin, and Samsun Metropolitan Municipalities serve as examples for other municipalities in terms of ease of access to their official websites and the strengthening of the transparency approach.

Criterion b – Law No. 5018 on Public Financial Management and Control requires municipalities to publish their preliminary budget reports and year-end reports on their websites to ensure budgetary transparency. While 27 metropolitan municipalities include this information on their websites, Erzurum, Konya, and Malatya Metropolitan Municipalities do not provide such data online. In particular, Balıkesir, Kocaeli, Mersin, Samsun, and Trabzon Metropolitan Municipalities present clear and comprehensible financial tables, charts, and graphics on their websites to facilitate stakeholders' access to budgetary data.

Criterion c – In accordance with Law No. 6085 on the Court of Accounts and Law No. 5018 on Public Financial Management and Control, local administrations are expected to present their long- and short-term plans to the public transparently, in line with the principle of accountability. While 29 metropolitan municipalities publish long- and short-term activity reports on their websites, Konya Metropolitan Municipality does not provide any information in this regard.

Criterion d – Although Law No. 5393 on Municipalities does not impose a direct obligation for the publication of municipal council meetings, decisions, and minutes online, sharing such information with the public is considered a good governance practice in accordance with the principles of accountability and transparency. Within this scope, 28 metropolitan municipalities publish council agendas, decisions, and minutes on their websites, whereas Manisa Metropolitan Municipality does not share this information. For instance, Ankara Metropolitan Municipality presents council decisions online with video support, while Antalya, Hatay, and Samsun Metropolitan Municipalities provide direct access and open data from previous years to public access.

The Financial Statement has been evaluated in accordance with the specified criteria;

Criterion a – Within the scope of Law No. 5018 on Public Financial Management and Control, public administrations are expected to prepare their budgets and present them to the public. While 29 metropolitan municipalities publish budget information for past and current years on their websites, Konya Metropolitan Municipality does not share such data. For instance, Bursa, İzmir, Mersin, Sakarya, and Samsun Metropolitan Municipalities directly publish budget information on their homepages, supported by tables and documents.

Criterion b – According to the criteria concerning public procurement and purchasing procedures, announcements must be made through specific channels such as the Official Gazette and electronic platforms. Accordingly, 28 metropolitan municipalities announce public tenders via their websites, whereas Erzurum and Konya Metropolitan Municipalities do not provide any information on public tenders on their websites. The live broadcast service of the tender room on the website of Kocaeli Metropolitan Municipality serves as an exemplary practice, and the publication of administrative

procedures related to the presentation, evaluation, and finalization of tenders on the website ensures that tender processes are conducted transparently and enhances accountability.

Criterion c – Article 39 of Law No. 5302 stipulates the publication of strategic plans and performance reports. While 29 metropolitan municipalities publish their strategic plans along with performance and financial reports on their websites, Konya Metropolitan Municipality does not include such information. Accordingly, Muğla and Trabzon Metropolitan Municipalities provide easy access to strategic plans and performance reports from their homepages and present these reports in a clear and visual format supported by financial data.

Criterion d – Pursuant to Law No. 5018 on Public Financial Management and Control (PFMC), public administrations are obliged to report financial expenditures transparently. Within this scope, 29 metropolitan municipalities publish budget expenditures in graphical and tabular formats, whereas Konya Metropolitan Municipality does not provide such data. The financial information regarding budget expenditures published by Ankara and Trabzon Metropolitan Municipalities in graphical and tabular formats ensures ease of access and clarity.

Criterion e – The publication of information regarding completed or planned projects on the websites of metropolitan municipalities is of great importance in terms of accountability. While 23 metropolitan municipalities provide detailed information about projects on their websites, such information is not available on the websites of Adana, Antalya, Hatay, Kahramanmaraş, Mardin, Sakarya, and Trabzon Metropolitan Municipalities. In contrast, Malatya, Antalya, and Ankara Metropolitan Municipalities have presented spatial data on their websites by supporting land use related to project planning processes with visuals and videos.

Stakeholder Input has been evaluated in accordance with the specified criteria:

Criterion a – According to Law No. 5216 on Metropolitan Municipalities, metropolitan municipalities are obliged to ensure the transparent delivery of public services. Within this scope, all metropolitan municipalities provide information on their websites regarding the events, activities, and programs conducted for stakeholders, in accordance with the relevant criteria. For example, Samsun, Kocaeli, and Konya Metropolitan Municipalities have directly published their activities and programs on their homepages, facilitated access through explanatory content and visuals, and informed stakeholders via announcements.

Criterion b – While 24 metropolitan municipalities include information on their websites explaining the institution's mission, 6 metropolitan municipalities do not publish such information. Publishing the institution's mission, recent activity reports, or future plans and projects on municipal websites is of great importance in terms of accountability.

Criterion c – Information explaining the institution's vision is available on the websites of 25 metropolitan municipalities, whereas 5 metropolitan municipalities do not provide such information. Websites offer insights into how metropolitan municipalities will realize their strategic goals and priority plans, thereby enabling stakeholders to gain a transparent perspective on the municipality's future orientations.

Criterion d – While 26 metropolitan municipalities publish planned event calendars on their websites, Hatay, Mardin, Samsun, and Van Metropolitan Municipalities do not share this information. For instance, Malatya Metropolitan Municipality presents its event calendar on the homepage, supported by visuals.

Criterion e – News bulletins and announcements published on the websites of 30 metropolitan municipalities generally serve a one-way informational purpose, offering content focused on information dissemination. This situation has a decisive impact on the capacity of bulletins to provide

meaningful and accurate information to stakeholders and on strengthening accountability regarding the actions and decisions of municipal administrations.

Criterion f – 28 metropolitan municipalities publish photographs related to organized events and activities on their websites, whereas Hatay and Van Metropolitan Municipalities do not share such content. By sharing photographs of events via their websites, metropolitan municipalities provide more information in a format that stakeholders can easily access.

Criterion g – While 25 metropolitan municipalities publish videos related to their events and activities on their websites, 5 metropolitan municipalities do not include such videos. Establishing audio-visual communication with stakeholders through municipal websites and effectively utilizing multimedia elements is important for accountability.

Criterion h – Online discussion panels of varying levels are available on the websites of Adana, Aydın, İstanbul, Kayseri, and Kocaeli Metropolitan Municipalities, whereas the remaining 25 metropolitan municipalities do not have such panels on their websites. Online discussion panels are important platforms that offer open communication channels for addressing stakeholder concerns and enabling responses through data. These platforms facilitate direct interaction with stakeholders, thereby enhancing participation and traceability.

Interactive Participation has been evaluated in accordance with the specified criteria:

Criterion a – All metropolitan municipalities have social media platforms (Facebook, YouTube, Twitter, Instagram) accessible via their official websites. These media applications enable municipalities to establish communication with stakeholders within an organizational context. Platforms such as Facebook, Twitter, and YouTube facilitate the sharing of videos, visuals, and texts, thereby supporting collaborative processes among stakeholders.

Criterion b – Pursuant to Law No. 5393, all metropolitan municipalities provide stakeholders with the opportunity to submit requests and complaints through dedicated platforms available on each municipality's website. In addition to practices that promote interaction between Central Government and Local Administrations, the Presidential Communication Center (CİMER) application also supports effective stakeholder participation in various services offered by metropolitan municipalities at the local level.

Criterion c – On the websites of 30 metropolitan municipalities, shared data is presented to stakeholders in various formats, particularly in downloadable formats such as PDF, ensuring re-accessibility when needed. These downloadable contents function as effective tools for municipalities to fulfill their responsibilities toward the public, facilitating the monitoring and evaluation of public services.

Criterion d – With the Additional Article 3 of Law No. 5393, municipalities have begun to conduct administrative procedures related to their assigned duties and services via their websites. With the establishment of official websites of metropolitan municipalities, paper-based procedures have started to be transferred to digital platforms. Many public services such as health, tax, electricity, water, and natural gas payments can now be carried out electronically through the "online transactions" section of municipal websites.

Criterion e – Law No. 4982 on the Right to Information defines the obligation of public institutions to provide information to stakeholders. Within this scope, 30 metropolitan municipalities allow stakeholders to submit information requests and provide feedback on municipal activities via their websites. Metropolitan municipalities can collect requests and suggestions through feedback forms on their websites before, during, and after their activities, and reshape the services they offer based on this feedback.

This evaluation conducted through the websites of metropolitan municipalities in Türkiye reveals that the legal regulations and reforms supporting the implementation of online accountability have established a robust legal infrastructure that enables municipalities to fulfill their administrative procedures and public service responsibilities. While metropolitan municipalities demonstrate a high level of compliance in terms of information accessibility, it is observed that online discussion panels and feedback mechanisms promoting participatory governance are implemented in a more limited manner. This indicates that despite strong legal compliance, full realization of online accountability has not yet been achieved, and certain deficiencies persist in enabling stronger stakeholder interaction through digital platforms.

5. Conclusion and Recommendations

In Türkiye, there is currently no comprehensive study focusing specifically on the dimensions of "disclosure and dialogue" within the framework of online accountability practices implemented through the websites of metropolitan municipalities. In this study, the criteria defined in relation to disclosure and dialogue sub-dimensions, along with financial information, performance reports, and stakeholder participation, have been evaluated through data analysis based on the websites of metropolitan municipalities. Moreover, although there is no legal regulation that directly refers to online accountability practices, these practices have been addressed within the framework of various reforms and regulations that lay the foundations and prepare the ground for their development. In this context, the e-Government Gateway has constituted a significant turning point in the digital delivery of public services, thereby facilitating stakeholders' access to public services. The financial information and performance reports provided by municipalities via their websites emerge as critical elements that directly affect the principles of transparency, participation, and accountability. Through data analysis, municipalities can more accurately identify stakeholder needs and enhance participation, while relevant legal regulations that enable access to publicly available financial data can make significant contributions to strengthening trust between municipalities and stakeholders.

Metropolitan municipalities in Türkiye, in line with the legal regulations enacted within the reform process aimed at implementing online accountability, provide stakeholders with direct access by publishing annual activity reports, budgets, plans, council decisions, projects, visuals related to activities, request-complaint sections, and feedback forms on their official websites. This digital transformation has not only improved service quality but also enabled the state to be "one click away" from stakeholders and to provide services 24/7. The traceability of every stage of services offered through the websites of metropolitan municipalities ensures that these services are accessible and widely utilized. The effective use of metropolitan municipalities' websites constitutes a significant component of online accountability.

As a result of the evaluations, it is emphasized that all metropolitan municipalities' websites should have a more consistent design and that their content should be structured in accordance with e-Government standards. Ensuring that online services are easily accessible from the homepage will enable stakeholders to quickly reach the information they need and promote interaction. Furthermore, online discussion panels are recommended as an important tool for stakeholders to share their opinions and for municipalities to enhance accountability. Feedback forms allow municipalities to quickly identify and resolve service deficiencies. Email notification systems and free subscription options offered via websites also present effective methods to increase participation and ensure stakeholder involvement in processes. In conclusion, web-based accountability transcends the traditional understanding of accountability by enabling stakeholders to interact more effectively with municipalities and to hold them accountable. This process, driven by technological advancement, not only enhances the transparency and accountability of municipalities but also promotes stakeholder participation at a broader level.

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INFLUENCE OF SOCIAL MEDIA MARKETING ON CONSUMER DECISION-MAKING

Dr. Sandeep Kumar
Professor in Management
Tecnia Institute of Advanced Studies , Delhi
E-mail: sandeeprk1969@gmail.com
ORCID ID: 0000-0002-5320-2285

Dr. Sweta Bakshi
Associate Professor in Management
Institute of Technology and Science , Mohan Nagar , Ghaziabad
E-mail: hereissweta123#gmail.com
ORCID ID : 0009-0009-4250-2221

Abstract

This paper examines how social media marketing (SMM) influences consumer decision-making through an extensive review and synthesis of secondary data from 1991–2025, including peer-reviewed studies, industry reports, and global consumer behavior surveys. The analysis reveals that social media marketing significantly affects all stages of the consumer decision-making process—need recognition, information search, evaluation, purchase, and post-purchase behavior. Using secondary data from prior research, this study identifies key mediators such as influencer credibility, user-generated content (UGC), perceived trust, and platform interactivity. Findings demonstrate that social proof, engagement metrics, and algorithm-driven personalization enhance consumer trust and purchase intention. The paper concludes with managerial and policy implications for ethical and effective social media marketing strategies in the digital economy.

Keywords: Social Media Marketing, Consumer Behavior, Decision-Making, Secondary Data, Influencer Marketing, Digital Marketing, Social Commerce.

INTRODUCTION

Social media has revolutionized how consumers interact with brands, gather information, and make purchase decisions. The growth of platforms such as Facebook, Instagram, YouTube, and TikTok has allowed brands to engage customers directly through personalized, interactive, and community-driven marketing.

Between 2015 and 2025, global social media users increased from 2.3 billion to over 5.2 billion, fundamentally transforming digital consumption habits (Statista, 2025). Brands increasingly leverage social media for content marketing, influencer collaborations, and real-time engagement.

This study investigates how social media marketing activities—based on secondary data—affect consumer decision-making patterns, emphasizing the psychological and behavioral mechanisms that convert engagement into purchase intention.

Objectives

- To analyze the influence of social media marketing on consumer decision-making using secondary data sources.
- To identify the key mediators (trust, credibility, engagement) that shape consumer purchase intention.

- To synthesize global findings (1991–2025) and identify emerging trends for marketers and researchers.

MATERIALS AND METHODS

Literature Review (1991–2025)

Theoretical Foundations (1991–2010)

Foundational communication theories such as Katz & Lazarsfeld's *Two-Step Flow Theory* (1955) and Ajzen's *Theory of Planned Behavior* (1991) explain how interpersonal influence and perceived behavioral control affect consumer decisions. These models form the conceptual base for understanding modern influencer and peer-to-peer marketing.

Early Digital Marketing and eWOM (2010–2015)

The early 2010s saw a shift toward *electronic word-of-mouth (eWOM)* as social networks matured. Studies found that peer reviews and recommendations increased consumer trust more than traditional advertising (Cheung & Thadani, 2012). Online communities became vital information sources influencing the "evaluation of alternatives" stage.

Rise of Influencers and Engagement-Based Marketing (2016–2020)

Influencer marketing emerged as a dominant trend. Secondary data from Statista (2020) shows that 63% of consumers trust influencer messages more than brand advertising. Research by Ki et al. (2019) demonstrated that perceived authenticity, trustworthiness, and attractiveness of influencers directly affect purchase intention.

Similarly, media analytics from GlobalWebIndex (2019) indicated that 42% of consumers use social media to research products before purchase, linking social media exposure with information search behavior.

Social Commerce and Algorithmic Personalization (2021–2025)

Recent secondary data (2021–2025) highlights social commerce and live streaming as transformative forces. TikTok Shop and Instagram Checkout have integrated direct purchasing into social feeds, reducing decision friction.

- A *2025 Times Business Report* revealed that **one in three Gen Z consumers** makes purchases directly through social platforms.
- A *Frontiers in Communication (2025)* study found that AI-driven ad personalization increases perceived usefulness and conversion by 27%.
- Fletcher (2022) emphasized that live streaming triggers impulse purchases by combining entertainment, social proof, and scarcity cues.

Mediating Factors

Synthesizing secondary data reveals the following recurring mediators:

- **Perceived Credibility:** Influencer trustworthiness and expertise enhance brand attitude.
- **Social Proof:** Likes, shares, and reviews create a bandwagon effect (Cialdini, 2021).
- **Perceived Usefulness:** Information clarity and relevance drive purchase intention.

- **Engagement:** Interactive features (polls, comments, co-creation) increase emotional connection and loyalty.

Identified Research Gap

While numerous studies confirm the positive influence of SMM on purchase behavior, few synthesize the mechanisms across multiple data sources. This secondary data study consolidates insights across global reports, academic findings, and consumer analytics, bridging empirical fragmentation.

Research Methodology

Research Design

The study adopts a descriptive and analytical secondary research design. It relies exclusively on secondary data sources, including:

- Peer-reviewed journals (1991–2025): Scopus, Elsevier, and Google Scholar databases.
- Market and industry reports: Statista (2020–2025), GlobalWebIndex (2019–2024), McKinsey (2023).
- Academic databases: ProQuest and ResearchGate.
- Secondary consumer datasets: Social commerce adoption reports and influencer marketing benchmarks.

Data Collection Procedure

Data were collected through systematic literature review techniques:

1. Search keywords: “social media marketing,” “consumer behavior,” “purchase intention,” “influencer marketing,” “social commerce,” and “digital decision-making.”
2. Inclusion criteria: peer-reviewed and credible reports between 1991–2025.
3. 78 empirical studies and 12 global reports were reviewed; 42 were included after quality assessment.

Data Analysis

Data were analyzed through content synthesis and trend analysis, comparing key findings across studies. Thematic categorization identified major influencers:

- Information Source Credibility
- Social Proof Mechanisms
- Emotional and Cognitive Engagement
- Platform Commerce Integration

Meta-trends were then summarized to draw generalized conclusions.

DISCUSSION AND CONCLUSION

The synthesis of secondary data collected from global academic and industry sources between 1991 and 2025 provides a comprehensive understanding of how social media marketing (SMM) shapes consumer decision-making. The findings reveal that social media has become more than a communication platform—it now functions as a behavioral ecosystem that influences consumers cognitively, emotionally, and socially. The discussion elaborates on these dynamics across each decision-making stage, integrating cross-sectional evidence from secondary data.

Influence Across the Consumer Decision-Making Stages

Social media marketing impacts all five stages of the consumer decision-making process: need recognition, information search, evaluation of alternatives, purchase decision, and post-purchase behavior. Each stage is influenced by distinct psychological and social mechanisms derived from the nature of digital interaction.

At the need recognition stage, exposure to visually engaging and emotionally charged content acts as a stimulus for need creation. Brands strategically employ storytelling, influencer aesthetics, and lifestyle associations to trigger latent needs that may not have existed previously. Visual content on Instagram, TikTok, and YouTube fosters aspirational appeal—an individual's desire to align with idealized lifestyles portrayed by influencers. Studies such as Fletcher (2022) and Ying (2025) confirm that algorithmic targeting enhances the precision of need-based marketing, showing users products aligned with their interests and demographics. Consequently, SMM transforms passive audiences into active consumers by framing consumption as a means of identity expression and social belonging.

In the information search phase, social media replaces traditional search engines as the primary information hub. Consumers increasingly turn to influencer reviews, user-generated content (UGC), and peer testimonials for validation. According to Macías Urrego (2024), peer-generated information carries higher perceived credibility than corporate advertising, because it is embedded in social context and perceived as authentic. Platforms such as YouTube and Reddit provide experiential information through product unboxings and tutorials, which allow potential buyers to evaluate quality before purchase. Data from GlobalWebIndex (2019) supports this behavioral shift, noting that 42% of global consumers now conduct product research through social media. In developing markets, this reliance is even more pronounced, as consumers use social platforms to compensate for the lack of transparent offline information channels.

During the evaluation of alternatives, consumers compare multiple options using cues derived from social proof—likes, shares, ratings, and comment sentiments. Social validation serves as a decision shortcut, minimizing cognitive effort in evaluating competing products. Theories of social influence (Cialdini, 2021) help explain this behavior: individuals often interpret popularity as a proxy for quality or trustworthiness. Alghzawi et al. (2024) found that exposure to positive social proof significantly increases purchase intention, while conflicting or negative comments can deter buyers, even if the overall brand reputation is high. Hence, brand image and online reputation management have become integral to SMM effectiveness.

The purchase decision stage is where social media's commercial integration has had the most direct effect. Features like TikTok Shop, Instagram Checkout, and Facebook Marketplace collapse the traditional marketing funnel into a frictionless transaction path. Consumers can transition seamlessly from discovery to purchase without leaving the app, significantly shortening decision cycles. The Times Business Report (2025) revealed that one in three Generation Z consumers globally, and an increasing share in emerging markets, now purchase directly through social media platforms. Fletcher (2022) demonstrated that live-streaming commerce—characterized by interactivity, time-bound offers, and real-time influencer engagement—can increase impulse purchases by up to 25%. These findings emphasize that social media not only guides purchase intention but directly converts it into action by combining convenience, trust, and entertainment.

The post-purchase evaluation stage has become more visible and socially amplified. Consumers frequently share reviews, ratings, and experiences online, transforming personal satisfaction into public discourse. This participatory culture allows brands to benefit from organic advocacy but also exposes them to reputational risks. According to McKinsey's (2024) Digital Trust Report, positive post-purchase engagement can enhance customer retention and generate unpaid brand exposure at rates nearly 2.5 times higher than traditional paid campaigns. However, negative reviews or controversies can spread virally, requiring brands to adopt proactive reputation management and responsive engagement strategies. Thus, SMM extends its influence beyond conversion, shaping post-purchase perceptions and long-term loyalty.

Influence across Decision-Making Stages

Decision Stage	Social Media Influence (Based on Secondary Data)
Need Recognition	Social media exposure creates awareness through visual storytelling and influencer inspiration.
Information Search	Consumers rely on peer reviews and UGC for validation. YouTube and Instagram act as modern "search engines" for product exploration.
Evaluation of Alternatives	Social proof (likes, comments) shapes brand credibility and preference formation.
Purchase Decision	Integrated checkout features (TikTok Shop, Instagram Shopping) reduce cognitive delay and increase impulse buying.
Post-Purchase Evaluation	Reviews and sharing behavior reinforce brand reputation and loyalty.

Key Findings from Secondary Data

- Influencer marketing increases purchase intention by 40–60% depending on credibility (Alghzawi et al., 2024).
- Live stream commerce contributes to a 25% increase in impulse buying (Fletcher, 2022).
- Consumers exposed to user-generated content are twice as likely to trust product claims (Macías Urrego, 2024).
- AI-driven personalization in ads increases conversion rates by 20–35% (Kothari, 2025).
- Ethical transparency and data privacy strongly moderate the positive effects of SMM, as shown in McKinsey's Digital Trust Report (2024).

Implications

- **For Marketers:** Focus on authentic storytelling, micro-influencers, and value-based engagement.
- **For Policymakers:** Regulate disclosure and transparency in influencer endorsements.
- **For Researchers:** Further longitudinal studies should quantify causality between exposure duration and behavioral outcomes.

Mediating Factors and Mechanisms of Influence

Secondary data reveal four primary mediators explaining how SMM translates into decision outcomes: influencer credibility, perceived trust, engagement, and perceived usefulness.

Influencer credibility remains the most powerful determinant of consumer trust and purchase intention. Ki et al. (2019) demonstrated that influencer expertise, attractiveness, and authenticity collectively enhance message persuasiveness. Consumers often perceive influencers as relatable peers rather than marketers, making their recommendations more believable. Alghzawi et al. (2024) further quantified this relationship, showing that credible influencers can raise purchase intention by 40–60%. However, McKinsey (2024) cautions that undisclosed sponsorships can erode credibility, emphasizing the need for transparency.

Perceived trust functions as the emotional foundation of digital decision-making. Trust develops through consistent content quality, honest product representation, and reciprocal brand-consumer interaction. Brands that respond promptly to customer feedback or showcase user testimonials strengthen perceived reliability. Conversely, algorithmic overexposure or irrelevant targeting can diminish trust by creating perceptions of manipulation.

Engagement—likes, comments, shares, and co-creation—acts as both a behavioral indicator and a psychological reinforcer. Engagement transforms one-way advertising into dialogue, allowing consumers to feel acknowledged by the brand. The participatory aspect enhances emotional attachment, which in turn increases loyalty and word-of-mouth advocacy. Studies between 2020 and 2025 consistently link engagement metrics with both brand recall and purchase likelihood.

Perceived usefulness stems from the cognitive appraisal of whether social media content adds informational or functional value to consumers' decision-making. Kothari (2025) found that AI-driven personalization raises perceived usefulness by making content more relevant, thereby increasing conversion rates by 20–35%. The more informative and customized the content, the higher the perceived value, leading to stronger purchase intentions.

Moderating Factors: Demographics, Culture, and Technology

The impact of SMM varies across demographic groups, cultures, and technological contexts. Younger consumers, particularly Generation Z, are more responsive to social media marketing due to their digital fluency and preference for peer-based validation. Statista (2025) reports that individuals under 35 account for nearly 70% of social commerce transactions. Gender and socioeconomic background also moderate responses—female users tend to rely more on visual and emotional content, while male users prioritize functional and technical information during evaluation.

Cultural factors further shape SMM influence. In collectivist societies, community validation and group consensus strongly affect purchasing behavior. This aligns with Hofstede's (2010) cultural framework, which explains how collectivist consumers prioritize relational trust over individual autonomy. Hence, social media marketing strategies in such contexts should emphasize community endorsement, peer sharing, and social belonging rather than individual achievement.

Technological literacy also moderates influence. Consumers with higher digital competence navigate multiple platforms, cross-check information, and resist manipulative tactics, whereas digitally less experienced users may rely more heavily on influencers and social proof cues. Thus, SMM's effectiveness is partly contingent upon users' critical evaluation capacity and online experience.

Ethical and Policy Implications

While SMM provides opportunities for engagement, it raises ethical challenges concerning data privacy, algorithmic manipulation, and authenticity. McKinsey's (2024) Digital Trust Report underscores that 78% of consumers worry about how their personal data is used in targeted advertising. Ethical breaches—such as fake followers, undisclosed sponsorships, or deepfake endorsements—can trigger consumer backlash. Policymakers must therefore enforce transparency guidelines and data protection regulations. Platforms like Instagram and YouTube have already begun labeling sponsored content, but enforcement remains inconsistent across regions.

For businesses, ethical marketing is not just compliance—it's a strategic asset. Transparent influencer relationships, privacy-conscious data use, and authentic engagement foster long-term loyalty and reduce reputational risk. As consumers grow more discerning, ethical conduct becomes an integral part of brand equity.

Strategic and Theoretical Implications

The synthesis of findings supports the theoretical view that consumer decision-making in the digital era is cyclical rather than linear. Social media blurs the boundaries between pre- and post-purchase stages, creating a feedback loop in which post-purchase sharing influences the next wave of consumer awareness. This dynamic aligns with the "connected consumer journey" model proposed in recent marketing literature.

Strategically, businesses should adopt integrated SMM frameworks that merge content personalization, influencer collaboration, and social commerce technologies. Micro-influencers—individuals with small but engaged audiences—emerge as cost-effective drivers of authenticity. Additionally, marketers should balance data-driven precision with emotional storytelling to maintain both relevance and trust.

Conclusion

The secondary data analysis (1991–2025) confirms that social media marketing profoundly shapes consumer decision-making across cognitive, affective, and behavioral dimensions. Consumers increasingly depend on digital social cues, influencer credibility, and algorithmic recommendations to make purchase choices.

The integration of commerce within social platforms has blurred the line between marketing and purchase behavior, turning social networks into full-funnel ecosystems. However, data privacy, authenticity, and ethical disclosure remain crucial to maintaining trust. Future studies should use meta-analytic modeling to quantify SMM impact across cultures and product types

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AI-DRIVEN MARKETING ANALYTICS FOR PREDICTING CONSUMER TRENDS

Dr. Sweta Bakshi
Associate Professor in Management
, ITS Mohan Nagar , Ghaziabad
E-mail: hereissweta123#gmail.com
ORCID ID : 0009-0009-4250-2221

Dr. Sandeep Kumar
Professor in Management
Tecnia Institute of Advanced Studies , Delhi
E-mail: sandeeprk1969@gmail.com
ORCID ID: 0000-0002-5320-2285

Abstract

Artificial intelligence (AI) is rapidly reshaping marketing analytics by enabling retailers and brands to predict consumer trends with unprecedented speed and granularity. This paper reviews scholarship and industry reports (1991–2025) to synthesize how machine learning (ML), deep learning, and generative AI models are applied in forecasting consumer demand, segmenting markets, and anticipating behavioral shifts. Using a systematic secondary-data approach, the paper maps algorithm classes, data inputs, evaluation metrics, and practical constraints (bias, privacy, operationalization). It proposes a conceptual analytics framework that integrates structured transactional data, unstructured social and textual signals, and third-party macro indicators to produce short- and medium-term consumer trend forecasts. The discussion addresses accuracy trade-offs, ethical and governance concerns, and managerial implications for deploying AI in marketing decision systems.

Keywords: Artificial intelligence (AI), Machine learning (ML), Deep learning, NLP & transformers

INTRODUCTION

Predicting consumer trends has always been central to marketing strategy. Historically, trend forecasting relied on market research, surveys, and expert judgment. The rise of digital data—clickstreams, social posts, transaction logs—and advances in AI have transformed forecasting from slow, top-down processes into continuous, data-driven prediction systems. AI-driven marketing analytics harness supervised and unsupervised learning, time-series models, natural language processing (NLP), and increasingly generative models to detect emerging preferences, forecast category demand, and recommend product assortments. The promise: faster detection of trend inflection points and more precise targeting, enabling firms to reduce inventory risk, personalize offerings, and shape product innovation pipelines. However, technical, ethical and managerial challenges remain. Recent industry analyses highlight both rapid adoption and ongoing skepticism about ROI and governance, indicating that a careful synthesis of evidence is timely.

MATERIALS AND METHODS

Research objectives

Synthesize the evolution of AI methods used for consumer trend prediction (1991–2025).

Propose a conceptual framework for AI-driven marketing analytics that integrates heterogeneous data sources.

Identify evaluation metrics, limitations, and governance considerations for practical deployment.

Literature Review

Early foundations (1991–2005)

Foundational models of consumer choice and information processing (e.g., Theory of Planned Behavior, diffusion of innovations) framed early predictive efforts that used econometrics and time-series analysis (ARIMA, exponential smoothing) on sales data. During this period, forecasting emphasized macro drivers and temporal patterns derived from limited structured datasets.

Emergence of machine learning (2006–2015)

From mid-2000s onward, machine learning methods (decision trees, random forests, support vector machines) began supplementing econometric approaches. Marketers used these algorithms for customer segmentation, churn prediction, and response modeling as firms collected larger digital footprints (CRM, web logs). The era emphasized feature engineering and cross-validation to improve out-of-sample performance.

Big data and deep learning (2016–2022)

The proliferation of large, unstructured data (social media, images, reviews) and affordable compute ushered in deep learning approaches for NLP and computer vision. Time-series deep models (LSTM, GRU) became popular for demand forecasting; embedding techniques allowed representation learning from text and images, enhancing feature sets for trend detection.

Generative AI and integrated pipelines (2023–2025)

Generative AI's breakout (2023 onward) expanded capabilities for synthetic data augmentation, scenario simulation, and automated content analysis. Recent empirical studies and industry reports show firms using hybrid pipelines combining classical forecasting, ML ensembles, and generative models to predict short-term demand spikes and longer-term trend shifts. However, vendor hype and mixed implementation experiences are well documented: while generative models accelerate creative production and pattern discovery, Gartner and other observers caution that many AI projects still lack measurable business value or rigorous governance.

Key algorithmic approaches (overview)

Time-series models: ARIMA, Prophet, state-space models for baseline forecasting.

Supervised ML: Gradient boosting machines (XGBoost, LightGBM), random forests for feature-rich prediction tasks.

Deep learning: LSTM/GRU and Temporal Convolutional Networks for complex temporal patterns.

NLP & transformers: BERT/GPT families for text mining, sentiment, topic modeling, and trend extraction.

Ensembles and hybrid models: Combine statistical and ML methods to improve robustness. Recent literature (2023–2025) shows ensembles yield better accuracy in volatile consumer datasets.

Data inputs and signals

Fusing multiple data types improves predictive power: POS and e-commerce transactions (structured), website analytics and clickstream (behavioral), social media (sentiment, emerging topics), search query volumes (Google Trends), macroeconomic indicators, and weather or mobility data for category-specific forecasting. Studies demonstrate that adding social and search signals can improve early detection of trend inflection points.

Evaluation metrics and best practice

Forecast accuracy is typically measured via MAPE, RMSE, and MAE for continuous demand; classification metrics (AUC, precision/recall) for event detection. Robust validation requires cross-validation with temporal folds, back testing across seasons, and business-metric alignment (e.g., stock-out reduction, margin improvement). Recent methodological reviews emphasize explainability, calibration, and model monitoring as critical for operationalization.

Ethical, privacy, and operational risks

AI forecasting raises privacy concerns (use of personal data), bias (historical data reflecting inequity), and model brittleness (overfitting to short-term signals). Industry reports caution that many AI projects are overpromised; Gartner predicts significant scrapping of low-value "agentic" projects without clear ROI. Governance frameworks, human-in-the-loop review, and data provenance are recommended safeguards.

Research Methodology

This study employs a systematic secondary-data synthesis combining academic articles, preprints, and industry whitepapers (1991–2025). The approach mirrors a structured literature review plus framework development.

Data sources

Databases: Scopus, Web of Science, Google Scholar (academic papers). Industry sources: McKinsey, Gartner, Reuters, Statista, and specialist analytics reports (2020–2025). Inclusion criteria: empirical or methodological pieces addressing AI/ML methods for consumer forecasting, published 1991–2025; high-quality industry reports describing real deployments.

Selection & synthesis procedure

1. Keyword searches: "AI marketing analytics," "predictive analytics consumer trends," "demand forecasting machine learning," "generative AI marketing 2023–2025."

2. Screening: title/abstract relevance; removal of duplicates; quality check for reproducibility and transparency (method sections).

3. Extraction: algorithm types, data inputs, evaluation metrics, reported accuracy/improvements, deployment notes, and ethical concerns.

4. Synthesis: thematic coding to produce (a) algorithmic taxonomy, (b) data-fusion framework, (c) operational recommendations.

FINDINGS

Drawing on evidence synthesized from academic and industry research between 2015 and 2025, this study proposes a three-layer conceptual framework that explains how AI-driven marketing analytics can

systematically predict consumer trends. The framework is not merely technical; it is organizational and strategic, emphasizing how data, models, and decision governance interact to translate prediction into market performance. The three layers—Signal Layer (Data Fusion), Modeling Layer (Hybrid Algorithms), and Decision Layer (Action and Governance)—function as a continuous loop rather than discrete silos. Data flows upward from the signal layer, intelligence is derived in the modeling layer, and managerial action and ethical oversight occur in the decision layer. Feedback from decisions then refines subsequent data inputs, producing a learning ecosystem that improves over time.

Signal Layer: Data Fusion and Intelligence Inputs

The Signal Layer represents the foundation of AI-driven marketing analytics. It involves the collection, integration, and harmonization of diverse data sources to generate a 360-degree view of consumer behavior. Traditional marketing analysis relied primarily on structured datasets such as point-of-sale (POS) records or CRM logs. While these remain critical, they capture only transactional outcomes—not the motivations, sentiments, or contextual drivers behind them.

Recent empirical studies demonstrate that integrating unstructured and semi-structured data—social media posts, web clickstreams, app usage events, and search queries—significantly enhances the timeliness and sensitivity of trend prediction models. Social and search data often act as leading indicators; they detect weak signals of shifting interests before they manifest in sales. For example, an uptick in TikTok hashtags about a fashion style may precede its retail demand surge by several weeks. Likewise, rising Google search volumes for specific food ingredients can predict grocery category growth ahead of scanner data.

AI facilitates the processing of such high-velocity, high-variety data through natural language processing (NLP) and computer-vision algorithms. Text mining extracts sentiment polarity, emerging topics, and semantic associations, while image recognition decodes lifestyle and product-use patterns from social feeds. Combining these with structured transaction data enables "data fusion"—the merging of multi-source information into unified feature spaces that capture both behavioral intent and realized action.

External macro indicators further contextualize micro-level signals. Economic indices, mobility trends, climatic variables, and even cultural event calendars influence consumer behavior. For instance, weather anomalies often trigger deviations in apparel or beverage sales, while inflation rates affect discretionary spending patterns. Incorporating such exogenous variables allows models to distinguish between trend shifts driven by genuine preference change and those caused by contextual shocks.

However, effective data fusion demands a robust infrastructure: interoperable databases, standardized schemas, APIs for data ingestion, and cloud-based pipelines for real-time streaming. Organizations still face challenges in connecting legacy CRM systems with new digital sources. Poor integration can lead to incomplete or noisy data, undermining the predictive power of downstream models. Therefore, investment in data engineering and governance at the signal layer is foundational to AI success.

Modeling Layer: Hybrid Algorithms and Predictive Intelligence

The Modeling Layer transforms raw, fused data into actionable intelligence. It consists of a hierarchy of algorithmic methods—statistical, machine-learning, and generative—that collectively detect patterns, forecast demand, and simulate future scenarios.

Time-Series and Classical Forecasting

Baseline demand forecasting still benefits from time-series models such as ARIMA, Holt-Winters, and state-space frameworks. These techniques provide interpretability and stability for categories with seasonality or established cycles. However, they struggle when consumer preferences shift rapidly or when data are sparse. Hence, AI systems typically embed such models as components within ensemble architectures rather than standalone predictors.

Machine-Learning Approaches

Supervised learning algorithms—gradient boosting (XGBoost, LightGBM), random forests, and support vector machines—excel at handling high-dimensional feature sets that combine transactional, behavioral, and contextual variables. They can capture nonlinear relationships between variables (e.g., interaction between influencer sentiment and economic confidence) that linear models overlook. These models are particularly useful for short-horizon forecasting (one week to one quarter) where fast reaction is vital for inventory or campaign planning.

Deep Learning and Transformers

Deep learning further advances prediction accuracy by automatically learning hierarchical representations of complex data. Recurrent neural networks (RNNs), long short-term memory networks (LSTMs), and more recently transformers, have proven superior for capturing long-term temporal dependencies. Transformer-based architectures such as BERT, RoBERTa, and GPT variants are now deployed to extract themes and sentiment trajectories from vast textual datasets. For example, analyzing millions of tweets and reviews, a transformer model can quantify rising optimism toward sustainable products months before sales reflect it.

Generative and Counterfactual Models

The newest frontier is generative AI, which moves beyond prediction to simulation. By generating synthetic scenarios—"what if inflation rises by 2%?" or "what if influencer engagement doubles?"—these models allow marketers to stress-test strategies and visualize multiple futures. Generative adversarial networks (GANs) and large language models (LLMs) enable scenario generation, data augmentation, and even automated insight explanation in natural language.

Ensemble and Hybrid Architectures

Empirical research from 2022–2025 shows that hybrid pipelines outperform any single model, especially in volatile consumer categories. A robust architecture might combine:

- time-series models for baseline trends,
- gradient boosting for feature-rich short-term forecasts, and
- transformer/NLP modules for qualitative sentiment detection.

Outputs are then merged using ensemble techniques such as weighted averaging or meta-learners. This hybridization enhances generalization and reduces the risk of overfitting to any specific signal source.

Nevertheless, increased model complexity introduces computational cost and interpretability challenges. Hence, performance evaluation must balance statistical precision with operational feasibility. Model explainability tools (discussed later) become indispensable for managerial acceptance.

Decision Layer: Action, Integration, and Governance

The Decision Layer operationalizes model outputs by translating forecasts into actionable business strategies. This layer represents the interface between technical analytics and managerial decision-making.

From Prediction to Action

Predictions must align with business objectives—inventory optimization, pricing, assortment planning, or campaign timing. For example, an AI forecast identifying a surge in demand for "protein-based snacks" should trigger timely procurement and promotional decisions. McKinsey's practitioner guidance stresses that predictive insights yield value only when embedded into decision workflows—dashboards, automated alerts, or recommendation engines accessible to managers in real time.

Performance Measurement

Traditional model metrics such as RMSE or accuracy scores provide technical validation but fail to capture business impact. Organizations should evaluate success using economic key performance indicators (KPIs) such as sales uplift, inventory turnover, margin preservation, and promotion ROI. A model that marginally improves statistical accuracy but fails to reduce stock-outs or marketing waste offers little tangible value. Aligning evaluation with financial outcomes ensures AI analytics are accountable and result-oriented.

Human-in-the-Loop Governance

Despite automation, human judgment remains critical. The decision layer must include governance checkpoints where analysts and domain experts review AI recommendations, especially when actions have high financial or reputational consequences. Human oversight ensures contextual reasoning—considering brand positioning, competitive responses, or socio-cultural nuances—that algorithms may overlook. Furthermore, governance frameworks should define escalation paths, audit trails, and documentation of decision rationale to comply with emerging AI-regulation standards.

Accuracy Trade-offs and Explainability

AI models often deliver superior short-term accuracy compared with traditional techniques, but they are not infallible. External disruptions—pandemics, geopolitical crises, or supply shocks—can invalidate patterns learned from historical data. This brittleness arises because algorithms extrapolate from the past; when the structural environment changes, predictions drift. Ensemble methods, periodic retraining, and continuous backtesting mitigate such risks by refreshing models with recent data and detecting performance decay.

False positives—early "trend calls" that fail to materialize—are inevitable in probabilistic systems. Managers must therefore treat predictions as decision aids rather than deterministic truths. Scenario analysis, confidence intervals, and risk scoring help contextualize uncertainty.

Explainability is paramount for adoption. Business users demand to know why the model predicts an emerging trend. Explainable-AI (XAI) tools such as SHAP (SHapley Additive exPlanations) and LIME (Local Interpretable Model-agnostic Explanations) quantify the contribution of each feature to an output. Visualization dashboards highlight which factors—search interest, influencer sentiment, price elasticity—drive a forecast. For text and image models, attention heatmaps reveal which words or pixels the model focused on. Transparent insights build managerial trust and facilitate learning.

Without explainability, even highly accurate systems risk rejection by executives who view them as "black boxes." Hence, explainability should be integrated during model design, not retrofitted afterward. Combining XAI with domain narratives bridges the gap between data science and marketing intuition.

Operational Challenges and Governance

Empirical evidence and industry reports highlight several barriers to successful deployment of AI-driven analytics:

- Data Silos and Quality Issues. Many organizations still manage disconnected data repositories across departments. Inconsistent identifiers and missing values undermine data fusion efforts. Data

governance programs—including standardized taxonomies, metadata tracking, and data lineage systems—are essential to maintain integrity.

- Talent and Skill Gaps. Marketing professionals may lack advanced data-science literacy, while data scientists may not grasp brand strategy or consumer psychology. Bridging this gap requires cross-functional training and creation of hybrid "analytics translators" who connect technical outputs with business implications.
- Technology and Cost Constraints. Sophisticated AI architectures demand significant computational resources and maintenance. Firms must evaluate ROI carefully. Gartner (2025) projects that up to 40% of "agentic AI" projects will be discontinued by 2027 due to cost overruns and unclear benefits. Sustainable adoption depends on incremental implementation with measurable payback.
- Change Management. Integrating AI into established decision processes often meets cultural resistance. Managers accustomed to intuition-based marketing may distrust algorithmic guidance. Successful adoption requires organizational change initiatives emphasizing co-creation, transparency, and clear demonstration of wins.
- Model Governance. Beyond operational oversight, AI governance encompasses ethical compliance—bias detection, fairness evaluation, and regulatory adherence (e.g., GDPR, forthcoming EU AI Act). Documentation of training data, model versions, and decision logs supports accountability. McKinsey and other practitioners recommend forming an AI Governance Board that supervises model lifecycle management, ensuring technical performance aligns with organizational values and risk appetite.

Ethical Considerations

Ethics represent both a constraint and an enabler of sustainable AI adoption. Predictive marketing models often process sensitive data—purchase histories, location traces, and social-media behavior—that can reveal personal attributes. Without appropriate safeguards, such systems risk violating privacy, enabling manipulation, or reinforcing inequality.

Privacy and Consent

Consumers increasingly demand transparency regarding data use. Regulatory frameworks such as the General Data Protection Regulation (GDPR) in Europe and similar laws globally require explicit consent and the right to explanation for automated decisions. Firms should anonymize data, minimize retention periods, and clearly communicate purposes of collection. Privacy-preserving computation techniques—federated learning, differential privacy, homomorphic encryption—allow analytics without exposing identifiable information.

Fairness and Bias Mitigation

Models trained on historical purchase data may replicate socioeconomic or demographic biases. For instance, if luxury-brand campaigns historically underrepresented certain ethnic groups, AI models might perpetuate exclusion by allocating lower ad exposure probabilities. Bias auditing, re-sampling, and fairness-aware algorithms help detect and mitigate these effects. Diverse training data and human review further safeguard equity.

Transparency and Consumer Autonomy

Ethical marketing respects consumer autonomy. Hyper-personalized recommendations that exploit cognitive biases or addictive design patterns raise moral questions. Organizations should balance personalization with user empowerment by providing opt-out mechanisms and explanations of recommendation logic.

Societal and Environmental Responsibility

AI operations consume significant computational power; thus, environmental sustainability should also be considered. Efficient model design and carbon-offset strategies align technological advancement with broader ESG (Environmental, Social, Governance) commitments.

Collectively, these ethical dimensions underscore that predictive power must coexist with accountability. As McKinsey (2024) notes, long-term brand trust depends not only on accuracy but also on fairness and transparency of algorithmic marketing.

Managerial Implications and Strategic Recommendations

Translating the conceptual framework into practice yields several managerial insights.

- Start Small with Measurable Pilots.
  - Firms should initiate limited-scope projects—one product category, region, or campaign—to validate performance. Success metrics must include financial outcomes (e.g., sales uplift) alongside model accuracy. Pilot outcomes can inform scaling strategies and justify investment to executives.
- Build Hybrid Teams.
  - Effective AI marketing demands collaboration between data scientists, marketing strategists, and ethicists. Hybrid teams ensure that analytical rigor complements creative insight and ethical judgment. Companies like Unilever and Nike have institutionalized "analytics pods" that pair marketing and data professionals for agile experimentation.
- Invest in Data Infrastructure.
  - Early trend detection requires real-time or near-real-time data pipelines. Cloud-native architectures with API connectivity, streaming analytics, and integrated data warehouses enable continuous learning. Investment in clean data pays long-term dividends by reducing re-work and enhancing model reliability.
- Human-in-the-Loop Decision Making.
  - AI should augment—not replace—human creativity and judgment. Cross-functional committees can review automated forecasts, contextualize them with market knowledge, and decide appropriate responses. This hybrid decision model mitigates risks of over-automation.
- Focus on Explainability and Communication.
  - Managers must translate complex model outputs into accessible narratives. Visualization dashboards using SHAP-based explanations help non-technical stakeholders grasp why a trend is predicted. Clear communication accelerates trust and adoption.
- Prioritize Governance and Ethical Brand Value.
  - Organizations that demonstrate ethical data practices and responsible AI gain reputational advantages. Transparent consent management and fairness auditing can become differentiators in markets increasingly conscious of digital ethics.
- Continuous Learning Culture.AI adoption should be framed as an ongoing learning process. Feedback loops from campaign outcomes feed model retraining, creating adaptive intelligence. Regular training for staff on interpreting AI outputs strengthens organizational capability.

Integrative Reflection

The three-layer framework reveals that AI-driven marketing analytics is as much a managerial transformation as a technological one. The Signal Layer provides the raw materials—diverse data capturing the voice and behavior of the consumer. The Modeling Layer converts that raw material into structured intelligence through hybrid algorithms capable of understanding language, emotion, and time. The Decision Layer ensures that intelligence is applied ethically, profitably, and transparently.

When functioning harmoniously, these layers establish a virtuous cycle of insight and action. Data informs models; models inform decisions; decisions generate new data that refines subsequent predictions. Firms that master this cycle gain a sustained competitive edge—anticipating rather than reacting to market shifts.

Nevertheless, the sophistication of AI does not eliminate the need for human intuition. As the literature and recent practitioner evidence suggest, the most effective organizations combine algorithmic foresight with strategic empathy—a deep understanding of human motives, culture, and ethics. AI provides the lens; human intelligence interprets the view.

DISCUSSION AND CONCLUSION

AI-driven marketing analytics significantly strengthens the ability to predict consumer trends by fusing heterogeneous data and applying hybrid modeling approaches. From baseline time-series to transformer-based NLP and generative scenario engines, these tools provide earlier and more granular signals for marketing decisions. However, the practical value depends on governance, explainability, data quality, and alignment with business KPIs. Industry evidence shows considerable promise—yet also warns that many projects fail without clear ROI and adequate operationalization. Future research should focus on robust longitudinal evaluations comparing hybrid AI pipelines to traditional methods across multiple product categories and cultural contexts.

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GREENWASHING

YEŞİL AKLAMA

Cemal ELİTAŞ
Prof.Dr., Yalova Üniversitesi, İ.İ.B.F., Uluslararası Ticaret ve Finansman Bölümü, Yalova, Türkiye.
E-mail: cemal.elitas@yalova.edu.tr
ORCID ID: 0000-0002-6010-6574

Abstract

Greenwashing refers to the deliberate dissemination of misleading claims by organizations or products regarding their environmental impact. This phenomenon encompasses (a) knowingly false representations, (b) deceptive or ambiguous disclosures, and (c) the omission of critical environmental information. Detecting and classifying such practices presents a significant challenge. While greenwashing may offer short-term benefits, it undermines long-term sustainable development goals and leads to adverse outcomes. It constitutes a widespread issue in the pursuit of sustainability, often hindering the success of genuine efforts. This study explores the multidimensional and diverse nature of greenwashing, detailing its various forms, implementation strategies, and the complex network of actors involved. From product-level deception aimed at consumers to firm-level policies and broader financial market dynamics, greenwashing influences every stage of the value chain. As such, it poses substantial obstacles for stakeholders genuinely committed to advancing sustainability.

Keywords: Greenwashing, Sustainability, Misrepresentation, Misleading Information.

Özet

Yeşil aklama, kuruluşların veya ürünlerin çevresel etkileri konusunda kasıtlı olarak yanıltıcı iddialarda bulunmasını ifade eder. Bu durum: (a) bilinçli yanlış beyanları, (b) aldatıcı bilgilendirmeleri ve (c) önemli çevresel bilgilerin eksik bırakılmasını kapsar. Bu tür uygulamaların tespit edilmesi ve sınıflandırılması önemli bir zorluk teşkil etmektedir. Kısa vadede bazı faydalar sağlasa da, uzun dönemde sürdürülebilir kalkınma hedefleri açısından olumsuz sonuçlar doğurmaktadır. Yeşil aklama, sürdürülebilir kalkınmada yaygın bir sorundur ve gerçek çabaların başarıya ulaşmasını zorlaştırmaktadır. Bu çalışmada, yeşil aklamanın çok boyutlu ve çeşitli yönleri ele alınmış; farklı biçimleri, uygulanma yöntemleri ve içerdiği karmaşık aktörler ağı detaylandırılmıştır. Tüketicilere yönelik ürün düzeyindeki aldatmacalardan firma düzeyindeki politikalara ve daha geniş finansal piyasa dinamiklerine kadar, yeşil aklama değer zincirinin her parçasını etkilemekte ve gerçek sürdürülebilirlik arayışındaki paydaşlar için zorluklar yaratmaktadır.

Anahtar Kelimeler: Yeşil Aklama, Sürdürülebilirlik, Yanlış Beyan, Aldatıcı Bilgilendirme.

GİRİŞ

"Greenwashing" (Yeşil Aklama) terimi ilk kez 1986 yılında çevre aktivisti Jay Westervelt tarafından, otelcilik sektörünün ürünlerin yeniden kullanımını teşvik etme uygulamaları hakkında bir makale yayınladığında ortaya atılmıştır (Kim & Lyon, 2015).

Günümüzde bu fenomen için net bir tanım bulunmamakla birlikte, çeşitli sözlükler yeşil aklamaya farklı açıklamalar getirmektedir. Duden Sözlüğü (2024 baskısı) yeşil aklamayı "firmaların veya kurumların çevre projelerine bağış yapma, halkla ilişkiler faaliyetleri vb. yollarla kendilerini özellikle çevre bilincine sahip ve çevre dostu olarak gösterme çabası" şeklinde tanımlamaktadır. Gabler Online Lexikon ise bunu "kuruluşların iletişim, pazarlama ve tek seferlik önlemler yoluyla operasyonel işleyişte sistematik bir şekilde yer almayan 'yeşil bir imaj' elde etme çabası" olarak açıklamaktadır (Kraft vd., 2024).

Temel olarak greenwashing, bir kuruluşun çevresel sorumluluk konusunda asılsız veya kasıtlı olarak yanıltıcı bir kamu imajı yayması olarak anlaşılabilir. Delmas ve Burbano (2011), greenwashing'e iki

düzeyde yaklaşan ayrıntılı bir perspektif sunmaktadır. Buna göre bir yanda şirket düzeyinde, tüketicilerin bir şirketin çevre uygulamaları konusunda yanıltılması; diğer yanda ürün/hizmet düzeyinde, belirli bir ürün veya hizmetin çevresel faydaları hakkında yanıltıcı bilgilendirme (bkz. Şekil 1) (De Freitas Netto ve ark., 2020).

Şekil 1. Yeşil Aklamanın Sınıflandırılması

Şirket düzeyinde greenwashing örneği olarak General Electric'in "Ecomagination" kampanyası gösterilebilir. Şirket bu kampanyayla çevre dostu uygulamalarını öne çıkarırken, aynı zamanda temiz hava düzenlemelerine karşı lobi faaliyetleri yürütüyordu. Ürün düzeyinde ise LG'nin Energy Star enerji verimliliği etiketiyle pazarlanan yanlış sertifikalı buzdolapları örnek verilebilir. LG'nin bu buzdolabı modelinin, sertifikasyon için yeterince enerji verimli olmadığı tespit edilmiştir (Delmas & Burbano, 2011). Bu iki örneğin dikkat çekici yanı, tıpkı mevcut pazarlama araştırmalarında olduğu gibi, ağırlıklı olarak reklam ve reklam mesajlarına odaklanmalarıdır.

Bu bağlamda kısaca yeşil aklama, bir kurumun veya ürünün çevresel faydalarını açık ya da üstü kapalı şekilde öne sürerek yanıltıcı iddialar oluşturma yöntemidir. Başka bir ifadeyle de Yeşil aklamada, yanıltıcı çevre iddiaları yapmak amacıyla bir kuruluşun ya da ürünün ekolojik faydalarını doğrudan veya dolaylı şekilde referans gösteren argümanlara başvurulur (Kraft vd., 2024).

GREENWASHING UYGULAMASI, TÜRLERİ VE METODOLOJİLERİ

Yeşil aklama, beyan edilen çevresel taahhütler ile gerçekte yapılanlar arasındaki uyumsuzluk olarak tanımlanabileceği daha önceden de belirtilmişti. Yıllar içinde yapılan çok sayıda çalışma, yeşil aklamanın karmaşık, dinamik ve çok boyutlu doğasını ortaya koymuştur (Bernini vd., 2023). Bu özellikleri nedeniyle, yeşil aklama iletişim ve gerçeklik arasındaki bir boşluk olarak kabul edilse de, tek bir tanım altında standartlaştırılması zorlu bir süreç olarak kalmaktadır (Seele & Gatti, 2017). Konu hakkında farklı akademik perspektifler olduğunu literatürü incelediğimizde görebilmekteyiz. Bunlardan bazıları şöyledir; Delmas ve Cuerel Burbano (2011) "zayıf çevresel performans ile çevresel performans hakkında olumlu iletişim kurma" olarak tanımlamaktadır. Lyon ve Maxwell (2011) "bir şirketin çevresel veya sosyal performansına ilişkin olumlu bilgilerin seçici olarak açıklanması, olumsuz bilgilerin ise tam olarak paylaşılmaması yoluyla abartılı olumlu bir kurumsal imaj yaratılması" şeklinde açıklamaktadır. Lyon ve Montgomery (2015) "insanların bir kuruluşun çevresel performansı hakkında abartılı olumlu inançlar benimsemesine yol açan çeşitli iletişim biçimleri" olarak nitelendirmektedir.

Yeşil aklama, esas olarak çevresel konulara yönelik sembolik taahhütler ile somut taahhütler arasındaki boşluğu temsil etmektedir (Walker & Wan, 2012).

Bu bağlamda buraya kadar yapılan tüm tanımlamalar ele alındığında ortak vutgu yapılan konuların, (a) kurumsal iletişimde şeffaflık eksikliği, (b) çevresel performans ile iletişim stratejileri arasındaki tutarsızlık, (c) sürdürülebilirlik söylemlerinde seçicilik ve (d) paydaşları yanıltıcı bilgilendirme riski temalarını kapsadığı görülecektir.

Literatürde yeşil aklamaya dair tekil ve net bir tanımın bulunmaması ve bu olgunun çok boyutlu doğası nedeniyle, bu bölümde ilk adım olarak kavramın daha net bir şekilde sınırlandırılması ve açık ayrımlarla standartlaştırılması doğru olacaktır. Gatti vd. (2021) sunduğu ayrım doğrultusunda, yeşil aklamadaki temel boşluğun, sunulan bilginin doğasından kaynaklandığını savunmaktadır. Bu bağlamda, bilgi doğrudan yanlışlanmamakta, ancak seçici biçimde sunularak alıcının gerçekliğe dair çarpıtılmış bir algıya yönlendirilmesi sağlanmakta ve böylece dolaylı yoldan aldatma gerçekleşmektedir. Bu tipoloji Tablo 1'de görülmektedir.

Tablo 1. Yeşil Aklamanın Tipolojileri

Bu tür yeşil aklama farklı şekillerde kendini gösterebilir:

- Seçici açıklama olarak bilgi gizleme: Doğru ancak eksik bilgi sunularak çevresel olarak olumsuz uygulamalar gizlenir; bu da alıcının "yeşil" taahhütleri olduğundan fazla algılamasına neden olur.
- Seçici açıklama olarak belirsizlik: Belirsiz ifadelerle yapılan açıklamalar aldatıcıdır. Örneğin, kâğıt ambalaj kullanılması ürünün sürdürülebilir olduğunu doğrudan göstermez.
- Seçici açıklama olarak kanıt eksikliği: Sunulan çevreci iddialar doğrulanabilir bilgiyle desteklenmez.
- Seçici açıklama olarak ilgisizlik: Gerçek ancak konu dışı bilgiler öne çıkarılarak çevreye duyarlı bir imaj yaratılır.
- Seçici açıklama olarak dikkat dağıtma: Doğru bilgiler kullanılarak esas çevresel zararlardan dikkat başka yöne çekilir. Örneğin, bir petrol şirketi ana kirletici faaliyetlerini gizleyerek küçük çaplı çevreci girişimlerini ön plana çıkarır.

Seçici açıklamalar, doğrudan yanlış beyanlardan daha tehlikeli olabilir; çünkü aldatma açık yalanlar yerine, zararlı bilgilerin örtük biçimde gizlenmesi yoluyla yapılır. Ancak hem doğrudan hem de dolaylı aldatmaların temel amacı, şirketin ekonomik performansını ve imajını korumaktır. Yeşil aklama olgusu, uygulama şekillerinin çeşitliliği nedeniyle daha da karmaşık hâle gelmektedir. Yanıltıcı bilgi, ister yanlış ister seçici olsun, hem doğrudan hem de dolaylı yollarla iletilebilir. İlk durumda buna iddia temelli yeşil aklama denirken, ikinci durumda uygulama temelli yeşil aklama olarak adlandırılır (Bkz. Tablo 2). İddia temelli yeşil aklama, yanıltıcı bilgilerin sözel dil aracılığıyla doğrudan iletildiği bir aldatma biçimidir (de Freitas Netto vd., 2020). Buna karşılık, uygulama temelli yeşil aklama, iletim kanalı olarak çağrışımı kullanır. Başka bir ifadeyle, aldatıcı iletişim dil yoluyla değil; görseller, renkler, sesler ve benzeri unsurlar aracılığıyla gerçekleşir. Bu unsurlar doğrudan ESG (Çevresel, Sosyal ve Yönetişim) temalarıyla ilişkilendirilir (örneğin, yeşil renk kullanımı, doğayı simgeleyen logolar vb.) (Parguel vd., 2015; Ende vd., 2023). Çevresel taahhütlere dair açık bir ifade olmasa da, bu unsurlar alıcının bilişsel yanlılıkları üzerinden bu izlenimi yaratır. Uygulama temelli yeşil aklama, tıpkı seçici açıklamalar gibi daha örtük ve tespit edilmesi zor bir yapıya sahiptir; çünkü alıcının bilgi düzeyi ve bilişsel arka planına bağlıdır. Bu mekanizmaların anlaşılması, sürdürülebilirlik iletişiminde yaygınlaşan yeşil aklama sorununu tanımlamak ve çözmek açısından büyük önem taşımaktadır (Aliano vd., 2024).

Tablo 2. Yeşil Aklamanın Uygulama Metodolojileri

Yeşil Aklamanın Tipolojisi

Önceki paragraflarda belirtildiği gibi, gönüllülük esasına dayanan koşullarda şirketler, ürün düzeyinde iki farklı kanal aracılığıyla yanıltıcı bilgi üretebilirler: iletişim ve çağrışım. İletişim kanalı, literatürde iddia temelli yeşil aklama (claim greenwashing) olarak adlandırılır. Bu türde şirketler, ürün ya da hizmet hakkında eksik, belirsiz, ilgisiz veya yanlış bilgiler sunarak, tüketicileri bir ürünün olduğundan daha çevreci olduğuna inandırmak için sözcükleri kullanır. İddia temelli yeşil aklamaya dikkat çekici bir örnek, 2020 yılında İtalyan enerji şirketi ENI'nin "ENIdiesel+" kampanyasıdır. Petrol ve doğalgazın üretimi, taşınması, işlenmesi ve pazarlanması alanlarında faaliyet gösteren ENI, 2016–2019 yılları arasında çevre dostu bir kampanya yürütmüştür. Kampanya kapsamında tanıtılan "ENIdiesel+" adlı dizel yakıtın, %15 yenilenebilir bileşen içerdiği, yakıt tüketimini %4 oranında azalttığı ve emisyonları %40 oranında düşürdüğü öne sürülmüştür. Reklamlar, bu yakıtın yalnızca aracın ömrünü uzatmakla kalmayıp aynı zamanda çevreyi korumaya da katkı sağlayacağını ima etmiştir. Ancak, Legambiente, Movimento Difesa del Cittadino ve Transport & Environment (T&E) adlı sivil toplum kuruluşları, İtalya

Rekabet Kurumu'na şikâyette bulunmuş ve kurum 2020 yılında ENI'nin bu reklam kampanyasını "haksız ticari uygulama" olarak değerlendirmiştir. Kampanya, "yeşil" ve "yenilenebilir" gibi terimleri kullanarak, çevreci olmayan bir ürünü ve çevresel korumaya yönelik temelsiz bir taahhüdü pazarlamıştır. İddia edilen emisyon azaltımı ve dizelin yenilenebilir bileşenine dair veriler tam olarak kanıtlanmamış; bu nedenle kampanyanın süresi ve ihlalin ciddiyeti göz önünde bulundurularak şirkete beş milyon euro ceza verilmiştir. ENI, "kullanarak sen de katkı sağlıyorsun" mesajıyla, tüketicilerin çevresel konulardaki duyarlılığını istismar etmiş; ancak bu "yeşil" iddialarını yeterince temellendirememiştir. Çağrışım ise uygulama temelli yeşil aklama yapısına karşılık gelir. Bu türde yanıltıcı bilgi, sürdürülebilirlik temalarıyla doğrudan ilişkilendirilen görseller, renkler ve sesler kullanılarak örtük biçimde iletilir. Bu yeşil aklama biçimi, tüketicilerin bilişsel yanlılıklarını kullanarak etki yaratır. Ürün ya da hizmetler, yeşil veya kahverengi renkler, yüksek fiyatlar ya da diğer çevre dostu semboller gibi eko-prototip özellikler üzerinden tanıtılarak, doğrudan çevresel sürdürülebilirlikle ilişkilendirilmeye çalışılır. Genellikle, uygulama temelli yeşil aklama, yanıltıcı iddialarla birlikte kullanılır ve görsel ya da işitsel ipuçlarıyla bu mesajı pekiştirir. Her iki yapıda da —ister doğrudan (iddia temelli) ister dolaylı (uygulama temelli) olsun— ortak unsur, çevreci özellikleri sembolik düzeyde olan bir ürün hakkında bilgi yaymak veya çağrışım yaratmaktır. Bu yeşil aklama biçimlerinin her ikisi de, ürünün çevresel faydalarına dair gerçek dışı olumlu bir algı oluşturmayı, böylece tüketicileri yanıltmayı ve şirketin ekonomik performansını ve imajını korumayı amaçlamaktadır (Aliano vd., 2024).

Yeşil (Aklama) Pazarlama

Sürdürülebilirliğe yönelik artan tüketici farkındalığı nedeniyle, şirketler sıklıkla yeşil aklamayı pazarlama stratejilerine entegre etmeye yönelmektedir (Lyon & Montgomery, 2015). Bu durum, şirketlerin pazarda rekabet avantajı elde etmeleri ve işletme ile finansal performanslarını artırmaları için bir araç hâline gelmiştir (Siano vd., 2017; Guo vd., 2018).

Yeşil aklama temelli pazarlama, yeşil pazarlamanın karanlık yüzü olarak değerlendirilebilir. Yeşil pazarlama, çevre dostu ürün veya hizmetlerin üretimi, tasarımı, tanıtımı ve satışı gibi meşru stratejileri kapsar (Shao vd., 2023). Temel hedef, tüketici davranışlarını çevreye duyarlı tercihlere yönlendirmek ve aynı zamanda şirketin sürdürülebilir bir itibar kazanmasını sağlamaktır (Polonsky vd., 1997).

Buna karşılık, "yeşil aklama pazarlaması", esas olarak pazar güvenilirliği yaratmayı ve ekonomik getirileri maksimize etmeyi amaçlar. Bu yaklaşım, sürdürülebilirlik stratejilerinin temelinde yer alması gereken çevresel bağlılık motivasyonunu göz ardı eder. Aldatma tespit edilmediği sürece, tüketiciler şirketin sözde çevre dostu davranışlarından etkilenmeye devam eder. Ancak bu durum, şirketlerin pazardan haksız ve uygunsuz avantaj sağlamalarına imkân tanır (Chen, 2010; Guo vd., 2018). İster "iddia temelli yeşil aklama", ister "uygulama temelli yeşil aklama" yoluyla olsun, yeşil aklama pazarlama iletişimi, doğasında aldatıcı bir niyet barındırır.

Algı

Bu noktada, yeşil aklama, genellikle yanıltıcı bir eylem olarak tanımlanmakta ve böylece şirketlerin tüketicilere karşı haksız davranma eğilimine vurgu yapılmaktadır. Ancak, birinci düzey yeşil aklama, yalnızca kasıtlı aldatma ile sınırlı değildir. Ürün düzeyindeki analiz, esasen "tüketici" ile "ürün" arasındaki ilişkiye dayanır; bu da bir ürünün sürdürülebilirliğine ilişkin nihai yargının, tüketicinin algısına bağlı olduğu anlamına gelir. Seele ve Gatti'nin (2017), yeşil aklama olgusunu daha net biçimde tanımlamak ve özellikle öznel boyutlarını (örneğin algı) da kapsamak amacıyla geliştirdikleri yeşil aklama matrisi çalışmasından yola çıkarak, şu değerlendirme önerilmektedir. Ürün düzeyine odaklanan literatürde yaygın olan yaklaşım, yeşil aklamayı nedensel bir ilişki temelinde ele almaktır. Burada

şirketin aldatma niyeti, tüketicinin "kandırıldığını" ileri sürmesi için ön koşul olarak görülür. Oysa, algı, bu nedensellik zincirini kırabilir ve böylece yeşil aklama olgusuna yeni anlamlar kazandırabilir.

Yukarıda tanımlanan yeşil aklama tanımına dayanarak geliştirilen yeşil aklama matrisi, aşağıda sunulmuştur. Yeşil aklama matrisi, olgunun daha iyi anlaşılmasını kolaylaştırır. Matris, yeşil aklamanın nasıl farklılaştığını iki faktörün birleşimi üzerinden gösterir ki bunlar : (a) şirketin yanıltma niyeti ve (b) tüketici algısı olup Şekil 2'de görülebilmektedir (Aliano vd., 2024).

Şekil 2. Yeşil Aklama Matrisi

Şekil 2'deki birinci bölüm, gerçek yeşil aklamaya karşılık gelir. Bu durumda, şirketin yanıltıcı ve aldatıcı niyeti, tüketici tarafından fark edilir ve kınanır; bu da şirketin itibarına ve satışlarına zarar verir. Gerçek yeşil aklamaya örnek olarak, ünlü "Dieselgate" skandalı verilebilir. Otomobil üreticisi Volkswagen, 2014 yılında araçlarının emisyon değerlerine ilişkin yanlış bilgi verdiği iddiasıyla suçlanmıştır. Araçlar, yasal sınırların çok üzerinde kirletici madde yaydığı hâlde testleri geçmiş gibi gösterilmiştir. Volkswagen, bu iddiaları reddetmiş ve standartlara uygunluğu kanıtlamak amacıyla kendi testlerini gerçekleştirmiştir. Ancak 2015 yılında ABD Çevre Koruma Ajansı (EPA), test sırasında emisyon seviyelerini düşük gösteren özel bir yazılım kullanıldığını ortaya çıkarmıştır. Volkswagen, suçu kabul etmiş, aldatılan müşterilere tazminat ödemiş ve hem mali hem de cezai yaptırımlarla karşı karşıya kalmıştır. İkinci bölüm, potansiyel yeşil aklamayı temsil eder. Bu durumda, şirketin aldatıcı eylemleri henüz kamuoyu tarafından algılanmamıştır. Yukarıdaki tanıma göre, aldatma tespit edilmediği sürece yeşil aklama oluşmuş sayılmaz. Şirket, sahte çevresel iddiaları üzerinden haksız şekilde ekonomik ve imaj kazanımları elde eder. Ancak, yanıltma niyeti daha sonra fark edilirse, olgu potansiyel yeşil aklamadan gerçek yeşil aklamaya dönüşür. Örneğin, Volkswagen'in emisyon testleri yeniden değerlendirilmemiş olsaydı, Dieselgate hâlâ potansiyel yeşil aklama kategorisinde kalacaktı. Üçüncü bölüm, yanlış yeşil aklamaya aittir. Burada, şirketin ne niyet ettiği ne de gerçekleştirdiği bir aldatma söz konusu olmasına rağmen, tüketici aldatıldığını düşünür. Şirket, gerçekte yanıltıcı bir kampanya yürütmemiş olsa da, gerçek yeşil aklamada görülen olumsuz etkilerle karşı karşıya kalabilir. Örnek olarak, 2021 yılında H&M'in "Bilinçli Seçim" kampanyası gösterilebilir. Şirket, kıyafetlerini "%50 sürdürülebilir malzeme" ile ürettiğini vurgulayarak yeşil aklama yapmakla suçlanmıştır. Ancak H&M, reklamların ürünlerin tamamen sürdürülebilir olduğunu iddia etmediğini; yalnızca önceki koleksiyonlara göre daha sürdürülebilir malzemelerden üretildiğini savunarak bu iddiaları çürütmüştür. Sonuç olarak suçlamalar düşürülmüş ve olayın yanlış yeşil aklama olduğu ortaya konmuştur. Dördüncü ve son bölüm, yeşil aklamanın olmadığı durumu ifade eder. Bu durumda, ne şirketin yanıltıcı bir beyanı vardır ne de tüketici tarafından algılanan bir aldatma söz konusudur (Aliano vd., 2024).

Matrisin analizi, dış dünyanın (yanlış) algılanmasının piyasa bozulmalarına nasıl yol açtığını ortaya koymaktadır. Ürün düzeyindeki analizde yeşil aklamanın öznelliği, gerçek yeşil aklamanın oluşması için gereken nedensel ilişkiyi sekteye uğratabilir ve böylece iki "patolojik" boyut yaratır, bunlar :

- Potansiyel yeşil aklama, şirketlere haksız kazançlar sağlarken sürdürülebilir ekonomik kalkınmayı zayıflatır;
- Yanlış yeşil aklama ise tüketicinin hatalı yargısı nedeniyle şirketlerin haksız yere cezalandırılmasına neden olması şeklindedir.

Yeşil aklamayı yalnızca algı temelli olarak ele almak, bu olguyu öznel bir yapıya büründürür; bu durumda "toplumsal açıdan sorumlu" ya da "sorumsuz" olmak, büyük ölçüde algılayanın bakış açısına bağlı hâle gelir.

Riskler

Aldatma fark edildiği anda —ister gerçek ister yanlış olsun— şirket iki düzeyde kayıp yaşar: itibar ve finansal zarar. Gerçek yeşil aklama durumunda, şirket bilinçli olarak aldatıcı bir stratejiyi seçer; hem itibarını hem de mali performansını pekiştirmek amacıyla yeşil aklamayı bir araç olarak kullanır. Şirketin amacı, tüketicilerin çevresel kaygılarını satış ve gelir artışı lehine kullanmaktır. Ancak, bu kötü niyetli uygulama ifşa edildiğinde (ya da algılandığında), uygunsuz şekilde yaratılmış olan rekabet avantajı bumerang etkisine dönüşür. Tıpkı çevresel değerlere duyarlı bir şirketin tüketicide duygusal bağlılık yaratması gibi, aldatmanın ortaya çıkması durumunda bu bağ tersine döner (Lyon & Montgomery, 2015; Ende vd., 2023).

Aldatma yapan şirket, kendi güvenilirliğini ve mesleki itibarlılığını zedeler; bu da tüketicilerden başlayarak, diğer paydaşlara ve genel olarak piyasaya yayılan güvensizlik tepkisini tetikler (Lyon & Montgomery, 2015).

Sonuç olarak, tüketiciler "(yeşil olmayan) ürün" sunan şirkete olan güvenini kaybeder ve bu markadan gelecekte alışveriş yapmaktan ciddi biçimde caydırılır. Bunun doğrudan bir sonucu da yatırımcıların şirkete olan ilgisini kaybetmesidir; zira bu tarz bir firmayla ilişkilendirilmek, yatırımcıların kendi itibar ve güvenilirliklerini de olumsuz etkileyebilir. Azalan satışlar ve yatırımlar, şirketin mali performansını ve faaliyet sürekliliğini doğrudan tehdit eder (Aliano vd., 2024).

Başlangıçta tüketiciler ve yatırımcılar gibi paydaşlardan kaynaklanan bu etkiler, zamanla piyasanın geneline yayılır. Yeşil aklama vakalarındaki artış, tüketicilerde "yeşil şüphecilik" (green scepticism) adı verilen bir durum yaratmaktadır (Torelli vd., 2020; Bernini vd., 2023). Bu durumda, tüketiciler şirketlerin çevresel politikalarına dair beyanlarını sorgulamaya başlar (Shao vd., 2023). Şüphecilik, tüketicilerin kendilerine sunulan ürünler hakkında daha fazla soru sormalarına ve daha eleştirel bir bilinç geliştirmelerine yol açabilir.

Ancak öte yandan, çevreye karşı gerçekten taahhüt göstermiş olan şirketler de bu şüpheyle karşı karşıya kalabilir, bu da onların çevresel çabalarını sürdürme konusundaki motivasyonlarını zayıflatabilir. Potansiyel yeşil aklama durumunda ise, şirket herhangi bir kasıtlı yanlış davranışta bulunmamış olsa bile, gerçek yeşil aklamada olduğu gibi olumsuz etkilerle karşılaşır. Şirketin itibarı ve mali durumu üzerindeki yansımalar, aldatma niyeti olmasa bile benzer şekilde zarar verici olabilir (Aliano vd., 2024).

Niyet dışı (kasıtsız) yeşil aklama boyutunda, dış çevrenin yanlış algısını mümkün olduğunca önlemenin tek yolu, yanıltıcı yorumlara yer bırakmayan şeffaf bir iletişim tercih etmektir. Açık ve dürüst iletişim, yeşil aklama algısının oluşmasını engeller ve tüketici güvenini korur. Zararın boyutu göz önüne alındığında, gerçekten somut ve etkili çevre politikaları uygulayan şirketler, zaman zaman ESG (Çevresel, Sosyal ve Yönetişim) taahhütlerini kamuoyuna açıklamaktan kaçınmayı tercih etmektedir (Cheng vd., 2024). Bu uygulama literatürde "greenhushing" (yeşil suskunluk) olarak adlandırılmaktadır.

YEŞİL SESSİZLİK (SUSKUNLUK)

Yeşil sessizlik, şirketlerin sürdürülebilirlik politikalarını ve taahhütlerini eksik raporlamayı gönüllü olarak tercih etmeleri şeklinde tanımlanır. Bu durum, bir şirketin çevre dostu uygulamalarını gizlemeyi ve kamuoyuyla paylaşmamayı seçmesini ifade eder. Yeşil aklamadan farklı bir olgu olmakla birlikte, yeşil sessizlik de özellikle iddiaların bilinçli olarak dışlanması yönüyle aldatıcı nitelikler taşıyabilir (Falchi vd., 2022).

İlk bakışta, yeşil sessizlik çelişkili bir davranış gibi görünebilir. Zira sürdürülebilirlik konusunda artan tüketici farkındalığı, onların çevreci ürünlere, geleneksel ürünlerden daha yüksek fiyatla dahi olsa yönelmesini sağlamaktadır (Zhang vd., 2018). Bu durumda sürdürülebilirlik çabalarının gizlenmesi akıl dışı gibi görünse de, yeşil sessizlik bazı durumlarda şirketler açısından avantajlı olabilir.

Örneğin, H&M vakasında olduğu gibi. İsveç menşeli bu ünlü markanın reklam kampanyası, dış çevre tarafından yanlış algılanmış ve bu durum, markanın yanıltıcı reklamcılık suçlamalarına karşı yargı önünde kendini savunmak zorunda kalmasına neden olmuştur. H&M suçsuzluğunu kanıtlamış olsa da, gerçekte işlemediği bir kusur yüzünden kamuoyunun odağına girmiştir.

Bir şirket, aldatıcı reklam yapmamış olsa bile, yeşil aklamacı olarak algılandığında, ciddi itibar kaybı yaşayabilir (Zhang vd., 2018). Şirketin itibarı yalnızca gerçek ya da potansiyel suistimallere değil, aynı zamanda ağızdan ağıza iletişim (Word of Mouth-WOM) süreçlerine de bağlıdır (Zhang vd., 2018).

WOM, tüketicilerin ürün veya hizmet hakkında aile bireyleri ya da arkadaşları gibi çevreleriyle gerçekleştirdikleri sözlü iletişimi ifade eder (Chen vd., 2014). Eğer bu iletişim konusu şirketin sürdürülebilirlik taahhüdü ise, buna yeşil WOM denir (Chen vd., 2014). Yeşil WOM hem olumlu hem olumsuz olabilir:

- Olumlu WOM, müşterilerin çevre dostu uygulamaları takdir etmesiyle birlikte satışların artmasına katkı sağlayabilir.
- Olumsuz WOM, tüketicilerin şirketin çevreci politikalarına güven duymamasıyla ortaya çıkar ve bu durum, şirketin itibarına büyük zararlar verebilir (Zhang vd., 2018).

WOM'un en temel özelliği, bilginin yayılma hızıdır. Bu hız, iletişimin etkisini doğrudan belirler ve şirket açısından anlık avantajlar (olumlu WOM-PWOM) veya dezavantajlar (olumsuz WOM-NWOM) doğurabilir. WOM, tüketicinin şirkete dair algısını aktarmaya dayanır. Bu yüksek hızda bilgi dolaşımı göz önüne alındığında, bazı şirketler, yanlış yeşil aklama suçlamalarına maruz kalmamak adına geri planda kalmayı, yani yeşil sessizliği tercih edebilir. Üstelik bu durum, eğer kitlesel medya kanalları aracılığıyla yayılırsa, şirketin maruz kaldığı görünürlük katlanarak artar (Sajid vd., 2024).

Yeşil sessizlik, çoğunlukla yanlış anlaşılma riskinin doğurduğu korkulardan kaynaklanır. Yeşil aklama, yanıltma amacıyla yapılan bir eksik bildirim iken; yeşil sessizlik, tüketiciyi daha fazla satın almaya yönlendirmek amacı taşımayan, hile içermeyen bir eksik bildirimi ifade eder. Bu nedenle yeşil sessizlik, doğrudan bir aldatma değil, daha çok "önlem alma refleksi" veya bir tür "tuzak" olarak değerlendirilebilir. Yeşil aklama vakalarının artması ve kamuoyunda yarattığı öfke, gerçekten sürdürülebilirlik taahhüdü olan şirketlerde bile, yanlış suçlamalara uğrama korkusu yaratmakta ve haksız sonuçlarla karşılaşmalarına yol açabilmektedir (Aliano vd., 2024).

Aldatıldığını düşünen bir tüketici, bu durumu "ihanet" olarak algılar ve bu da güven kaybına, markadan uzaklaşmaya ve olumsuz WOM'a (NWOM) neden olur (Sajid vd., 2024). Bu bağlamda değerlendirildiğinde ve tüketicilerin her zaman rasyonel davranmadığı gerçeği göz önüne alındığında, bazı şirketlerin potansiyel ya da haksız yeşil aklama suçlamalarından korunmak için bilgi vermekten kaçınmaları, rasyonel bir strateji olarak görülebilir.

Her ne kadar yeşil sessizlik, temelinde şirketin kendini koruma amacı taşısa da, bu uygulama aynı zamanda sürdürülebilir ekonomik kalkınmayı yavaşlatabilir (Falchi vd., 2022). Gerçekten sürdürülebilirlik taahhüdü bulunan şirketlerin, örnek teşkil ederek sorumlu davranışı teşvik etmeleri gerekirken, yeşil sessizlik bu çabaların görünürlüğünü azaltmakta ve pazarda daha yaygın sürdürülebilir uygulamaların gelişmesini engelleyebilmektedir (Aliano vd., 2024).

SONUÇ VE GENEL DEĞERLENDİRME

Yeşil aklamanın etkileri zaman içinde gelişir ve hem paydaşlar hem de toplum üzerinde farklı izler bırakır. Kısa vadede, yeşil aklama yapan şirketler, imajlarını ve kamu algılarını iyileştirerek olumlu sonuçlar elde edebilirler. Çevresel etkileri hakkında kamuoyunu kasıtlı olarak yanıltmaları, tüketici güvenini geçici olarak artırabilir ve şirketin pazardaki konumunu sağlamlaştırabilir (Yang vd., 2020).

Ancak, ciddi sonuçlar genellikle uzun vadede ortaya çıkar. Yeşil aklamanın ifşa edilmesi, paydaşlar nezdinde kalıcı bir güven kaybına yol açar. Daha önce inşa edilen güven sarsılır, bu da müşteri sadakatinde düşüşe, itibar kaybına ve marka imajı üzerinde olumsuz etkilere neden olabilir. Ayrıca, şirketler hukuki yaptırımlarla ve düzenleyici cezalarla karşı karşıya kalabilirler - özellikle tüketiciyi yanıltıcı reklamların ve aldatmacaların yasal olarak cezalandırıldığı ülkelerde -(De Freitas Netto vd., 2020).

Yatırımcılar ve iş ortakları gibi potansiyel paydaşlar, yeşil aklama uygulamaları nedeniyle, bir şirketin gerçek sürdürülebilirlik performansına dair yanlış varsayımlara kapılabilir. Bu durum, şirketin vaat ettiği çevresel standartlara uzun vadede uymaması hâlinde, yatırım risklerine yol açabilir. Dolayısıyla yeşil aklama, şirketin uzun vadeli mali refahını tehlikeye atabilir ve kredi alma süreçlerinde de olumsuz rol oynayabilir.

Toplumsal düzeyde, yeşil aklama, çevresel söylemlerin güvenilirliğine duyulan inancı zedeler. Bu, tüketicilerin çevresel girişimlere karşı giderek daha şüpheci yaklaşmasına ve sürdürülebilir kararlar alma yetilerini kaybetmesine neden olabilir. Uzun vadede, bu durum, toplumun gerçek çevre dostu uygulamaları kabul etme ve destekleme isteğini azaltabilir ve sürdürülebilir bir gelecek için gerekli dönüşümleri engelleyebilir (Yang vd., 2020).

Sonuç olarak, burada yalnızca bir kısmı ele alınan yeşil aklamanın çok katmanlı sonuçları, şirketlerin dürüst ve somut sürdürülebilirlik uygulamaları benimsemesinin, güven, itibar ve uzun vadeli başarı açısından ne denli gerekli olduğunu açıkça göstermektedir. Bu bağlamda, yeşil aklamanın yarattığı etik ikilemlerin farkında olunmalı ve bu ikilemlerin aşılması hedeflenmelidir. Ele alının bu konu Türkçe literatürde an itibariyle çok fazla tartışılmamış olduğundan, okuyucuların konunun geliştirilmesi yönünde farklı çalışmalar yapabilecekleri düşünülmektedir.

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ARTIFICIAL INTELLIGENCE AND THE ENERGY SECTOR

YAPAY ZEKÂ VE ENERJI SEKTÖRÜ

Cemal ELİTAŞ

Prof.Dr., Yalova Üniversitesi, İ.İ.B.F., Uluslararası Ticaret ve Finansman Bölümü, Yalova, Türkiye.
E-mail: cemal.elitas@yalova.edu.tr
ORCID ID: 0000-0002-6010-6574

Abstract

Climate change has been a significant concern since the late 20th century. It refers to regional and global climatic shifts driven by the increased atmospheric concentration of carbon dioxide (CO_2) and other greenhouse gases (GHGs), primarily caused by human activities—particularly fossil fuel consumption. This study examines the root causes of climate change, with a focus on the impacts of fossil fuel-based energy production, and explores the potential roles of artificial intelligence (AI) and data science in addressing this challenge, especially within the energy sector. The primary objective is to evaluate long-term strategies for achieving net-zero carbon emissions. The study argues that combating climate change requires not only individual efforts but also structural transformations and technological innovations. AI and data science can serve not merely as solutions but also as tools for monitoring and guiding the effectiveness of climate policies. It concludes that achieving net-zero targets necessitates the widespread adoption of AI-driven decision systems and a just transition away from fossil fuel-based infrastructures.

Keywords: Climate Change, Artificial Intelligence, Energy Sector, Carbon Emissions, Finance.

Özet

İklim değişikliği, yirminci yüzyılın sonlarından bu yana önemli bir endişe kaynağı olmuştur. Bu durum, insan faaliyetlerinden – özellikle fosil yakıt tüketiminden – kaynaklanan karbondioksit (CO2) ve diğer sera gazlarının (GHG) atmosferde artışıyla gözlemlenen bölgesel ve küresel iklim değişikliklerini ifade eder. Bu çalışma, iklim değişikliğinin temel nedenlerini, özellikle fosil yakıt kullanımına dayalı enerji üretiminin etkilerini, ve özellikle enerji sektöründeki bu soruna karşı mücadelede yapay zekâ (YZ) ve veri biliminin potansiyel rollerini incelemektedir. Temel amaç, net sıfır karbon emisyonu hedeflerine ulaşmada izlenebilecek uzun vadeli stratejileri değerlendirmektir. Çalışma da iklim değişikliğiyle mücadelede yalnızca bireysel çabaların değil, yapısal dönüşümlerin ve teknolojik inovasyonların da gerekli olduğunu savunur. YZ ve veri bilimi, yalnızca çözüm değil, aynı zamanda iklim politikalarının etkinliğini izleme ve yönlendirme aracı olarak kullanılabilir. Net sıfır hedeflerine ulaşmak için, YZ destekli karar sistemlerinin yaygınlaştırılması ve fosil yakıt temelli sistemlerin adil geçişle dönüştürülmesi gerektiği sonucuna varılmaktadır.

Anahtar Kelimeler: İklim Değişikliği, Yapay Zekâ, Enerji Sektörü, Karbon Emisyonu, Finans.

GİRİŞ

İklim değişikliği, yirminci yüzyılın sonlarından bu yana önemli bir endişe kaynağı olmuştur. Bu durum, insan faaliyetlerinden – özellikle fosil yakıt tüketiminden – kaynaklanan karbondioksit (CO2) ve diğer sera gazlarının (GHG) atmosferde artışıyla gözlemlenen bölgesel ve küresel iklim değişikliklerini ifade eder (Nesbit, 2013). Ölü organizmaların (oksijensiz ortamda) milyonlarca yıl boyunca yer altında kalması sonucu oluşan organik moleküllerin ayrışması doğal bir süreçle fosil yakıtları meydana getirir. Ancak, bu oluşum milyonlarca yıl sürdüğünden, fosil yakıtlar yenilenemez enerji kaynakları olarak kabul edilir (Motoaki, 1990; Schmidt, 2015; Paul vd., 1990-1999). Tüketim hızları üretim hızlarını geçtiği için bu kaynaklar hızla tükenmektedir (Sharma & Kumar De, 2024). Fosil yakıtlar karbon içerir ve üç halde bulunur: gaz, sıvı ve katı. Gaz hâlindeki hidrokarbon karışımı (örneğin metan), sıvı hâlde petrol ve katı hâlde kömür olarak örneklendirilebilir (Miller, 2007; Ahuja, 2015).

2019 yılı verilerine göre, dünya enerji tüketiminin %84,3'ü fosil yakıtlardan (petrol, kömür ve doğalgaz) sağlanmıştır. Geri kalan %15,7'lik enerji nükleer enerji, hidroelektrik ve yenilenebilir kaynaklardan gelmektedir. Ancak bu dengesizlik (yaklaşık 80:20 oranı) ciddi bir uyarıdır. Fosil yakıtların yakılması yalnızca hava kirliliğine neden olmakla kalmaz, aynı zamanda iklim değişikliği, deniz asidifikasyonu, ekonomik yükler ve sağlık sorunları gibi birçok sorunu da beraberinde getirir. Her yıl atmosfere 37 milyar ton CO2 salınmakta ve bunun yalnızca küçük bir kısmı doğa tarafından emilmektedir (Ellabban vd., 2014; Harvey&Haikkinen, 2018). Söz konusu 2019 yılı Dünya Enerji İstatistikleri Raporuna göre, sanayi devrimi ve insan faaliyetleri, CO2, CH4 (metan), O3 (ozon) ve N2O (diazot monoksit) gibi sera gazı salınımının başlıca nedenidir. Ancak fosil yakıt kullanımının azaltılması her yıl 3,6 milyar insanın hayatını kurtarabilir (Zhang, 2019). Bu kötü gidişata karşılık yenilenebilir enerji iyi bir alternatif olarak görünmektedir. Yenilenebilir enerji, karbon-nötr ve doğal olarak yenilenebilen kaynaklardan (jeotermal, güneş, gelgit, rüzgâr, biyokütle vb.) elde edilir (Ellabban vd., 2014; Harvey&Haikkinen, 2018). REN21 2025 Raporu, toplam nihai enerji tüketiminde (TFEC) yenilenebilirlerin payını %20,5, fosil yakıtların payını ise %79,5 olarak belirtmiştir (REN21, 2025). Söz konusu bu rapor da fosil yakıt/yenilenebilir enerji oranının 80:20 olmasını alarm verici bulmaktadır.

Fosil yakıtların yanması, astım ve diyabet gibi sağlık sorunlarına yol açan hava kirliliğinin ana nedenidir (Myllyvirta, 2020). Yılda 37 milyar ton CO_2 salınımına neden olan bu süreçte, doğa tarafından emilen miktar sınırlı kalırken, büyük bir kısmı atmosferde birikerek kirliliği artırır (Ambrose, 2020). Bunun sonucunda:

- Küresel ısınma,
- Okyanus asitlenmesi,
- Dünya GSYİH'sinin %3,3'üne denk gelen ekonomik yük,
- Yılda 5 milyar insanın ölümüne katkı (Zhang, 2019).

Bu sorunların kökeni, 17. yüzyılda başlayan Endüstri Devrimleri ve ekonomik kalkınma odaklı küresel politikalar ile doğrudan bağlantılıdır (Readfearn, 2017). IPCC'nin Altıncı Değerlendirme Raporu (AR6, 2019), sera gazı emisyonlarının (CO_2, CH_4, O_3, N_2O) başlıca nedeninin insan faaliyetleri olduğunu vurgulamıştır (Climate Change 2013). Fosil yakıt kullanımının azaltılması ise yılda 3,6 milyar hayat kurtarabilir (Zhang, 2019).

Bu çalışmada, iklim değişikliğiyle ilgili zorlukları ele alırken, enerji sektörüne odaklanılmıştır. Ayrıca, sorunların çözümünde veri bilimi ve yapay zekânın rolü de incelenmiştir.

KARBON EMİSYONLARI, İKLİM DEĞİŞİKLİĞİ VE ENERJİ SEKTÖRÜ

2016-2020 yılları arasında bankalar, Paris Anlaşması'nın imzalanmasından sonra bile fosil yakıt şirketlerine toplam 3,8 trilyon ABD doları finansman sağlamıştır. 2020 yılında fosil yakıtlara en fazla kaynak ayıran üç banka şunlardır:

- JP Morgan Chase: 51,3 milyar $
- Citi Bank: 48,4 milyar $
- Bank of America: 42,1 milyar $ (Banking on Climate Chaos, 2021).

Altmış banka 2050 yılına kadar net sıfır emisyon hedefine ulaşma taahhüdünde bulunmuştur. Ancak raporda bu taahhütlerin zayıf olduğu belirtilmektedir, çünkü bazı bankaların fosil yakıt, petrol ve gaz ile ilgili iş yapan şirketlere finansman sağlamaya devam eden politikaları bulunmaktadır (Banking on Climate Chaos, 2021). Bank of America Corp, Barclays Plc ve Morgan Stanley gibi birçok banka, kredi ve yatırımlarından kaynaklanan karbon emisyonlarını izleyip raporlama sözü vermiştir (Sharma & Kumar De, 2024).

Kâr amacı gütmeyen bir iklim organizasyonu olan İklim Beyan Projesi (Climate Disclosure Project-CDP) tarafından hazırlanan bir rapora göre, karbon emisyonu üreten endüstrilere yatırım yapan ve kredi veren finans kuruluşlarının sera gazı emisyonları, doğrudan emisyonlarından ortalama 700 kat daha yüksektir (The Time to Green Finance, CDP Financial Services Disclosure Report 2020).

Diğer yandan, fosil yakıt sektörleri tarafından bir ürün, hizmet, teknoloji vb. ile ilgili çevresel faydalara dair yanlış veya yanıltıcı iddialarda bulunulduğu görülmektedir. Bankalar, nihayetinde büyük miktarda karbon emisyonuna ve iklim değişikliğine yol açan bu sektörlerdeki şirketlerin hisselerini satmaktadır. Bu durum, mevcut yatırım politikalarında bazı köklü değişiklikler yapılmasını gerektiren alarm verici bir sorundur. Bu nedenle, finans sektörü sürdürülebilir finansman ve sorumlu yatırımlar yoluyla emisyonların azaltılmasında önemli bir rol oynamaktadır (Bolton vd., 2020).

Yapay Zekâ ve Finans Sektörü

Çevresel, Sosyal ve Yönetişim (ESG), şirketleri ve ülkeleri sürdürülebilirlik açısından ne ölçüde ilerlemiş oldukları bakımından değerlendirmek için kullanılan popüler bir yaklaşımdır. ESG analizi, yatırım sürecinin giderek daha önemli bir parçası hâline gelmiştir. Yatırımcılar, yatırım yaptıkları şirketleri daha kapsamlı bir şekilde anlayabilmek için ESG verilerini yatırım kararlarına entegre etmektedir. Sürdürülebilirlik hedeflerine ilişkin göstergeler genellikle zorunlu finansal raporlama kapsamında yer almasa da, şirketler giderek artan şekilde bu bilgileri yıllık raporlarında veya bağımsız sürdürülebilirlik raporlarında sunmaktadır. Sürdürülebilir Muhasebe Standartları Kurulu (Sustainability Accounting Standards Board-SASB), Küresel Raporlama Girişimi (Global Reporting Initiative-GRI) ve İklimle İlgili Finansal Açıklamalar Görev Gücü (Task Force on Climate-related Financial Disclosures-TCFD) gibi çeşitli kuruluşlar, bu faktörlerin yatırım sürecine dâhil edilmesini kolaylaştırmak için standartlar geliştirmek ve önem derecelerini tanımlamak üzere çalışmalar yürütmektedir (Kozlov, 2021).

Yatırımcılar hâlâ ESG verilerinin toplanması ve yorumlanması konusunda zorluklar yaşamaktadır. Standardize edilmiş ESG veri setlerinin ve raporlama yönergelerinin eksikliği, ihraççıların sürdürülebilirlik hakkında anlamlı bilgiler açıklamasını zorlaştırmaktadır. Veriler çoğu zaman geniş çapta erişilebilir değildir ya da analistler tarafından manuel olarak toplanmakta, bu da veri sağlayıcıları alternatif olarak öznel ve niteliksel değerlendirmeler yapmak zorunda bırakmaktadır. Bu yaklaşım, farklı ESG araştırma şirketlerinin ve veri sağlayıcılarının genellikle birbirinden tutarsız yöntemler kullanarak ESG puanları oluşturmasına yol açmaktadır. Ancak, Doğal Dil İşleme (NLP) gibi yapay zekâ teknikleri, hem yapısal hem de yapısal olmayan verilerin toplanması, temizlenmesi ve analiz edilmesinde kullanılabilir. Yapay Zekâ destekli ESG analizleri, yapılan yatırımların türü ve çevre açısından güvenilirliği hakkında daha fazla bilgi sağlayabilir (Kozlov, 2021).

Yapay Zekâ, aynı zamanda finansal kurumlar tarafından şirketlerin greenwashing (yeşil aklama) uygulamalarını tespit etmek için de kullanılabilir (Kishan, 2021). Yeşil Aklama (Greenwashing), bir şirketin veya ESG finansal ürününün sürdürülebilirlik profiline ilişkin etkilerinin ya da risklerinin yatırımcılara yeterince açıklanmaması durumudur. Bankalar, sosyal medya, yazılı basın ve internet portalları gibi çevrimiçi içerikleri kullanarak şirketlerin sürdürülebilirlik iddialarını doğrulayan Yapay Zekâ çözümleri geliştirebilir. Finansal kuruluşlar, enerji tüketimini ve karbon emisyonlarını azaltmayı hedefleyen şirketlere sorumlu yatırımlar yaparak sürdürülebilir kalkınmaya katkıda bulunabilir. Bankaların çeşitli sektörlerde yaptığı yatırımların iklim değişikliği ile ilgili sonuçlarını tahmin etmek için makine öğrenimi modelleri geliştirilebilir. Bankacılık sektörü, farklı sektörleri değerlendirmek ve karbon ayak izlerini analiz etmek amacıyla çeşitli ML algoritmalarını ve veri bilimi yaklaşımlarını kullanabilir. Bu, bankaların düşük karbonlu varlıklara yatırım konusunda daha akıllıca kararlar almasına yardımcı olabilir (Sharma & Kumar De, 2024).

Bu bağlamda, bankalar ve finans sektörlerindeki yatırımlar, çevre için ciddi tehditler oluşturabilir ve iklim değişikliğine katkıda bulunabilir. Hangi sektörlerin ve hisse senetlerinin daha yüksek risk taşıyacağını belirlemek zordur. Mevcut finansal sistemlerin çoğu, çeyrek dönemlik ya da yıllık performansa odaklanmakta; ancak bu yaklaşım, iklim değişikliklerinin uzun vadeli etkilerini dikkate

almamaktadır. Bankalar ve finans kuruluşları, iklim değişikliğiyle mücadelede şu iki temel unsura odaklanarak önemli bir rol oynayabilir:

- Yatırımların hisse senedi piyasalarında daha az kirletici sektörlere yönlendirilmesi,
- Karbon yoğun sektörlerin, yeşil teknolojilerin geliştirilmesi ve uygulanması yönünde teşvik edilmesi.

Yapay zekânın finans sektörüne entegrasyonu sayesinde, yeni yöntemler geliştirilebilir ve mevcut yöntemler iyileştirilebilir. Yapay Zekâ, ayrıca greenwashing uygulamalarını denetleyebilir ve ESG analizlerini geliştirebilir. Bu sayede, toplam karbon emisyonlarının azaltılması yoluyla net sıfır emisyon hedefine ulaşılmasına katkı sağlanabilir.

Karbon Emisyonları, İklim Değişikliği ve Enerji Sektörü

Tüketilen enerjinin büyük çoğunluğu, oluşumu binlerce yıl süren kömür, petrol ve doğalgaz gibi fosil yakıtlardan üretilmektedir. Bu enerji kaynakları yeniden kullanılamaz veya yenilenemez olup sınırlı rezerve sahiptir. Enerji ihtiyacını karşılamak için fosil yakıtlara olan bağımlılık son onyıllarda artış göstermiştir. Sanayi Devrimi'nden bu yana fosil yakıtlar küresel ölçekte dominant enerji kaynağı haline gelmiştir. 2019 yılında yapılan bir araştırmaya göre, Hindistan'ın enerji ihtiyacının %91,04'ü fosil yakıtlarla karşılanmaktadır (AEEE, 2025).

İklim Değişikliği ve Enerji Sektörü

Şekil 1, 1750-2023 yılları arasındaki tüm ülkelerin anılan dönem için dünya genelindeki enerji kaynaklı karbon emisyonlarını göstermektedir (ourworldindata, 2025). Grafik, bu zaman dilimi boyunca karbon emisyonlarında sürekli bir artış olduğunu ve bu durumla mücadele için acil önlemler alınması gerektiğini ortaya koymaktadır. Ancak 2020 yılında karbon emisyonlarında bir düşüş gözlemlenmiştir ki bu muhtemelen Covid-19 pandemisinin yol açtığı küresel çaptaki karantinalar ve ekonomik faaliyetlerin durma noktasına gelmesiyle ilişkilidir. Bu CO2 emisyonlarındaki azalma, 2010 yılından bu yana kaydedilen en büyük düşüş olup, 2009 yılında görülen 0,4 milyar tonluk önceki rekor azalmayı dahi geride bırakmıştır.

Şekil 1. Dünya Geneli Yıllık CO_2 Emisyonları

Fosil yakıtların yakılması, büyük miktarlarda CO_2 ve diğer zararlı sera gazlarının salınımına yol açarak iklim değişikliğine ve sera etkisinin artmasına önemli ölçüde katkıda bulunmaktadır. İnsan faaliyetlerinden kaynaklanan sera gazı emisyonları artmakta, bu gazlar atmosferde birikerek gezegenin ısınmasına neden olmaktadır. Dahası, bu sera gazları salındıktan sonra atmosferde onlarca hatta yüzlerce yıl kalabilme potansiyeline sahiptir. Bu nedenle iklim üzerindeki etkileri uzun süreli olup günümüz ve gelecek nesilleri etkilemeye devam etmektedir. Enerji verimliliği çoğu zaman sessiz sedasız ilerleyen bir süreç olsa da, yıllar içinde sera gazı emisyonlarının azaltılmasında büyük ilerlemeler kaydetmiştir. Enerji verimliliğine yapılacak daha büyük yatırımlar, iklim değişikliğinin etkilerini hafifletmeye potansiyel olarak katkı sağlayabilir (Sharma & Kumar De, 2024).

Yapay Zeka (AI) ve Enerji Sektörü

Yapay zekâ ile enerji sektörü arasındaki bağlantı, tahmin edilenden çok daha derin ve karmaşıktır. Yapay Zekâ, enerjinin değişken ve öngörülemez doğasını yönetmede kritik bir rol oynayarak ve

yenilenebilir enerji kaynaklarının benimsenmesini hızlandırarak, tüm enerji sektörünü dönüştürme eşiğindedir.

Enerji Sektöründe Yapay Zeka Uygulama Alanları

Yapay Zekâ, elektrik üreticileri ile tüketicilerinin sektör sınırlarını aşan akıllı ağlarla birbirine bağlanması alanında etkin olarak kullanılmaktadır. Elektrik şebekesinin giderek daha fazla merkezsizleşmesi ve dijitalleşmesiyle birlikte, çok sayıda ağ katılımcısını yönetmek ve ağı dengede tutmak giderek zorlaşmaktadır. Bu da veri seli anlamına gelen büyük miktarda bilginin değerlendirilmesini ve analizini gerektirir. Yapay Zekâ, bu verileri mümkün olan en hızlı ve en verimli şekilde işleme konusunda yardımcı olur. Bir başka uygulama alanı da akıllı şebekelerdir – bunlar sadece elektriği değil, aynı zamanda verileri de taşıyan ağlardır. Özellikle güneş ve rüzgâr gibi değişken üretim yapan santrallerin sayısının artmasıyla birlikte, santrallerin tüketime (ve tam tersine) akıllıca yanıt vermesi giderek daha önemli hâle gelmektedir. Yapay Zekâ, elektrik şebekesine bağlı olan çeşitli katılımcıların (tüketiciler, üreticiler, enerji depolama tesisleri) verilerini değerlendirebilir, analiz edebilir ve kontrol edebilir. Ayrıca, Yapay Zekâ üretim, tüketim veya iletimdeki anormallikleri neredeyse gerçek zamanlı olarak tespit ederek uygun çözümler geliştirebilir. Yapay Zekâ, enerji israfını azaltma, enerji maliyetlerini düşürme ve dünya çapında elektrik şebekelerine temiz, yenilenebilir enerji kaynaklarının entegrasyonunu kolaylaştırma ve hızlandırma potansiyeline sahiptir. Ayrıca, enerji sistemlerinin planlamasını, işletilmesini ve kontrolünü geliştirme kabiliyeti de vardır. Bu nedenle YZ teknolojileri, kalkınma için vazgeçilmez olan temiz ve uygun fiyatlı enerji sağlama kapasitesiyle yakından ilişkilidir (IFC, 2025)..

YZ teknolojisi, çeşitli kaynaklardan gelen büyük miktarda veriyi kullanarak problemlere çözüm bulabilir. Bu teknoloji sadece küresel verimliliği artırmakla kalmaz, aynı zamanda karbon ve diğer güçlü sera gazlarının toplam emisyonlarını da azaltma potansiyeline sahiptir. Microsoft ve PwC tarafından yayımlanan yakın tarihli bir rapora göre, çevresel uygulamalarda yapay zekâ kullanımı küresel GSYİH'yı %3,1–4,4 oranında artırabilir, küresel sera gazı emisyonlarını ise 2030 yılına kadar %1,5–4,0 arasında azaltabilir (Report by Microsoft and PWC, 2019). Bu Yapay Zekâ teknolojileri, sanayinin enerji yönetimini optimize etmesine yardımcı olabilir; enerji kaynaklarının izlenmesi ve dağıtımını iyileştirerek tahmine dayalı analizler sunabilir. Ayrıca, simülasyonların görselleştirilmesi, karar alma süreçlerinin iyileştirilmesi, işletme maliyetlerinin düşürülmesi ve fiziksel varlıkların yaşam döngüsünün yönetimi ve uzatılması gibi alanlarda da kullanılabilir. Petrol ve doğalgaz şirketlerinin, gelecekte varlıklarını sürdürebilmeleri için CO_2 ve diğer sera gazı emisyonlarını önemli ölçüde azaltmaları, hatta mümkünse tamamen ortadan kaldırmaları gerekmektedir. Yapay Zekâ teknolojisi, enerji endüstrisine bu son derece zorlu hedefe ulaşmasında yardımcı olabilecek bazı çözümler sunabilir (Sharma & Kumar De, 2024).

Enerji Sektöründe Karbon Emisyonlarının Azaltılmasında Yapay Zekânın Rolü

Yapay Zekâ yöntemlerinin uygulanması, enerji sektöründeki mevcut çözümlerin etkinliğini önemli ölçüde artırabilir ve yenilenebilir enerji kaynaklarının daha hızlı entegrasyonunu destekleyebilir. Makine öğrenimi algoritmaları, büyük veri setlerindeki kalıpları ve içgörüleri belirleyerek tahmin doğruluğunu artırabilir. Bu sayede enerji şirketleri:

Akıllı Enerji Tahmin Sistemleri açısından ;

- Rüzgar ve güneş enerjisi üretimini yüksek doğrulukla öngörme,
- Enerji talebindeki dalgalanmaları tahmin ederek fazla üretimi önleme.

Şebeke Optimizasyonu açısından ;

- Gerçek zamanlı veri analiziyle enerji dağıtımını optimize etme,
- Yenilenebilir kaynakların şebekeye entegrasyonunu kolaylaştırma.

Enerji Depolama Yönetimi açısından ;

- Batarya sistemlerinin verimli kullanımını sağlama,
- Depolama ihtiyacını doğru tahmin ederek maliyetleri düşürme.

Tahmine Dayalı Bakım açısından ;

- Enerji altyapısındaki olası arızaları önceden tespit etme,
- Bakım maliyetlerini azaltırken sistem güvenilirliğini artırma.

Karbon Ayak İzi Analizi açısından ise ;

- Emisyon kaynaklarını detaylı şekilde haritalama,
- En yüksek emisyonlu süreçleri belirleyerek iyileştirme fırsatları sunma şeklinde katkılar sunmaktadır.

Bu noktada Yapay Zekânın enerji sektörü üzerindeki etkilerini biraz daha detaylı incelemenin çalışma içeriği ile uyumlu olacağı düşünülmektedir.

(a) Enerji Talebini Tahmin Etmek

Kısa vadeli talep tahminlerinde sağlanacak daha yüksek doğruluk, enerji şirketlerinin üretim kararlarını iyileştirmesine, operasyonel verimliliği artırmasına ve gerekli işletme yedeklerini azaltmasına yardımcı olabilir. Yapay Zekâ tabanlı modeller, son kullanıcılar için güneş ve batarya sistemlerini optimize ederek ve yükleri elektrik şebekelerinin daha az yoğun olduğu zamanlara kaydırarak elektrik faturalarının düşürülmesine katkı sağlayabilir. Böylece, gerçek zamanlı enerji tasarruf planları, tarife programları ve indirimlerin sunulması mümkün olur. Mountain View merkezli start-up şirketi Bidgely Inc., evlerdeki enerji üretimi ve tüketimi hakkında ayrıntılı bilgiler ve analizler sağlamak amacıyla yapay zekâ kullanmaktadır (Bidgely, 2025). Bu sayede kullanıcılar, hangi elektrikli cihazların ne zaman ve ne kadar verimli kullanıldığını görebilmekte, bu da enerji yönetimini daha bilinçli ve verimli hâle getirmektedir.

(b) Hava Koşullarını Tahmin Etmek

Farklı enerji kaynakları arasında yenilenebilir bir portföyde denge sağlamak kolay bir iş değildir, çünkü bu denge atmosferik koşullara bağlıdır. Kendi kendine öğrenebilen hava durumu modelleri, uydu görüntülerinin geniş çapta işlenmesi ve gerçek zamanlı ölçümlerle birleştirildiğinde, yenilenebilir enerji üretim maliyetlerini önemli ölçüde düşürebilir.

(c) Hata Tahminleri Oluşturmak

Bu, enerji sektöründe yapay zekânın en önemli uygulama alanlarından biridir (gerçek zamanlı bakım ve ideal bakım planlarının belirlenmesi ile birlikte). Cihaz arızalarının sık yaşandığı ve potansiyel olarak ciddi sonuçlara yol açabildiği bir sektörde, Yapay Zekâ, uygun sensörlerle birlikte kullanıldığında, cihazları izlemek ve arızaları henüz meydana gelmeden tespit etmek açısından son derece faydalı olabilir. Bu sayede kaynak, para, zaman ve insan hayatı tasarrufu sağlanabilir.

(d) Süreç Optimizasyonu Yoluyla Kontrolleri İyileştirmek

Süreç optimizasyonuna ilişkin gerçek bir örnek üzerinden hareket etmek yararlı olacaktır. Profire Energy Inc., petrol ve gaz endüstrisi için endüstriyel yanma sistemleri çözümleri sunan bir teknoloji şirketidir **Yapay Zekâ ile Emisyon Azaltma Programı'nın iki aşamasına katılmıştır. Ekip, makine öğrenimi teknolojisi kullanarak, program kapsamında uyumsuz çalışan brülörleri (yanma cihazlarını) tespit etmeye yönelik yüksek kaliteli ve düşük riskli bir iyileştirme fırsatını tanımlayıp incelemiştir. Bu gaz brülörleri doğalgaz israfına neden olmakta ve sera gazı emisyonlarını artırmaktadır – Profire'ın kurulu sistem sayısının 75.000 olduğu göz önüne alındığında, böyle bir teknolojinin sağlayabileceği tasarruf oldukça büyüktür. Üstelik bu teknoloji işe yaradığı takdirde, Kuzey Amerika'daki yaklaşık 1,7

milyar petrol kuyusuna da uygulanabilir. Şu anda doğalgazla çalışan ısıtma sistemlerinde uyumsuz brülörleri sürekli olarak denetleyip tespit etmenin nesnel ya da maliyet açısından etkili bir yolu yoktur. Saha teknisyenleri, brülör performansını alev rengi, şekli, sesi, manuel yanma analizleri ve diğer saha gözlemleri temelinde elle değerlendirmek zorundadır. Bu yaklaşım hem pahalı hem de zaman alıcıdır ve sonuç olarak verimsiz brülör yönetimi, doğalgaz israfı ve artan sera gazı salımı ile sonuçlanmaktadır (Magill, 2021; Kube & Ayotte, 2021).

SONUÇ VE GENEL DEĞERLENDİRME

Yapay Zekâ, elektrik üretimi, iletimi, dağıtımı ve tüketimini iyileştirme konusunda büyük bir potansiyele sahiptir. Hem gelişmekte olan pazarlarda hem de gelişmiş ekonomilerde enerji sektörü; verimlilik, şeffaflık, erişilebilirlik ve yenilenebilir enerji kaynaklarının elektrik sistemlerine entegrasyonu gibi konularda hâlâ birçok zorlukla karşı karşıyadır. Yapay Zekânın enerji sektöründeki potansiyel uygulamaları çeşitlidir ve farklılık gösterir. Bu nedenle, Yapay Zekâ endüstrisinin enerji sektörünün alanlarına daha derinlemesine entegre edilmesi gerekmektedir. Yapay Zekâ, karbon emisyonlarının azaltılmasında kilit bir rol oynamaktadır. Bunu; enerji talebini, hava koşullarını ve ekipman arızalarını öngörerek, ayrıca burada verilen örnek esas alındığında doğalgaz brülörlerinin süreçlerini optimize edip kontrol edilmesi bakımından da sağlayabilmektedir. Bu bağlamda yapay zekânın enerji sektöründe sağlayacağı temel faydaları (a) akıllı şebekelerde, (b) gerçek zamanlı şebekelerde ve (c) küresel enerji sistemlerinde kısa başlıklar halinde ayrı ayrı özetlemek konunun pekiştirilmesi açısından faydalı olacaktır.

(a) Akıllı Şebekelerde Yapay Zekâ Uygulamaları:

- Akıllı şebekeler, yalnızca elektrik değil aynı zamanda veri iletişimi de sağlayan ağlardır.
- Özellikle güneş ve rüzgar enerjisi santralleri gibi değişken üretim kapasitesine sahip santrallerin artmasıyla birlikte, santrallerin tüketime (ve tersi yönde) akıllı cevap vermesi kritik önem kazanmaktadır.
- Yapay Zekâ, şebekeye bağlı tüm katılımcıların (tüketiciler, üreticiler, depolama sistemleri) verilerini değerlendirme, analiz etme ve yönetme kapasitesi sunmaktadır.

(b) Gerçek Zamanlı Şebeke Optimizasyonu:

- AI teknolojileri, üretim, tüketim veya iletimdeki anormallikleri neredeyse gerçek zamanlı olarak tespit edebilmekte ve uygun çözümler üretebilmektedir.
- Fraunhofer Enstitüsü gibi kurumlarda bu alandaki ilk araştırma projeleri halihazırda yürütülmektedir.

(c) Küresel Enerji Sistemlerine Katkıları:

- Enerji israfını azaltma potansiyeli
- Enerji maliyetlerinde düşüş sağlama
- Temiz ve yenilenebilir enerji kaynaklarının kullanımını kolaylaştırma ve hızlandırma
- Enerji altyapısının planlanması, inşası ve işletilmesi süreçlerini optimize etme.

Bu çalışma, yapay zekâ ile enerji sektörü arasındaki ilişkiyi iklim değişikliği teması çerçevesinde ele alarak alandaki mevcut duruma bütüncül bir bakış sunmayı amaçlamıştır. Yapay zekânın enerji üretimi, dağıtımı ve yönetimi süreçlerinde sunduğu potansiyel, karbon emisyonlarının azaltılması ve sürdürülebilirlik hedeflerine ulaşılması açısından kritik bir araç olarak öne çıkmaktadır. Bundan sonraki akademik ve uygulamalı çalışmaların, bu etkileşimi derinlemesine inceleyerek literatürü zenginleştirmesi ve politika yapıcılar ile sektör temsilcilerine yön gösterici katkılar sunması beklenmektedir.

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İSLAM'IN FAKİRLİK VE YOKSULLUĞA ÇÖZÜM YOLLARI VE ÇALIŞMAYA TEŞVİK: KURAMSAL ÇERÇEVE, TARİHÎ TECRÜBE VE POLİTİKA ÖNERİLERİ

Yazar: İbrahim Halil ER – Sıddık BADILLI

Anahtar Kelimeler: İslam iktisadı, fakirlik, sosyal adalet, emek, işçi-işveren, zekât, vakıf, teşvik, meşruiyet, kanaat

Özet

İslam'ın tembelliği ve miskinliği teşvik ettiği yönündeki iddialar, tasavvufî eğitimdeki "bir lokma bir hırka" anlayışının bütüncül iktisadî sisteme genellenmesinden kaynaklanan bir indirgemecilik içerir. Oysa Kur'an ve Sünnet, çalışmayı, üretimi, helal kazancı, adaleti ve toplumsal dayanışmayı merkeze alır. Bu bildiride;

(i) meşru kazanç ilkesi,

(ii) çalışmanın ibadet boyutu ve iktisadî üretim,

(iii) fakirlikle mücadelede kurumsal araçlar (zekât, infak, sadaka, karz-ı hasen, vakıf, hisbe),

(iv) işçi-işveren ilişkileri ve iş sağlığı-güvenliği,

(v) kanaat ve israf karşıtlığı gibi ahlâkî sütunlar; tarihî tecrübe (Asr-ı Saadet, klasik dönem ve Osmanlı) ile modern literatür ışığında ele alınmaktadır. Son bölüm, İslam iktisadının çağdaş yoksulluk dinamiklerine dair politika önerileri ve ölçüm yaklaşımları (makâsıd temelli refah endeksleri) sunmaktadır.

Giriş

İslam'ın iktisadî öğretileri, "meşruiyet, emek, adalet ve dayanışma" ekseninde şekillenir. Kur'an, meşru olmayan yollarla mal edinmeyi yasaklar (Nisâ 4/29; Bakara 2/188); emek ve çalışmayı değer olarak tesciller (Necm 53/39); adalet ve ihsanı toplumsal düzenin temeline yerleştirir (Nahl 16/90; Nisâ 4/58, 135). Tasavvufî terbiyede görülen zühdî uygulamalar ise sistemin tamamı değil, iç dünyayı arındırmaya dönük pedagojik yöntemlerdir; mülke ve zenginliğe düşmanlık değil, mülke esir olmamayı hedefler.

Bu çalışma, İslam'ın fakirliğe bakışını ve çalışma ahlâkını normatif metinler, tarihî tecrübe ve çağdaş iktisat literatürü ile birlikte yorumlayarak "uygulanabilir bir politika seti" önermeyi amaçlar. Yöntem olarak metin çözümlemesi (Kur'an ayetleri, sahih hadisler, fıkıh metinleri), tarihsel örnekler ve modern iktisat tartışmalarının karşılaştırmalı analizi benimsenmiştir.

Genelde İslam'a yönelik eleştirilerin başında insanı miskinliğe ittiği, klasik doğu tembelliğini sağladığı şeklinde olup, "bir lokma, bir hırka" ilkesini getirdiği iddia edilmektedir. Aslında bu görüşler İslam muarızları tarafından ortaya atılan, İslam'ı karalama ve Müslümanların çalışma tempolarını düşürmeye yönelik algı çalışmasıdır.

İslam, bu iddianın aksine çalışmayı, üretmeyi ve zenginliği savunmaktadır. "Veren el alan elden üstündür" ilkesini savunduğu gibi, Müslümanın dilenmesini de yasaklamakta ancak ölmeyecek kadar almasına izin vermektedir.

Tasavvuftaki "bir lokma, bir hırka" anlayışı İslam'ın ekonomi sistemine genelleştirilemeyeceği gibi, bu ilke tasavvuf okulunun bir eğitim yöntemi olduğu da bilinmelidir. Talib, tasavvuf okuluna intisab ettiğinde az ile yaşamayı, az ile yetinmeyi, dünya nimetlerine yönelmemeyi ve kanaatkarlığı

öğrenmesi için hocası tarafından böyle bir eğitime tabi tutulur. Talebenin eğitimdeki başarısı ile bu süreç sona erer. Buradaki amaç, talebenin kalbinden dünya sevgisini çıkarmaktır. Fakat dünya sevgisi çıkartılırken dünyayı zem etme veya zenginlik düşmanı empoze edilmez. Burada varılmak istenen hedef, dünyanın insana sahip olmasını engellemedir. Eşya insanın kölesi iken, insanın eşyanın kölesi olmasından kurtarmak ve insanı Allah'a kul olmaya yöneltmektir. Kişi zengin olacak ama bu zenginlik onu kendinden geçirmeyecek, mala köle olmayacak, toplumsal görevlerini ifa edebilecektir.

Kazanç ve Meşruiyet

İslam, kazancın helal ve meşru yollardan elde edilmesine önem verir. Gayri meşru kazançları hem haram ve hem de yasak kabul eder. İslam; gasp, hırsılık, rüşvet, zimmete geçirme, yolsuzluk, emanete hıyanet etme, soygun, görevi istismar etme ve makamından çıkar sağlama, yağma, faiz, karaborsa, kumar, aldatma ve gayrı meşru yollarla elde edilen kazançları yasaklar. Bu yoldan elde edilen kazançlar hem dünya ve hem de ahirette geçersiz olduğu gibi cezayı hak eder. Ayet şöyle buyuruyor: "Ey iman edenler! Mallarınızı aranızda meşrû olmayan yollarla yemeyin. Karşılıklı rıza ile yapılan bir ticaret yapmanız ise, elbette meşrûdur." Nisa Suresi, 4/29

Dolayısıyla İslam'a göre bir kazancın öncelikle meşru yollarla elde edilmesi gerekir. Hatta verilen emek de meşru yollar için sarf edilmelidir. Yani hırsızlık yapmak için verilen emek meşru olmayan bir şeyi elde etmek için sarf edildiğinden kabul edilmez ve bu emeğin karşılığı verilmez. Cenâb-ı Hak buyuruyor: "Aranızda mallarınızı bâtıl sebeplerle yemeyin. İnsanların mallarından bir kısmını, bile bile haksız yere yemek için, mallarınızı hâkimlere rüşvet olarak vermeyin." (Bakara, 188)

Bir devlet memurunun görevini kötüye kullanması, kendisine şahsi çıkar ve menfaat temini için kullanması, rüşvet alması, iltimas/torpil geçirmesi, yolsuzluk yapması veya zimmetine para geçirmesi gibi yollarla elde edilen kazanç helal değildir, gayri meşrudur ve bu yollarla elde edilen kazançlar tazmin edildiği gibi, sahibi de ta'zir, hapis ve görevinden uzaklaştırma cezası ile cezalandırılır. "Emanete hıyanet etmek, bir peygamberin yapacağı iş değildir. Her kim hıyanet edip de ganimetten veya kamuya ait hâsılattan bir şey aşırır, bunu da gizlerse, kıyamet gününe o vebalini aldığı şeyler, boynuna asılı olarak gelir. Sonra her kişiye kazandığı şeylerin mükâfatı veya cezası eksiksiz verilir. Ve onlar asla haksızlığa uğratılmazlar." Âl-i İmran Suresi, 3/161.

Bir kazancın meşru olması için onun helal/meşru yollarla emek sarf edilerek elde edilmesi gerekir. Bunun başında çalışmak, miras, ticaret, memuriyet ve buna benzer kazanç yollarıdır. Meşru yollarla elde edilen kazançlar kişinin helal kazancı olmuş olur. "Allah Resulü (sallallâhu aleyhi ve sellem) rüşvet alana da verene de lanet etmiştir." Ebu Davud, Ekdıyâ 4.

Çalışmaya Teşvik

İslam çalışmayı teşvik eder fakat ibadetlerini, ailesini ve sosyal ilişkilerini de aksatacak şekilde mal hırsına kapılmasını kabul etmez. "Mallarınız ve çocuklarınız ancak birer imtihandır; Allah katında ise büyük bir mükâfat vardır" (Teğabun, 15). Çalışmayı ibadet olarak görürken, çalıştığı için ibadetleri aksatmayı da kabul etmez. Allah Teâlâ, "İnsan için ancak çalıştığı vardır." (Necm 39)

Günümüzde Müslümanların ciddi anlamda tembel olduğu görülmektedir. Halbuki dünyayı imar etmek için çalışmak gerekir. Çalışmanın bir ibadet sayıldığı tek din olan İslam'ın müntesiplerinin bu tembel hali gerçekten dinlerine iman etmemenin veya onun emirlerini yerine getirmemenin temel göstergesidir. Halbuki çalışılmadığı takdirde hem bu dünyada ve hem öbür dünyada zillet içinde yaşanılacaktır.

Müslümanların bir an önce çalışma prensipleri ortaya koymaları ve sıkı bir çalışma prensibi gerçekleştirmeleri gerekir.

Fakirlik

İslam fakirliği mücadele edilmesi ve yok edilmesi gereken bir sosyal yara olarak görür. Fakirliği önlemek için çeşitli çözüm yolları sunar. Bunlar; çalışmayı teşvik, yardımlaşma, zekat, infak, sadaka, akrabalara yardım, yeni iş imkanları oluşturma ve bu konuda teşvik gibi yöntemler geliştirmiştir. Bu konu Kur'an-ı Kerim'de şöyle açıklanmaktadır: "Mallarını gece gündüz; gizli ve açık Allah yolunda harcayanlar var ya, onların Rableri katında mükâfatları vardır. Onlara korku yoktur. Onlar mahzun da olmayacaklardır." (Bakara 274) Fakirliği bir istismar aracı olarak kullanma ve çalışmayıp dilenmeyi tercih etmesine Resulullah (sav) karşı çıkmış "Sizden birinizin sırtında odun küfesi taşıması dilenmesinden hayırlıdır." (Buhari, Buyu 15) Fakirlik insanların kaderi değildir, sadece insanlar kazançlarını ve rızıklarını temin edecek yöntemler geliştirmeleri gerekir.

İslam, fakirliğin bir kader olmadığını belirtir. Belki İslam'daki rızık ilkesini insanlar yanlış yorumlamaktadırlar. Yani eğer rızkım varsa bana gelir düşüncesi bir tembellik düşüncesidir. İnsan, rızkını elde etmesi için çalışmalıdır. Tembelliği Allah'ın kendisine verdiği bir ceza, imtihan veya kader olduğunu düşünmek öncelikle Allah'a bir iftiradır. Allah cömerttir ve her kese imkan vermiştir. Yeryüzünü geniş tutmuş, güneşi herkese eşit bir şekilde dağıtmış, arazileri bereketli kılmış ve orayı işletecek olanlara bol rızık nasip etmiş, denizleri balıklarla doldurmuş ve bunun gibi bir çok imkan vermiş. Bu verilen imkanlardan yararlanmayıp hala fakir ve aç olunuyorsa bu artık insanın tembelliği ve beyinsizliğidir.

Afrika'da uzun bir süre kaldım ve orada benim açlıkla ilgili temel gözlemim şu oldu. Aslında var olan koşullara göre Afrikalıların aç olmaması hatta bizleri bile doyurması gerekirken aç kalıyor olmaları ciddi bir zihinsel felçliğin sonucudur. Bugün dünyanın bir çok ülkesi Afrika'nın arazilerini kiralayıp ürün üretip ülkelerine taşırken oradakilerin açlık çekmesi gerçekten bir travma ve hastalıktır. Türkiye'nin iki misli arazilerde 20 ve 30 milyon nüfusla aç kalınıyorsa kendilerine yönelmeleri gerekir. Burada kusur onlarıdır. Belki bizim gibi ülkelere düşen görev onlara tarımı öğretip kendi kendilerine yeter olmalarının yollarını açmaktır. Fakat sonuçta bu kadar büyük arazilerde açlık çekiliyorsa bu tembellik, sömürü ve yanlış eğitimdir.

Fakirlik sorunu, tüm dünyanın sorunudur ama fakirliğin nedeni aslında iş azlığı veya açlık değil bilakis insanların doyumsuzluğudur. Halbuki insanlar kanaatkar olurlarsa eldeki az ürünle ve malla yetinmeyi yaşamayı öğrenirlerse mutlu olurlar, hatta çevrelerine bile faydalı olurlar. Sıkıntı televizyonlar ve internet vasıtasıyla insanlara açlık, tüketim ve sahip olma duygusunun pompalanması insanda mutsuzluğu ve kendilerini yetersiz görme duygusunu oluşturmaktadır. Sürekli başkalarının elindekine sahip olma ve sahip olamadığında da kendisini yetersi görme yani fakir görme durumu toplumun en büyük hastalığıdır.

Acilen insanların kanaatkarlık ve mal ile değil de dostları ile ailesi ile mutlu olmanın yolları öğretilmelidir. Buna rağmen, devlete düşen görev, insanları eğitmesi, istihdam oluşturması, fakir insanlara başkasına muhtaç olmayacak şekilde iş imkanı oluşturmasıdır.

Biz günümüzde fakirlere mal vererek kısa bir süre de olsa sorunlarını çözmekle hem İslami ve hem de insani görevlerimizi yerine getirdiğimizi sanıyoruz. Bu yanlış bir düşüncedir. Eğer gerçekten fakirlere yardım etmek ve bu sorunu ortadan kaldırmak istiyorsak onlara iş imkanı oluşturmalı veya geçimlerini sağlayabilecekleri meslekler öğretmeliyiz. Halbuki verdiğimiz sadaka, zekat ve infaklarımız etrafımızda asalak bir sınıfın türemesine de yol açabilir. Bu infaklar acil durumlar için, muhtaçlar için, çalışamaz durumda olanlar için verilmesi gerekir, diğer kesimler için onları bu sorundan kurtaracak kalıcı yollar oluşturmalıyız. Peygamberimiz kendisinden para dilenen bir gence balta verip ormana göndermiş, kendi

alın teri ile çalışıp para kazanmayı teşvik etmiştir. İslam birgünlük yiyeceği olanın dilenmesini yasaklamıştır. Toplum içerisinde dilenen insanlar varsa acilen bunlarla birilerinin ilgilenip sorunu çözmeleri gerekir. Dilenme fakirlikten dolayı ise iş veya geçim kapısı sağlanmalı, hastalık veya tembellikten dolayı ise tedavi edilmeli veya ıslah edilmelidir.

Sosyal Adalet

Toplum hayatının sağlıklı bir şekilde devam etmesi için sosyal adaletin bulunması şarttır. Sosyal adaletin başında gelirin adil bir şekilde dağıtılması, fakirlere yardım ve onlara iş imkanları oluşturarak topluma kazandırılması, evlenme çağındaki insanların evlenmelerinin sağlanması gibi unsurlar gelir. Müslüman cimri değil cömert olur fakat savurgan olmaz. Ayrıca, insanların yükselebilmesi, eğitim imkanlarına sahip olabilmesi ve devletin her türlü sosyal olanaklarında yararlanabilmesi gibi alanlar da gelir.

Sosyal adaletin sağlanmasının başında toplumda lüks, israf, savurganlık, faiz, karaborsa ve emek sömürüsü gibi unsurların ortadan kaldırılması ve bunun yerine dayanışmanın sağlanması gelir. Güçlünün ve zenginin fakir ve zayıfı ezmesine izin verilmez. Haklar, başkalarının alanına girdiği zaman son bulur. Haksızlıklara imkan verilmez.

İslam, sınıfsız bir toplum arzular. Üstünlüğü takvaya yani bireysel meziyetlere verir. Yönetimde bile din, dil, renk ve etnik kökene itibar etmez ve bunları Allah'ın bir ayeti olarak yorumlar. Onun için liyakat önemlidir. İslam, sosyal hayatın idamesinin adalet üzerine olduğunu belirtir ve adaleti mülkün temeline alır. Şüphesiz Allah, adaleti, ihsanı, yakınlara vermeyi emreder; çirkin utanmazlıklardan (fahşadan), kötülüklerden ve zorbalıklardan sakındırır. Size öğüt vermektedir, umulur ki öğüt alıp-düşünürsünüz. (16/90)

Şüphesiz Allah, size emanetleri ehline (sahiplerine) teslim etmenizi ve insanlar arasında hükmettiğinizde adaletle hükmetmenizi emrediyor. Bununla Allah, size ne güzel öğüt veriyor!.. Doğrusu Allah, işitendir, görendir. (4/58) Ey iman edenler, kendiniz, anne-babanız ve yakınlarınız aleyhine bile olsa, Allah için şahidler olarak adaleti ayakta tutun. (Onlar) ister zengin olsun, ister fakir olsun; çünkü Allah onlara daha yakındır. Öyleyse adaletten dönüp heva (tutkuları)nıza uymayın. Eğer dilinizi eğip büker (sözü geveler) ya da yüz çevirirseniz, şüphesiz Allah, yaptıklarınızdan haberi olandır. (4/135) Musa´nın kavminden hakka ileten ve onunla adalet yapan bir topluluk vardır. (7/159)

Sonuç Olarak

İslam, bazıların empoze ettiği gibi fakirliği övmez bilakis alan el değil veren el olmayı tavsiye eder. İnsanların geçimlerini sağlayacak kazanç yollarını oluşturmalarını ister. Bunun yollarının oluşturulmasını sağlar ve bu konuda önce ailesi, akraba ve çevresi ve daha sonra devleti sorumlu kılar.

Fakirlik Müslümanların kaderi değildir ve fakirlik varsa burada üretim yoktur, iş bilem yoktur, tembellik vardır, sömürü vardır… Müslüman vakar sahibi olmalı ve en kısa zamanda üretmeli ve infak etmelidir. İnfak ve zekat müessesi sadece sosyal adaleti sağlamak için kurulmuş emniyet supaplarıdır ama amaç Müslümanların bunlara muhtaç olmasını ortadan kaldırmaktır.

İSLAM'DA İŞÇİ VE İŞVEREN HAKLARI

İslam'da İşçi ve İşveren

İslâm'da işçi ile işveren, bir sınıf teşkil edecek ve birinden diğerine geçiş veya ikisini bir anda temsil mümkün olmayacak şekilde birbirinden ayrılmış değildir. İslâm'da iş akdi, "icâre"; yâni "kiraya verme" mefhumu içinde ele alınmıştır; işçi, emeğini kiraya verendir. Buna göre herkese iş yapan zanaatkârlar, sanâyiciler, doktor, avukat gibi serbest meslek sahipleri bu vasıflarıyla işçidirler; işlerini yaparken başkalarının emeğinden de istifade ediyor, yani işçi kullanılıyorsa, bu vasıflarıyla da işverendirler? Buna mukabil, yalnız bir şahsa veya müesseseye çalışan kimse sırf işçidir; ancak bu işçi, emeği karşılığında ücret yerine, üretim ve gelirden pay alıyorsa, işçilik vasfına bir ölçüde işverenlik de katılmaktadır. İşte bu işçi-işveren anlayışı İslâm'da hem sınıf teşekkülü ve çatışmasını önlemiş, hem de işçinin işe sahip çıkarak üretimi artırmasını, bir gün işveren haline gelme ümidiyle daha verimli olmasını sağlamıştır.

İslam'da insanların geçim ve nafakasını sağlama görevi yani ona iş imkanı oluşturma görevi de devletindir. İnsanların tembel tembel oturmasını istemediği gibi fakirliği de mücadele edilmesi gereken bir sosyal yara olarak görür ve insanlara yeni iş imkanlarını, istihdam kaynaklarını oluşturmaya çalışır. Resulullah (sav) şöyle buyurmuştur: "Sizden birinizin oturup dilenmektense sırtına ip alıp odunculuk yapması ve bu yolla para kazanması daha hayırlıdır."

İşçi Hakları

İslâm hukukuna göre iş akdi karşılıklı rızâ ve irade beyanı ile olur. O zat Musa'ya dedi ki, "Bu iki kızımdan birini sen, bana sekiz yıl ecîrlik etmek üzere sana nikahlamak istiyorum. Eğer hizmetini on yıla tamamlarsan o da kendinden. Bununla beraber arzu etmem ki sana zorluk çektireyim. İnşâ-Allah beni salihlerden bulacaksın." Mûsâ dedi, "O, seninle benim aramdadır. Bu iki müddetten hangisini ödersem demek ki, bana karşı bir husûmet yok. Allah da şu dediğimiz üzerinde bir vekil." (el-Kasas: 28/24-28.)

İşveren, işçinin rengi, inancı, cinsiyeti, dini, mezhebi veya etnik yapısına göre muamele etmez, liyakat esasına göre davranır. Onun hizmetine bakar ve emeğinin karşılığını işin bitiminde verir. Nitekim Resulullah (sav) da aynı prensibi, "İşçinin ücretini alnının teri kurumadan veriniz…" (İbn Mace) sözüyle vurgulamıştır.

İslam'da işçi haklarının başında ücret yani emeğinin karşılığının verilmesi ve izinler gelir. Kur'an bu konuda şöyle buyurur: "Herkese işlediklerinin karşılığı ödenir. Kendilerine haksızlık yapılmaz." (Ahkaf: 46/19.) İşçi, yapacağı işin ücretini önceden beyan etmeli veya işveren ücretini önceden belirtmelidir. Ücreti belirtilmeden, yapılan iş akdi geçersizdir. Fakat yapılan işin toplumda belirli bir ücreti takdir edilmişse o zaman önceden belirtilmemiş olsa da bu ücrete göre takdir edilir. Ücretin miktarı da örfe bırakılmıştır. Bu konuda dayatmacı davranılmamıştır. Eşit işe eşit ücret verilirken, zor ve maharet gerektiren işlere de işin durumuna göre farklı ücret verilir. Çünkü eşitlik her zaman adil olmayabilir. Kişilerin maharetleri, uzmanlıkları ve işin niteliğine göre ücret farklılığı olabilir. "Herkes için emeğinin karşılığı vardır." (Necm: 53/39.) Ücretinin eksik verilmesi, kararlaştırılan ücretin altında verilmesi veya kararlaştırılan zamandan daha çok çalıştırılması durumunda işçinin dava hakkı doğar ve İslam hukukuna göre kadıya ya da muhtesibe başvurabilir.

Devlet her işçiye aynı ücreti vermeyebilir. Evli ve kalabalık bir ailesi olan ya da bakmakla yükümlü olduğu kişi sayısı fazla olana ek ödeme yani günümüz tabiriyle aile yardımı verebilir. Ebu Davud'un rivayet ettiği şu hadis, genel mânada evlilere öncelik tanındığını andırmaktadır:

"Avf b. Mâlik diyor ki: Resulullah (s.a.s.)'e ganimet malı geldiği zaman aynı gün taksim ederdi. Evliye iki, bekâra bir hisse verirdi. İbn Musaffa rivayetinde şu ilâve vardır: Bir seferinde ganimet gelmişti. Beni Ammâr b. Yasir'den önce çağırdılar. Evli olduğum için bana iki hisse verdiler. Ammâr'a ise bir hisse verdiler. Çünkü o, evli değildi.

İslam'da grev hakkı ve buna bağlı olarak lokavt hakkı yoktur. Çünkü işçinin işveren tarafından ezdirilmesine İslam müsaade etmez. İşçi, ücretinden memnun değilse devlete başvurur ve devlet emeğinin karşılığını takdir ederek işverenden alır. İşçi bu takdirden memnun değilse işi bırakabilir. İşsiz kalan bir insanın geçimini devlet üstlenir. Kendisine asgari bir geçim kaynağı takdir edilir. Yani işsizlik sigortası verilmiş olur. (Dr. Abdülvehhab Öztürk, İslâm'da Emek ve İşçi-İşveren Münasebetleri, Ensar Neşriyat Yayınları: 60-62.)

İşçi dilediği zaman işini bırakma yani iş akdini fesh etme hakkına da sahiptir. Fakat işi terk etmesinden dolayı işvereni mağdur edemez. İşveren de iş akdi ile tesbit edilen işin bitiminden veya sürenin sona ermesinden önce işçinin işine son veremez. Eğer verirse onun zararını tazmin etmek zorundadır. Çünkü İslam'da andlaşmalara riayet ve zararların izalesi esastır.

İşçinin Vazifeleri: İşçinin hakları olduğu gibi vazifeleri de vardır. Vazifelerin başında kendisinden istenen işi düzgün ve zamanında yapması, işin hilesine kaçmaması ve mesai saatleri içerisinde işini aksatıp başka işle uğraşmamasıdır. İşçinin emin ve güvenilir olması konusunda Kur'an şöyle buyurur: "İki kadından biri: "Babacığım, onu ücretli tut; ücretli tuttuklarının en iyisi bu güçlü ve güvenilir' (emin) adamdır." dedi" (Kasas: 28/26.)

Eğer işçi işi kendisi değil de başkasına yaptırıyorsa, artık o işçi değil işveren konumuna düşmüş olur. Ayrıca, işveren o işi işçiden yapmasını bekliyorsa ve işçi bilgi vermeden işi başkasına yaptırırsa iş akdine aykırı davranmış olur. Örneğin meşhur bir sanatçıdan resim yapması için sözleşip parasını verseniz ve o da işi talebelerine yaptırsa bu geçersiz olur. Çünkü bu işin ücreti meşhur sanatçıdan dolayı yükselmiştir. Ya da ameliyat için meşhur bir doktorla anlaşsanız fakat ameliyatınıza talebesi girse yine aynı şekilde iş akdine aykırı davrandığı için ücreti hak etmemiş olur.

"Binnefs amel etmek yani kendi işlemek üzere isticar olunan ecir (işçi) kendi yerinde başkasını kullanamaz" (mad. 571). Eğer böyle bir şart yoksa müşterek işçi kendi kalfa veya işçisini kullanabilir.

Peki devlet bir asgari ücret koyabilir mi? İşverenin emek sömürüsü yapmaya yönelebileceği durumlarda devletin o iş için asgari bir ücret takdim edebilme hakkı vardır. Ücret bu rakamın altında olamaz, fakat daha yukarı olabilir. Bu ücretin amacı emek sömürüsünü engellemek, emeğin ucuzlamasına fırsat vermemek ve işverenlerin tekel oluşturarak emek üzerinde belirleyici olmalarını engellemektir. Devletin sosyal devlet olma hasebiyle sömürüye izin vermemesi gerekir. Yalnız İslam'da her türlü üretim emektir. Yani kitap yazmak, devlet yönetmek, askeri hizmetler, öğretmenlik ve ziraatçilik gibi tüm alanlardaki hizmetler emektir. Her emeğin bir değeri ve niteliği vardır. Ücret tespitinde emeğin bu izafi durumu göz önüne alınır. Ücretler için asgarî bir sınır tespit edilmesinin "narh" müessesesiyle yakın alâkası vardır. İslâm hukukçularının çoğunluğuna göre fiyatların devletçe tespiti demek olan narh caiz görülmemiş olmakla birlikte İmam Mâlik ve bazı müteahhirûn hukukçular belli şartlarda caiz, hatta fiyatlarda adaleti sağlayıp bozulan dengeyi gerçek değer (semeni misl, ecri misl) üzerine tesis etmesi halinde vacip görmüşlerdir.

Ücret para olarak tespit edilebileceği gibi menfaat veya ayn (eşya) olarak da kararlaştırılabilir. Bazı İslam hukukçuları yeme ve içmenin ücret veya ücretin bir parçası olarak kararlaştırılmasını, ücretin bilinmezliğine yol açacağı endişesiyle kabul etmemişlerdir. Çünkü bu durumda işçinin mağdur olması mümkün ve muhtemeldir. Fakat yeme ve içmenin işçi ücretine dahil edilmesi yönünde örfün bulunması ve yeme-içmenin anahatlarıyla önceden bilinebilmesi durumlarda bunda bir mahzur olmayacağı, akdin geçerli olacağı belirtilmiştir. (Ali Bardakoğlu, İslâm'da Emek ve İşçi-İşveren Münasebetleri, Ensar Neşriyat Yayınları: 197-202.9) Bazı İslam hukukçuları da işçi ücretinin yapılan işin hissesi veya karın yüzdesi üzerinden verilmesini doğru bulmamıştır. Yani dokumacı dokuyacağı ürünün bir kısmından,

terzi dikeceği elbisenin bir kısmından veya çiftçi üreteceği ürünün bir kısmından ücretini takdir edemez. Çünkü burada bilinmezlik vardır, halbuki ücret işinin ihtilaf konusu olmaması için net olmalıdır. Buna rağmen hisseli veya yüzdeli ücret sistemine onay veren alimler olmuştur.

İşçi kendisine emanet edilen mal, malzeme, araç ve gereçleri koruyacak, onlara bir zarar gelmemesine çalışarak bunu bir emanet olarak telakki edecektir. Kendisinin ihmali sonucu telef olan malları da tazmin etmekle yükümlüdür. Peygamber Efendimiz de şöyle buyurmuştur; "İnsan işinde kusur ederse, Allah onu sıkıntıya düşürür."

İş Sağlığı

İşçinin manevi hakları da bulunmaktadır. Bunun başında kendisine gücünün üzerinde iş yüklenmemesi, ağır ve zor çalışma koşulları sunulmamasıdır. Resulullah (sav) şöyle buyurmuştur: "Kimin elinin altında bir kardeşi bulunuyorsa, ona yediğinden yedirsin, giydiğinden giydirsin. Onlara kaldıramayacakları işleri yüklemesin, eğer yüklerseniz kendilerine yardım ediniz." (Buharî)

İşçi izin ve dinlenme hakkına da sahiptir. Aynı zamanda mesai saati içerisinde yemek, namaz ve ihtiyaç molaları gibi hakları da bulunmaktadır ve bu pazarlık konusu bile olmaz. Fakat işçi namaz kılmak bahanesiyle işinden kaytarmaya veya bu süreyi istismar etmeye çalışması caiz değildir. İslam'da tatil günü diye bir kavram yoktur. Haftanın yedi günü de çalışılabilir. Cuma günü İslam'a göre bir tatil günü değildir o günde sadece Cuma namazı esnasında çalışılmaz ve Cuma kılındığı için de ücret kesintisi olamaz. Fakat her işveren işinin mahiyetine göre işçiye bir izin günü takdir vermek zorundadır. Fakat günümüzdeki izin sistemi örfe göre düzenlenebilir. İbn Maze (Mace değil), şöyle diyor: Kadı haftada, bir gün istirahat etmelidir; aksi takdirde usanır; ken¬di işlerine bakacak vakit bulamaz. Ebu Hanife zama¬nında (hicrî 2. asır) Cumartesi günleri tatil idî. Hassaf zamanında ise (h. 3. asır) kadılar bazen Pazar¬tesi, bazen de Salı günü tatil yapıyorlardı. Bizim za¬manımızda ise (h. 6. asır) Salı günleri tatil yapıyor¬lar. Çünkü Salı günü devlet daireleri de kapalı oluyor. (İbn Maze; Şerhu Edebi'1-Kadî li'1-Hassaf, 1/250) İşçi bu günde dinlenir ve ailesine de zaman ayırmış olur.

İşçinin beden sağlığını korumak için iş ve işyeri şartları iyileştirilecek, mesâi müddeti buna göre tespit edilecek, dinlendirme, muâyene, gerektiğinde tedâvi gibi bütün tedbirler alınacaktır. İşçinin ruh sağlığını korumak için haftalık, aylık izinler ve inancı istikametinde ibadet fırsatı verilecek, gerekli diğer tedbirler alınacaktır.

Hastalık veya iş yapamayacak bir rahatsızlığının bulunması durumunda işine son verilen bir işçinin bakımını devlet üstlenmek zorundadır. Yaşlanma veya yıpranma nedeniyle işi bırakan işçinin geçimini devlet üstlenir.

İş Güvenliği

İş yerinin ve yapılan işin güvenliğini sağlamak işverenin görevidir. İşçinin işverenin hatası, ihmali veya iş kazası sonucu iş yapamaz duruma düşmesi ya da yaralanması durumunda işveren sorumlu olup, masrafları ve bakımını üstlenmek zorundadır. İşçi kendisine teslim edilen her türlü eşya veya aracı emanet olarak görüp korumalı ve işine ihanet etmemelidir.

Emeklilik

İslam'da modern anlamda bir emeklilik sistemi yoktur. Sadece insanların çalışamayacak kadar yaşlanması veya yıpranmasından dolayı çalışmaması durumu vardır. Bu durumda devlet destek olur. Modern anlamda emeklilik sanayi devriminin bir sonucudur. Sanayi devlerimi nedeniyle ağır ve zor

fabrika koşullarından dolayı emeklilik gündeme geldi. Çünkü bu işler ancak belli bir yaşta yapılabiliyordu. Yaşlandığında yapılamayacak işlerdi. Fakat tarım toplumunda gücü yeten herkesin yapabileceği bir iş vardır. Modern bir konu olduğu için bunu İslam'ın genel prensipleri içerisinde çözüyoruz. O da yaşlılık ve çalışamayacak duruma gelmesi nedeniyle geçimini devletin üstlenmesidir.

Aslında buradaki sorun İslam'daki işçi kavramının çağdaş anlamdaki işçi kavramından farklı olmasıdır. Mecelle'de işçi; "kendini kiraya veren kimse" ola¬rak tarif edilmiştir. (Mecelle, md. 413.) İşçi İslam fıkhında ecir diye isimlendirilmiştir. Buna göre işçi ücret karşılığında emeğini kiralayan kişidir ve bir işçi, hizmetçi, çoban, şoför istihdam etmek yahut bir terziye sipariş vermek bir işçi-işveren ilişkisi oluşturur. Hatta devlet başkanı, vali, me¬murlar, hakimler, doktorlar vs., işçi kabul edilebilirler, çünkü belli bir ücret karşılığı çalışmaktadırlar. Bir başka açıdan bazı müteşebbisler, sanatkarlar, öğretmenler, mühendisler vs. emek sarf eden kişiler olarak işçi kavramına dahildirler. (Dr. Ahmed Tabakoğlu, İslâm'da Emek ve İşçi-İşveren Münasebetleri, Ensar Neşriyat Yayınları: 85.) İslam fıkhındaki bu işçi tanımını günümüze göre yeniden düzenlememiz gerekmektedir ve modern işçi kavramındaki fabrika çalışanları şeklinde düzenleyerek emeklilik olayını çözebiliriz. Fakat buna rağmen işi yapamayacak şekilde yıpranma ve yaşlanma ilkesini koyduğumuzda emeklilik sorunu çözülür. Buna göre emeklilikteki ölçüt çalışma primleri değil, çalışanın yaşıdır. Fakat günümüzde bazı alimler emeklilik döneminde alınan ücretin bir emek karşılığı olmadığı için caiz olmadığını söyleseler de devletin çalışamayacak durumda yıpranmış ve yaşlanmış olanlara bakma sorumluluğu göz önüne alınarak caiz olur. Çalışamama ve yıpranma ilkeleri de örfe göre tanzim edilebilir. Burada caiz olmayacak nokta erken emeklilik veya genç yaşta emeklilik gibi durumlar için geçerli olabilir.

İşveren

Kaynaklarda "müstecir" veya "sâhibu'l amel" olarak geçen işveren, iş akdinin işçiye göre diğer tarafını teşkil eder. İşveren, işçinin belli bir süre veya işte sarf edeceği emeğini satın alan kimsedir. Diğer bir ifadeyle işçi kavramına bağlı olarak işveren kavramı, İslâm hukukunda birçok kesimi kapsamakta, belli süreyle işçi istihdam eden kimse yanı sıra ücretle başkalarına iş gördüren kimseler de işveren sayılmaktadır.

İşveren gerçek şahıslar olabileceği gibi hükmî şahıslar, bu arada devlet de olabilir. Nitekim İş Kanunumuz işvereni; "işçi çalıştıran gerçek veya tüzel kişiye işveren denir" (Md. 1.) Her devirde başta memurlar olmak üzere toplumun ücret karşılığı çalışan önemli bir kesiminin işvereni durumunda olan devlet, İslâm hukukçuları tarafından gerçek şahıslara nazaran biraz daha farklı değerlendirilmiş, gerek sosyal devlet anlayışı, gerekse iş akdinin süreklilik arz etmesi sebebiyle, işveren olarak devlete birtakım ilâve sosyal, sürekli ve ağır mükellefiyetler yüklenmiştir. (Dk. Ali Bardakoğlu, İslâm'da Emek ve İşçi-İşveren Münasebetleri, Ensar Neşriyat Yayınları: 196-197.)

İşveren, işçinin yapılan işten zarar görmesi veya çalışamaz duruma düşmesinde kendi ihmali olması halinde zararı tazmin etmekle yükümlüdür. Bir işverenin en önemli sorumluluğu işçinin hakkını ve ücretini zamanında vermesidir. İşçiye zulmetmemesi, sözleşmeye aykırı işler yüklememesi ve haklarına riayet etmesi gerekir. İşverenin işçi üzerindeki en önemli hakkı, işçinin sözleşmede emredilen işi zamanında ve en iyi şekilde yapmasıdır. Hile yapılmış veya zamanında teslim edilmeyen işten işveren zarar göreceğinden zararını tazmin hakkı doğar.

Sonuç Olarak

İslam, hak ve emeğe çok önem vermiş ve insanların emeğinin sömürülmemesi için ciddi kurallar koymuştur. Fakat günümüzde ekonomik sistem kapitalist ve sosyalist ekonomik sistem parantezine sıkıştırıldığı için İslam'ın bu insani görüşü görülmediği gibi, iktisatçılar ve ekonomi fakülteleri üzerinde

çalışma gereğini bile duymamış, tüm güçlerini Batılı düşünürlerin ekonomi teorilerinin çözümlemesine harcamışlardır.

Müslümanlara düşen görev, ekonomi ile ilgili bir araştırma merkezi kurup, İslam'ın bu konudaki görüşlerini güncelleştirme ve ilmi birer teori haline getirmeleri gerekir. Bu konuda fıkıhçıların ve ekonomistlerin birlikte mesai harcamaları gerekir.

SUSTAINABILITY AND ENVIRONMENTAL AUDITING

Ali KESTANE

Assoc. Prof Dr., Kilis 7 Aralık University, FEAS, Department of Business Administration
E-mail: alikestane@kilis.edu.tr
ORCID ID: 0000-0002-7049-0354
Luminita DIACONU

Lecturer, Ph.D., The Academy of Economic Studies of Moldova, Faculty of International Economics Relations, Department of Business
E-mail: lumidiaconu74@gmail.com
ORCID ID: 0000-0002-6736-6344

Abstract

The recent rise of sustainability efforts has led to revolutionary changes in governance. Businesses' environmental responsibilities have diversified and increased. Auditing activities have also been affected by this situation. International regulatory and supervisory institutions have focused on auditing activities to ensure the sustainability of businesses. At this point, the issue of restructuring auditing activities to fulfill businesses' environmental responsibilities and strengthen their sustainability has emerged. This study aims to conduct a comparative analysis of environmental auditing practices conducted in Turkey and Moldova between 2020 and 2024. For this purpose, data was obtained from national databases specific to Turkey and Moldova. The obtained data was evaluated using descriptive content analysis in terms of structure, content, and implementation. The study determined that both Turkey and Moldova require dedicated resources for transparency, participation, and rural infrastructure through digital auditing.

Keywords: Environment Management, Sustainability, Environmental Audit

INTRODUCTION

Environmental auditing has emerged as a cornerstone in the global pursuit of sustainable development, bridging the gap between corporate governance and ecological responsibility. As businesses face increasing stakeholder pressure to demonstrate their commitment to sustainability, environmental audits offer a structured mechanism for assessing compliance, mitigating risks, and increasing transparency. These audits not only ensure compliance with environmental regulations but also serve as a strategic tool for fostering trust among investors, customers, and communities (Kouyoumdjian, 2025).

Türkiye's proactive integration of climate adaptation strategies into its national development framework highlights its commitment to sustainable practices (ISACA, 2024). Meanwhile, Moldova's efforts to modernize its environmental compliance assurance system highlight the importance of institutional capacity and stakeholder engagement in achieving ecological goals (EU, 2022).

This article aims to examine the comparative dynamics of environmental auditing in Turkey and Moldova, focusing on its impact on corporate governance and sustainability. By analyzing the regulatory frameworks, institutional mechanisms, and practical outcomes in these countries, this study aims to provide valuable insights. It addresses how environmental audits can promote sustainable development while enhancing corporate accountability. The findings will contribute to the broader discussion on Environmental, Social, and Governance (ESG) practices and offer practical recommendations for both policymakers and businesses. The key findings indicate that the regulations implemented in Turkey and Moldova are promising. In other words, while the countries' legal regulations are governed by different legislative provisions, their implementation methods are similar. Furthermore, it demonstrates that Türkiye has advanced control mechanisms in its environmental control practices, while Moldova has demonstrated success in terms of regulations and policies.

LITERATURE REVIEW

There are studies on sustainability and environmental auditing in the literature. Within the scope of this research, studies that address sustainability and environmental auditing in an integrated manner appear to be superficial. Studies considered important in line with the purpose and topic of the research are described below.

Cao et al. (2022) conducted a study on government auditing and environmental management in China. They found that the reform did not directly impact environmental financial expenditures on the performance of government auditing and environmental management; on the contrary, it improved environmental input-output performance and environmental management capabilities. Shamsadini et al. (2022), in their study investigating the factors affecting environmental auditing practices, found that sustainability was damaged in societies and organizations that polluted the environment by increasing environmental pollution and damage. However, they noted that developing societies lack sufficient awareness of this issue and that it needed to be improved. Hichri (2023) examined the impact of auditing quality and environmental auditing on integrated reporting, and the impact of environmental auditing on auditing quality. They concluded that there was a positive and significant relationship between auditing quality and integrated reporting. Environmental auditing has also been found to have a positive and significant impact on integrated reporting. Ergün (2024), in his research on the structure of environmental auditing and environmental ethics in Türkiye, argued that the moral justification for the claim that environmental auditing should be a public audit should not be sought in the differences in ethical values between public administration and business management. Rodrigues et al. (2024), in their research on the role of environmental auditing in enabling corporate sustainability, found that socio-environmental management is perceived as fundamental by companies and that there is a growing awareness of the importance of integrating sustainable practices. They also stated that environmental audits are a key tool for improving companies' environmental performance and create added value in ensuring sustainability.

MATERIALS AND METHODS

This section of the research: i) addresses the purpose and importance of the research, ii) explains the scope and limitations of the research, and iii) evaluates the findings obtained from the analysis of the obtained data and explains them in detail below.

Purpose and Significance of the Research

This study aims to comparatively examine environmental auditing studies conducted in Türkiye and Moldova between 2020 and 2024, and to determine the current status, content, and direction of these studies in practice and in the literature.

Scope and Limitations of the Research

In line with the purpose of the research, the scope of the research covers regulations concerning sustainability and environmental auditing between 2020 and 2024. The fact that the studies evaluated on this topic were conducted in Türkiye.

Data Collection and Analysis

For the purpose of the research, regulations between 2020 and 2024 were obtained from valid platforms such as national databases specific to Turkey and Moldova, scientific databases, professional organizations, etc. Secondary data, including published studies, was used for the research.

The obtained studies were evaluated in terms of structure, content, and application using descriptive content analysis. Qualitative content analysis provides significant advantages in understanding the nature of the research topic under study and interpreting the themes of the studies. This technique helps

preserve the deep meaning of qualitative data. It also allows for the acquisition and interpretation of a holistic perspective that can be derived from the studies.

Content analysis can be defined as a systematic and repeatable method for reducing sentences consisting of many words into fewer content categories based on specific coding rules (Weber, 1990; Krippendorff, 2004). It is considered a widely used qualitative technique (Hsieh & Shannon, 2005). Content analysis is used to interpret the meaning derived from the content of textual data. Qualitative content analysis can also be described as "the effort to reduce and make sense of any qualitative data using qualitative material" (Patton, 2002: 453). By objectively extracting content from textual data by examining latent or explicit themes, qualitative content analysis allows researchers to understand accepted truths in a subjective yet scientific manner (Zhang & Wildemuth, 2009). Qualitative content analysis was used in this study to reduce the number of studies to be examined and to provide accurate, reliable, and consistent interpretations.

ENVIRONMENTAL AUDITING IN STRENGTHENING SUSTAINABILITY: A COMPARISON OF TÜRKIYE AND MOLDOVA

The threat of extinction of natural living conditions is increasing in the face of constantly evolving economic developments and a growing global population (Oliveira and Cavalcanti, 2000: 109). With these changes and developments, the concept of environmental, social, and corporate governance (ESG) (Gao et al., 2021: 1-2) places particular emphasis on sustainability. The concept of auditing is indispensable for the sustainability policies developed by countries to generate practical solutions. In particular, the global concern about the depletion of natural resources has brought environmental auditing to the forefront. Environmental awareness campaigns, which have recently become a global issue, have profoundly impacted countries' understanding of corporate governance. Environmental audits have become an indispensable criterion in shaping countries' futures.

This phase of the study provides a comparative assessment of how Turkey and Moldova, rich in natural resources, vegetation, and biodiversity, bridge the Black Sea and strengthen their sustainability through environmental control activities and governance processes.

All practices that place people at the center ultimately return to people. In this context, environmental monitoring is an important tool for assessing the impact of human activities on the environment and provides a foundation for improving environmental performance. This report aims to analyze how environmental monitoring contributes to strengthening sustainability in governance in Turkey, a country with abundant resources and significant progress in natural resource management, and in the Republic of Moldova, a country facing environmental challenges but aiming to improve its natural resource management.

Sustainable governance involves integrating environmental concerns into all aspects of public policies. Environmental monitoring helps align national strategies with sustainable development goals through transparent and systematic evaluation of environmental policies. Turkey, which has embraced strategic environmental management and monitoring, has recently developed and implemented significant policies. Since 2020, the country has implemented action plans on waste management, marine and coastal cleanup, and air, soil, and emission reductions to protect the ecosystem, prevent pollution, and improve quality of life. By 2023, the issue of efficient use of natural water resources has been prioritized, and regulations have been implemented in this regard. In particular, a 2024-2030 climate change mitigation strategy and action plan have been implemented to combat climate change.

Environmental auditing is an important tool for assessing the impact of human activities on the environment and provides a basis for improving environmental performance. This report aims to analyze how environmental auditing contributes to strengthening sustainability within the governance framework in the Republic of Moldova, which faces significant environmental challenges but aims to improve natural resource management (KPMG, 2021).

Sustainable governance involves integrating environmental concerns into all aspects of public policies. Through a transparent and systematic assessment of environmental policies, environmental auditing helps align national strategies with sustainable development goals.

Moldova, a country rich in biodiversity and rich in natural resources, has adopted various environmental policies in recent years. The country implemented strategies to eliminate pollution and protect ecosystems during the 2020-2024 period. For example, the National Environmental Action Program (2020-2025) envisions specific measures to reduce greenhouse gas emissions (EY, 2023).

Between 2020 and 2024 (UNECE, 2025), various environmental organizations in Moldova conducted environmental audits to assess the impact of implemented policies. These audits revealed gaps in water resources management and environmental regulations. For example, a 2021 waste management audit revealed a lack of adequate recycling infrastructure.

A comparative analysis table focusing on environmental audit procedures in Turkey and Moldova, considering the regulatory framework, methodologies, and practices in the context of environmental screening and assessment:

Various laws and regulations, including the Environmental Protection Law and the Environmental Impact Assessment (EIA) Law, guide environmental audit processes in Turkey and Moldova. These laws are aligned with European Union standards as part of the country's integration efforts (European Commission, 2024).

Tablo 1: Environmental Auditing in Türkiye and Moldova

INDICATORS	TÜRKİYE	MOLDOVA
Regulatory Framework	1982 Constitution, Environmental Law, Environmental Impact Assessment, United Nations Framework Convention on Climate Change, Environmental Control Regulation	Governed by the Law on Environmental Protection and the Law on Environmental Impact Assessment.
Objective of Environmental Auditing	Evaluating compliance with environmental legislation, conducting inspections on facilities or activities for the protection of the environment, determining the qualifications of the personnel who will conduct inspections, detecting violations and implementing administrative sanctions.	To assess compliance with environmental legislation, evaluate environmental performance, and identify areas for improvement
Public Participation	Limited public participation compared to Western country practices; inspections are carried out by ministries and local governments under government supervision, such as the Ministry of Environment, Urbanization and Climate Change, the Ministry of Internal Affairs, the Ministry of Energy and Natural Resources, etc.	Limited public involvement compared to Western practices; typically, audits are conducted by private firms under governmental oversight.
Screening Process	An initial screening is carried out to determine the boundaries of audit activities and environmental impact assessment.	Initial screening to determine the scope of the audit and whether a full environmental impact assessment is required.
Methodologies	It is carried out with the help of quantitative measurements (emission measurement, management of solid, liquid, etc. waste) and qualitative evaluations (observation, interview, examination, ..., etc.).	Utilizes both qualitative assessments (visual inspections) and quantitative measures (data collection on emissions, waste management).
Advantages	Compliance with United Nations and EU standards is ensured, environmental management is made effective. It helps to ensure environmental awareness, performance and adaptation to contemporary human living conditions.	Aligns with EU standards, promoting regional environmental management Helps in identifying compliance and environmental performance issues early.

Limitations	Optimal resources provided through government support for comprehensive audits ensure consistency and improve quality, depending on the government's capacity and power. Public involvement in the audit process is limited, but awareness is high.	Limited resources for comprehensive auditing Dependency on the capacity of private firms may affect quality and consistency Public awareness and engagement in the auditing process are limited.
Implementation	Complete compliance with local and national laws and international regulations is ensured through audits carried out by government-affiliated ministries and local authorities.	Conducted by specialized environmental auditing firms or consultants, which may include governmental oversight to ensure compliance with local laws.

As Table 1 shows, environmental auditing in Turkey and Moldova is structured primarily to ensure compliance with national laws and then with international standards. In Türkiye, there is more intensive public participation in implementation compared to Moldova, practices are advanced in terms of UN and EU standards, and environmental auditing is conducted across a wider area. While better environmental practices are being promoted in Moldova, there are limitations regarding resources, public participation, and consistency in implementation. Increasing public awareness and capacity building regarding auditing practices could improve environmental management in the country. Below is a summary of the methods used in environmental auditing in Turkey and Moldova between 2020 and 2025 and the key findings from this period. This overview reflects the evolving practices and insights gained from audits conducted annually.

DISCUSSION AND CONCLUSION

This study, which comparatively examined the practices of environmental audit centers in Turkey and Moldova within the framework of corporate governance, yielded interesting results. Environmental auditing stands out as a driving force advancing sustainable management in the 2020-2024 period. In other words, the challenges faced in implementing social, environmental, and administrative (ESG) regulations and their implementation, as outlined in the previous sections of the study, were discussed. At this stage, Türkiye's future vision, which includes: i) transforming environmental auditing practices into strategic steps, ii) developing an integrated environmental information system, iii) developing sufficient human resources, iv) high implementation capacity, and v) strengthening its commitment to intensive public participation, demonstrates its alignment with the EU harmonization process and its desire to achieve modern living standards. Furthermore, it is believed that developing mechanisms that can take rapid action, particularly regarding the faster implementation of bureaucratic processes, is crucial. In terms of fundamental issues, it is believed that Türkiye can achieve its sustainable development goals by optimizing its environmental auditing practices in the future. In this regard, developing sufficient human resources and equipment and strengthening environmental control mechanisms will be beneficial for the country.

This study, which sheds light on environmental control and sustainability, was evaluated within the context of the resource structure and practices of both countries during the period under review and the relevant period. This constitutes a significant limitation of the study. Conducting analyses on environmental control by different researchers, including regulations and practices from more countries, will yield more accurate results. In the long term, examining environmental control in an integrated manner with cultural values will yield diverse and interesting results.

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FINANCIAL INSTRUMENTS FOR GREEN FINANCE

YEŞİL FİNANS İÇİN FİNANSAL ARAÇLAR

Arif Ali CAN

Yalova Üniversitesi, Lisansüstü Eğitim Enstitüsü, Uluslararası Ticaret ve Finansman Ana Bilim Dalı, Yalova, Türkiye.
E-mail: canarifali@gmail.com
ORCID ID: 0009-0005-0474-0000

Cemal ELİTAŞ

Prof.Dr., Yalova Üniversitesi, İ.İ.B.F., Uluslararası Ticaret ve Finansman Bölümü, Yalova, Türkiye.
E-mail: cemal.elitas@yalova.edu.tr
ORCID ID: 0000-0002-6010-6574

Abstract

Green financial instruments tailored for businesses are diverse and continually evolving. Various tools—such as green bonds, Islamic finance, supply chain finance, and digital inclusive finance—are available to support enterprises in achieving their sustainability goals. When utilized effectively and in accordance with green principles, these instruments not only promote the sustainable development of businesses themselves but also enable contributions to broader environmental and social objectives. This comprehensive approach provides businesses with opportunities to mitigate the adverse effects of climate change while enhancing their competitiveness and resilience amid volatile economic conditions. Given their pivotal role in global economies, businesses' access to appropriate green finance mechanisms is essential for advancing sustainable development worldwide. Through the adoption of innovative financial instruments and the enhancement of financial literacy, businesses can more effectively navigate the complexities of sustainable finance and position themselves as key actors in the green economy.

Keywords: Green Finance, Financial Literacy, Green Economy, Innovative Financial Instruments

Özet

İşletmelere yönelik yeşil finansman araçları çeşitlilik göstermekte ve sürekli gelişmektedir. Yeşil tahviller, İslami finans, tedarik zinciri finansmanı ve dijital kapsayıcı finans gibi farklı enstrümanlar, işletmelerin sürdürülebilirlik hedeflerine ulaşmalarına katkı sağlamak üzere kullanılabilir durumdadır. Bu araçların yeşil ilkelere uygun biçimde etkin şekilde kullanılması, işletmelerin kendi sürdürülebilir kalkınmalarını teşvik ederken aynı zamanda daha geniş çevresel ve sosyal hedeflere katkı sunmalarına da imkân tanımaktadır. Bu kapsamlı yaklaşım, işletmelere iklim değişikliğinin olumsuz etkilerini azaltma, aynı zamanda değişken ekonomik koşullarda rekabet avantajı ve dayanıklılık kazanma fırsatı sunmaktadır. Küresel ekonomilerde kilit bir rol oynayan işletmelerin, uygun yeşil finansman kaynaklarına erişimi, dünya genelinde sürdürülebilir kalkınma hedeflerine ulaşılması açısından kritik öneme sahiptir. Yenilikçi finansal araçların benimsenmesi ve finansal okuryazarlığın artırılması yoluyla işletmeler, sürdürülebilir finansın karmaşıklığını daha etkili bir şekilde yönetebilir ve yeşil ekonomide öncü konumlara yükselebilirler.

Anahtar Kelimeler: Yeşil Finans, Finansal Okuryazarlık, Yeşil Ekonomi, Yenilikçi Finansal Araçlar

GİRİŞ

Sürdürülebilir bir ekonomiye geçişin aciliyeti, tarihte hiç olmadığı kadar büyük bir önem kazanmıştır. Bu dönüşümün merkezinde, birçok küresel ekonominin bel kemiğini oluşturan başta KOBİ'ler olamk üzere tüm işletmeler yer almaktadır. Ancak, yeşil uygulamaların benimsenmesi genellikle önemli ölçüde finansal yatırım gerektirmektedir. İşletmelerin sürdürülebilirlik yolculuklarında desteklenebilmesi için, onların ihtiyaçlarına özel olarak uyarlanmış çeşitli yenilikçi finansal araçların değerlendirilmesi elzemdir.

İşletmeler, dünya ekonomisi açısından yaşamsal öneme sahiptir; ancak sürdürülebilir uygulamalara geçiş için gereken finansmana erişimde ciddi zorluklar yaşamaktadırlar. OECD (2023b) verilerine göre, KOBİ niteliğindeki işletmeler küresel sera gazı (GHG) emisyonlarının %45'inden sorumludur. Bu işletmelerin etkisi bu denli büyük olmasına rağmen, yarısından fazlası iklim eylemi önündeki en büyük engellerden birinin finansman eksikliği olduğunu belirtmektedir. Ayrıca, KOBİ'lerin yaklaşık %70'i, iklim eylemini başlatmak veya hızlandırmak için daha fazla finansmana ihtiyaç duyduklarını ifade etmektedir. Bu bölüm, işletmelerin geniş çaplı ve sürdürülebilir krediye erişimde karşılaştıkları zorlukları ve kamu finans kurumlarının bu zorlukları hafifletmedeki rolünü ele almaktadır.

İşletmeler için ve özellikle de KOBİ'ler için finansmana erişim, uzun süredir temel bir sorun alanıdır. Gerekli fonlara ulaşmalarını engelleyen pek çok faktör bulunmaktadır ve bu zorluklar, konu sürdürülebilir finans olduğunda daha da derinleşmektedir. İşletmelerin finansmana erişimde karşılaştığı en büyük iki engel, yetersiz kredi geçmişi ve teminat eksikliğidir. Geleneksel kredi veren bankalar, temerrüt riskini azaltmak adına genellikle önemli miktarda teminat talep etmektedir; ancak pek çok işletme bunu sağlayacak kapasiteye sahip değildir. Ayrıca, daha yeni kurulmuş işletmelerin güçlü bir kredi geçmişine sahip olmamaları, potansiyel kredi sağlayıcıları nezdinde güvenilirliklerini kanıtlamalarını da zorlaştırmaktadır (Hernández-Cánovas & Koëter-Kant, 2011; Benbekhti vd., 2021).

Finansal kurumlar tarafından işletmeler sıklıkla yüksek riskli borçlular olarak görülmektedir. Bu algı, genellikle işletmelerin daha küçük ölçekte faaliyet göstermesi, sınırlı kaynaklara sahip olması ve büyük ölçekli şirketlere kıyasla daha yüksek iflas oranlarına sahip olmalarından kaynaklanmaktadır. Bu algılanan risk, işletmelerin düşük maliyetli finansmana erişimini zorlaştırmakta, bu da daha yüksek faiz oranlarıyla karşılaşmalarına ya da doğrudan kredi başvurularının reddedilmesine yol açabilmektedir (Farinha & Félix, 2015; Jaabi, 2018).

Kredi ve diğer finansal ürün başvuru süreçleri, genellikle karmaşık ve zaman alıcıdır. İşletmeler, bu süreçleri başarıyla tamamlayabilmek için gerekli araç ve bilgiye çoğu zaman sahip değildir; bu da finansman onayı alma ihtimallerini düşürmektedir. Özellikle daha az çalışanı olan küçük ölçekli işletmeler için, kapsamlı finansal tablolar, iş planları ve diğer belgelerin hazırlanması yönündeki idari yük baş edilmesi zor bir zorluk oluşturabilir (Ismanto vd., 2022).

Ayrıca, işletmeler ile finansal kurumlar arasında ciddi bir bilgi asimetrisi söz konusudur. İşletmeler, kendilerine sunulan tüm finansman alternatiflerinin farkında olmayabilir veya çeşitli finansal araçların özel koşulları ve gereklilikleri karşısında kararsız ya da bilgi eksikliği içinde olabilir. Öte yandan, finansal kurumlar da işletmelerin kendilerine özgü ihtiyaç ve koşullarını yeterince anlamayabilir, bu da uyumsuz beklentilere ve gerekliliklere yol açabilir (Wang vd., 2020).

Bu çalışmada işletmelerin ve özellikle de KOBİ niteliğindeki işletmelerin sürdürülebilir finansmana erişimde karşılaştığı başlıca engeller ile kullanılan finansal araçlar ve teknikler ayrıntılı olarak ele alınacaktır.

İŞLETMELERİN SÜRDÜRÜLEBİLİR FİNANSMANA ERİŞİMDE KARŞILAŞTIĞI BAŞLICA ENGELLER

İşletmeler, sürdürülebilir finansmana erişim sağlamak konusunda, fon temininde karşılaşılan genel zorlukların ötesinde, KOBİ'ler kendilerine özgü bir dizi ayrı engelle de karşılaşmaktadır. Sürdürülebilir projeler, genellikle geleneksel girişimlere kıyasla daha yüksek başlangıç maliyetleri gerektirir. Örneğin, bir işletmenin enerji verimli makineler yatırımı yapmak, sürdürülebilir tedarik zinciri süreçleri uygulamak ya da güneş paneli gibi yenilenebilir enerji sistemleri kurmak istemesi durumunda, bu yatırımlar önemli düzeyde ilk finansal harcama gerektirir. Pek çok işletmenin zaten kısıtlı nakit akışları ile faaliyet gösterdiği düşünüldüğünde, bu tür yüksek başlangıç maliyetlerine kaynak ayırmak oldukça güçtür (Shaikh, 2024).

Ayrıca, işletmeler genellikle sürdürülebilir projeleri tanımlamak, uygulamak ve yönetmek için gereken teknik bilgiye sahip değildir. Bu bilgi; sürdürülebilir yatırımların faydalarını anlama, karmaşık mevzuat yapılarını yorumlama ve sürdürülebilirlik göstergelerini izleyip raporlama gibi unsurları içerir. Bu uzmanlık olmadan, işletmeler hata yapma korkusu ya da yetersiz görünme endişesiyle sürdürülebilirlik projelerine başlamaktan kaçınabilirler (Ye & Kulathunga, 2019). Örneğin, küçük ölçekli bir üretim işletmesi, sürdürülebilir bir tedarik zincirine geçişin uzun vadeli faydalarını nasıl analiz edeceğini veya yeni çevresel düzenlemelere nasıl uyum sağlayacağını bilmeyebilir.

Sürdürülebilir yatırımların finansal getirileri, geleneksel yatırımlara göre daha belirsiz ve daha geç ortaya çıkabilir. Bu öngörülemezlik, kısa vadeli mali istikrarını korumak zorunda olan işletmeler için caydırıcı bir unsur oluşturur. Örneğin, yenilenebilir enerji sistemlerine yapılan yatırımlar, uzun vadede tasarruf ve sürdürülebilirlik avantajları sunabilir; ancak ilk getiriler genellikle yavaş ortaya çıkar ve bu durum, kısa vadeli finansal performansa odaklanan işletmeler için bu tür yatırımları daha az cazip hâle getirebilir (Du, 2024).

Buna ek olarak, işletmeler sürdürülebilir finansmana erişim sürecinde sıklıkla piyasa ve düzenleyici engellerle karşılaşmaktadır. Bu engeller arasında; sürdürülebilir projeler için devlet teşviklerinin eksikliği, yeşil finans ürünleri için katı uygunluk kriterleri ve bazı sektör veya bölgelerde sürdürülebilir finans seçeneklerine sınırlı erişim yer almaktadır (Kuteesa, 2024). Örneğin, kırsal bir bölgede faaliyet gösteren bir işletme, yerel finansal kuruluşların bu tür ürünleri sunmaması ya da zorlayıcı koşulları karşılayamaması nedeniyle yeşil finansmana erişimde zorluk yaşayabilir.

Sonuç olarak, sürdürülebilir projeler uzun vadeli önemli faydalar sunmasına rağmen, işletmeler bu projeler için gerekli finansmanı sağlama konusunda ciddi zorluklarla karşı karşıyadır. Yüksek başlangıç maliyetleri, teknik uzmanlık eksikliği, belirsiz finansal getiriler ve piyasa ile düzenleyici engeller, bu süreci karmaşık hâle getirmektedir. Bu engellerin aşılabilmesi için, işletmelere hem finansal teşvikler hem de eğitim kaynakları açısından hedef odaklı destek sağlanması gerekmektedir. Böylece işletmeler, daha sürdürülebilir bir ekonomiye geçişte aktif rol oynayabilir.

Ancak tam bu noktada, işletmelerin sürdürülebilir finansmana erişiminde karşılaştığı sorunlar ve engellerin yanı sıra kamu desteklerine de değinmek gerekmektedir. Söz konusu engeller kadar, kamu destekleri de bu engellerin ortadan kaldırılmasına yönelik katkılar sunması bakımından değnilmesi gereken bir noktadır.

Kamu finans kuruluşları, işletmelerin finansmana erişimini kolaylaştırmak ve karşılaştıkları engelleri ortadan kaldırmak açısından hayati bir rol oynamaktadır. Bu kuruluşlar, işletmelere doğrudan hibe veya kredi yoluyla destek sağlayabilirken, dolaylı olarak da özel finansmanı teşvik edici teminatlar sunarak önemli katkılar sunabilirler.

Kamu finans kuruluşları, sürdürülebilir girişimler için tasarlanmış hibe ve düşük faizli krediler yoluyla işletmelere doğrudan finansal destek sağlayabilir. Bu finansal araçlar, sürdürülebilirlik çabalarının başlangıç maliyetlerini düşürme ve bu tür girişimlerin küçük ve orta ölçekli işletmeler için

erişilebilirliğini artırma potansiyeline sahiptir. Örneğin, hibeler, fizibilite çalışmaları, pilot projeler ve ilk yatırımların finansmanında kullanılabilirken; düşük faizli krediler, daha geniş ölçekli uygulamalar için gereken sermayeyi sağlayabilir (OECD, 2023a).

Devlet finans kurumlarının sunduğu teminatlar, özel kredi verenlerin risk algısını önemli ölçüde azaltabilir ve böylece onların işletmelere kredi vermesini kolaylaştırabilir. İşletmenin kredi geri ödemesinde başarısız olması durumunda, bu teminatlar bir tür güvence mekanizması olarak devreye girer ve kredinin bir kısmının geri ödenmesini sağlar. Bu tür risk azaltıcı mekanizmalar, daha düşük faiz oranları ve daha az teminat gerekliliği gibi işletmelere yönelik daha avantajlı kredi koşullarının oluşmasına katkıda bulunabilir (Niranjala, 2020).

Kamu finans kurumları, finansal ürünlerin yanı sıra, teknik destek ve kapasite geliştirme programları aracılığıyla da işletmelere sürdürülebilir projeleri yürütmeleri için gerekli becerileri kazandırabilir. Bu kapsamda; emisyon takibi ve raporlama desteği, mevzuata uyum danışmanlığı ve sürdürülebilir uygulamalara yönelik eğitim programları gibi hizmetler sunulabilir. Bu şekilde, kamu finans kuruluşları, işletmelerin sürdürülebilir projeleri etkin şekilde uygulama ve yönetme kapasitelerini artırabilir (Saad vd., 2022).

Ayrıca kamu finans kuruluşları, diğer paydaşlarla iş birliği yaparak sürdürülebilir finansmanı destekleyen bir politika ortamının oluşturulmasına da öncülük edebilir. Bu, sürdürülebilirlik için sektör standartlarının teşvik edilmesini, hükümetlerle birlikte uygun düzenleyici çerçevelerin oluşturulmasını ve işletmeler, özel yatırımcılar ve diğer sürdürülebilirlik aktörleri arasında iş birliklerinin güçlendirilmesini kapsayabilir (Boutbhirt, 2023).

Birçok ülke, kamu finans kuruluşlarının işletmelerin sürdürülebilir finansmana erişimini kolaylaştırmadaki önemini ortaya koyan başarılı uygulamaları hayata geçirmiştir. Örneğin, Almanya'da KfW Kalkınma Bankası, işletmelerin ihtiyaçlarına uygun olarak enerji verimliliği ve yenilenebilir enerji projeleri için düşük faizli krediler ve sübvansiyonlar sağlamaktadır. Benzer şekilde, Birleşik Krallık'taki Green Investment Bank (günümüzde Green Investment Group olarak bilinmektedir), yeşil altyapı projeleri için özel yatırımları harekete geçirmek amacıyla işletmelerle yakın iş birliği içinde çalışmış ve önemli katkılar sunmuştur (Du, 2024).

İşletmelerin sürdürülebilir finansmana erişimindeki engellerin aşılması, onların daha çevreci uygulamalara geçişini mümkün kılmak ve küresel sürdürülebilirlik hedeflerine katkı sunmak açısından kritik öneme sahiptir. Sürdürülebilir projeler için finansmana erişim konusunda ciddi zorluklarla karşılaşan işletmelere, kamu finans kuruluşları doğrudan mali destek, risk azaltıcı mekanizmalar, teknik yardım ve politika savunuculuğu yoluyla çözüm sunabilir. Bu destekler sayesinde, işletmelerin sürdürülebilirlik yolculukları kolaylaştırılabilir. Bu katkılar yalnızca işletmelerin büyümesini ve dirençliliğini desteklemekle kalmaz; aynı zamanda daha geniş çevresel ve sosyal hedeflere de hizmet eder (Aliano vd., 2024)..

FİNANSAL ENSTRÜMANLAR

Bu konuda günümüzde farklı taksonomilere göre sınıflandırmalar yapılabildiği görülmektedir. Örneğin Avrupa Birliği (AB) taksonomisine göre, varlık yönetimi sektörü ve genel anlamda finansal piyasa için yeniliği teşvik eden önemli bir unsur olmuştur. Sürdürülebilir yatırımlar için açık ve sağlam bir çerçeve sunarak, çevresel ve sosyal hedeflere yönelik tasarlanmış geniş bir yelpazede finansal ürünlerin geliştirilmesine ilham vermiştir. Finansal piyasalardaki yapılandırma uzmanlığı, bu ürünlerin pazara sunulmasında kilit rol oynamış ve kurumsal yatırımcılardan gelen artan talebin karşılanmasını sağlamıştır. Bu doğrultuda, taksonomiyle uyumlu ürün pazarı, büyümeye devam edecek şekilde konumlanmış ve bu sayede daha sürdürülebilir bir ekonomiye geçişi destekleyen bir ivme kazanmıştır. Varlık yönetimi sektöründe, AB Taksonomisi, katı sürdürülebilirlik kriterlerine uyumlu fonlar ve

yatırım portföylerinin geliştirilmesini teşvik etmiştir. Varlık yöneticileri, AB Taksonomisi kapsamında sürdürülebilir kabul edilen faaliyetlere yatırım yapan yeşil fonları giderek daha fazla piyasaya sunmaktadır. Bu fonlar, yatırımlarını çevresel, sosyal ve yönetişim (ESG) kriterleriyle uyumlu hâle getirmek isteyen yatırımcıları cezbetmekte; ayrıca çevresel etki açısından şeffaflık ve hesap verebilirlik sunmaktadır. Finansal piyasalar, karmaşık finansal ürünlerin yapılandırılmasındaki uzmanlıklarını kullanarak, AB Taksonomisi'nin kriterlerini karşılayan çeşitli finansal araçların piyasaya sunulmasını sağlamıştır (Wendt, 2024). Aşağıda yer alan Şekil 1'de işletmeler için etkili ve AB taksonomisine uygun finansal ürünler görülmektedir. Söz konusu taksonomisi ürün geliştirme ve yatırım yapma konusunda bir örnek oluşturabilir.

Şekil 1. AB Taksonomisine Uygun Finansal Ürünler ve Özellikleri

Şekil 1'de yer alan finansal enstrümanların kısaca açıklamak gerekirse :

- Yeşil Tahviller (Green Bonds): Bu tahviller, yenilenebilir enerji veya enerji verimliliği projeleri gibi çevresel faydalar sağlayan projeleri finanse etmek amacıyla ihraç edilmektedir. Yeşil tahvil piyasası, 2022 sonu itibarıyla yaklaşık 7 trilyon ABD doları değere ulaşarak, kurumsal yatırımcılar arasında güçlü bir piyasa iştahı olduğunu ortaya koymuştur .
- Sürdürülebilirliğe Bağlı Tahviller (Sustainability-linked Bonds – SLBs): Yeşil tahvillerin aksine, SLB'ler elde edilen gelirin kullanımına sınırlama getirmez, ancak tahvilin finansal özelliklerini ihraççının sürdürülebilirlik performansına bağlar. Bu tahviller, ihraççıları genel ESG (çevresel, sosyal ve yönetişim) performanslarını iyileştirmeye teşvik eder ve bu yönüyle AB Taksonomisi'nin hedefleriyle uyum sağlar .
- Sosyal Tahviller (Social Bonds): Bu tahviller, uygun fiyatlı konut projeleri veya sağlık hizmetleri girişimleri gibi pozitif sosyal sonuçlar doğuran projelerin finansmanında kullanılır. 2021 yılında, sosyal ve sürdürülebilirlik tahvillerinin toplam ihracı 400 milyar ABD dolarıyla rekor seviyeye ulaşmıştır .
- Mavi Tahviller (Blue Bonds): Yeşil tahvillerin bir alt kategorisi olan mavi tahviller, deniz ve okyanus temelli projeleri finanse etmek için kullanılır ve deniz ekosistemlerinin korunmasına katkı sağlar .
- Sürdürülebilir Tahviller (Sustainable Bonds): Bu tahviller, hem çevresel hem de sosyal faydalar sağlayan projelerin finansmanında kullanılır. Yeşil ve sosyal tahvillerin özelliklerini bir araya getirerek, ihraççılar için çok yönlü bir finansman aracı sunar (Wendt, 2024).

Yeşil Tahviller

Sürdürülebilirliğin işletmeler arasında teşvik edilmesi açısından en umut verici finansal araçlardan biri, yeşil tahvil çerçevesidir. Yeşil tahviller, çevresel açıdan olumlu sonuçlar sağlayan projeler için özel olarak sermaye sağlamak amacıyla tasarlanmış borçlanma araçlarıdır. Bu projeler; enerji verimliliği iyileştirmeleri, atık azaltma çalışmaları ve sürdürülebilir tedarik zincirlerinin geliştirilmesi gibi çok çeşitli girişimleri içerebilir. Yeşil tahviller, daha küçük ölçekli projelerin finansmanı için işletmelere özel olarak uyarlanabilir; böylece bu araçlar, işletmeler için daha erişilebilir ve uygun hâle gelir. Süreç, genellikle birkaç temel aşamayı içerir. İlk olarak, işletmenin enerji verimli ekipmanlara geçiş veya atık yönetim sistemlerinin uygulanması gibi çevresel faydalar sağlayan projeleri belirlemesi gerekir. Sonrasında, bu projelerin sağlayacağı çevresel kazanımların nicel olarak değerlendirilmesi ve sürdürülebilirlik etkilerinin ortaya konması gerekmektedir. Projeler açık biçimde tanımlandıktan ve çevresel etkileri belirlendikten sonra, gerekli sermayeyi sağlamak için yeşil tahviller ihraç edilebilir. İşletmeler, yeşil tahvillerden önemli faydalar elde edebilir. Örneğin, enerji verimliliği projelerinin yeşil tahviller yoluyla finanse edilmesi, enerji tüketimini ve işletme maliyetlerini azaltarak önemli tasarruflar sağlar. Aynı zamanda bu projeler, işletmenin çevresel ayak izinin küçülmesine katkıda bulunarak küresel sürdürülebilirlik hedefleriyle uyum sağlar. Yeşil tahvillerin işletmelere sağladığı avantajlar çok yönlüdür. Özellikle geleneksel finansman yöntemlerine erişmekte zorlanan küçük ölçekli işletmeler için

uygun maliyetli sermayeye ulaşma imkânı sunar. Ayrıca, yeşil tahviller, işletmenin çevresel sürdürülebilirliğe olan bağlılığını göstermesiyle itibarını artırır; bu da çevreye duyarlı yatırımcı ve müşterileri cezbetmesine yardımcı olur. Yeşil tahviller aracılığıyla küresel sürdürülebilirlik eğilimleriyle uyum sağlamak, işletmelerin pazardaki rekabet gücünü de artırabilir. Bununla birlikte, yeşil tahvillerle ilgili bazı zorluklar da bulunmaktadır. Bunlardan biri, finanse edilen projelerin gerçekten sürdürülebilir olduğundan emin olunabilmesi için net standartlar ve yönergeler gerekliliğidir. Güçlü standartların yokluğunda, bazı projeler beklenen çevresel faydaları sağlayamayabilir ve bu da yatırımcılar ile paydaşlar arasında şüpheye yol açabilir. Ayrıca, işletmeler, yeşil tahvil ihraç sürecinin karmaşıklığıyla başa çıkmakta da zorlanabilir. Bu süreç; ayrıntılı belgeler, düzenleyici gerekliliklere uyum gibi bir dizi karmaşık unsuru içerir. Bu nedenle, işletmelerin yeşil tahvil ihraç sürecinde finansal danışmanlar ve kurumların desteğine ihtiyaç duyması oldukça yaygındır. Sonuç olarak, yeşil tahviller, sürdürülebilir projelere yatırım yapmak isteyen işletmeler için değerli bir araçtır. Uygun maliyetli sermayeye erişim sağlaması ve küresel sürdürülebilirlik trendleriyle uyum sunması bakımından önemli avantajlar sunar. Ancak bu potansiyelin tam anlamıyla hayata geçirilebilmesi için, net standartların oluşturulması ve ihraç sürecindeki karmaşıklıkların azaltılması büyük önem taşımaktadır (Aliano, 2024).

Yeşil Bankalar

İşletmeler için kritik öneme sahip bir diğer finansal araç grubu ise yeşil bankalar ve karbon fiyatlandırma mekanizmalarıdır. Yeşil bankalar, yeşil projeleri desteklemeye odaklanmış uzmanlaşmış finansal kurumlardır ve çeşitli finansal ürünler aracılığıyla —örneğin krediler, teminatlar ve kredi kolaylıkları gibi— işletmelere kaynak sağlarlar. Yeşil bankalar, kamu yararı için özel sermayenin harekete geçirilmesinde kilit bir rol oynamaktadır. Bu kurumlar, işletmelere geleneksel bankalara kıyasla daha avantajlı koşullarda yeşil projeleri hayata geçirebilmeleri için gerekli finansal kaynakları sağlarlar. İşletmelerin finansman ihtiyaçları ile mevcut yeşil finansman kaynakları arasındaki boşluğu kapatmak adına, ihtiyaca özel finansal ürünler sunarak etkili bir köprü görevi üstlenirler. Devlete ait bankalar, sosyal bankalar ve çeşitli finansman kuruluşları, işletmelere yönelik kredi eşiklerini düşürmeye ve yeşil finansman mekanizmaları oluşturmaya teşvik edilmekte; bu sayede hem ekonomik toparlanma hem de sürdürülebilir kalkınma sürecine ivme kazandırılması amaçlanmaktadır (Su vd., 2022).

Amerika Birleşik Devletleri Çevre Koruma Ajansı (EPA), 2024 yılında iklim yasası kapsamında ayrılan 27 milyar dolarlık fon ile ulusal düzeyde bir yeşil banka kurmaya hazırlanmaktadır. Bu girişim, düşük gelirli toplulukların iklim değişikliğiyle mücadelesini desteklemeyi amaçlamaktadır. Fonlar; batarya depolama, elektrikli araç şarj altyapısı ve bina iyileştirmeleri gibi özel sektör yatırımlarının genellikle yetersiz kaldığı alanlara yöneltilmiştir. EPA, bu finansmanın daha önce temiz enerji dönüşümünün dışında bırakılmış toplulukların sürece katılmasına olanak tanıyacağını vurgulamıştır. EPA, söz konusu fonların 2024 yılı Eylül ayına kadar tahsis edilmesini planlamıştır. Yeşil bankalar, geleneksel bankalar değil, devlet destekli yatırım kuruluşlarıdır ve temiz enerji projelerinde özel sektör yatırımcılarıyla iş birliği yapmak amacıyla kredi, kredi garantisi ve diğer finansal araçları kullanacaktır. Hedef, yatırımcı risklerini azaltmak ve özel sektör katılımını teşvik etmektir. EPA, bu yeşil banka fonlarının 20 milyar dolarını ulusal düzeyde faaliyet gösteren sivil toplum kuruluşlarına tahsis etmeyi planlamaktadır. Bu kuruluşlar, kaynakları yerel ağlar aracılığıyla dağıtacaktır. Geriye kalan 7 milyar dolarlık kısım, yoksul topluluklara odaklanan bir eyalet düzeyindeki güneş enerjisi programına ayrılacaktır. Bu yaklaşım, New York ve Birleşik Krallık gibi yerlerdeki başarılı yeşil fon modellerini yansıtmaktadır; bu fonlar, önemli temiz enerji projelerinin başlatılmasında etkili olmuştur. Potansiyel yararlanıcılar arasında, bir yeşil fonlar ağı yöneten Coalition for Green Capital ve azınlık topluluklarını temsil eden Justice Climate Fund gibi kuruluşlar yer almaktadır. Bazı eleştirmenler, bu tür yeşil fon programlarının, mevcut vergi teşvikleri ve hibeler varken gereksiz olduğunu öne sürmektedir. Buna karşılık, destekçiler bu programların, temiz enerji projelerinin düşük gelirli kesimlere ulaşmasını sağlamak açısından hayati

öneme sahip olduğunu savunmaktadır. Yeşil bankalar geleneksel bankalar değildir. Bunun yerine, temiz enerji ve sürdürülebilir projelere finansman sağlamak ve bu projeleri teşvik etmekle görevli uzmanlaşmış finansal kuruluşlardır. Yeşil bankalar, temiz enerji yatırımlarında özel sektör katılımını hızlandırmak için tasarlanmış, devlet destekli yatırım araçlarıdır. Genellikle, geleneksel kredi kuruluşlarının fazla riskli veya ölçek açısından küçük gördüğü projeler için ortaya çıkan piyasa boşluklarını doldurmak amacıyla kurulurlar. Geleneksel bankalardan farklı olarak, yeşil bankalar çoğunlukla kamu kaynaklarıyla finanse edilir. Bu kamu desteği, yeşil bankalara mali istikrar ve özel sektörden yatırım çekmek için gerekli güvenilirliği sağlar. Yeşil bankalar, projeleri desteklemek için kredi, kredi garantisi ve diğer borçlanma araçları gibi çeşitli finansal araçlar kullanır. Devlet fonlarını kaldıraç olarak kullanarak, proje geliştiricilere daha cazip finansman koşulları sunabilir ve özel yatırımcılar için algılanan riskleri azaltabilir. Yeşil bankaların temel misyonu, çevresel sürdürülebilirliğe katkı sağlayan projelere finansman sağlamaktır. Bu kapsamda, yenilenebilir enerji yatırımları, enerji verimliliği iyileştirmeleri, sürdürülebilir ulaşım ve diğer iklim odaklı girişimler desteklenmektedir. Yeşil bankalar, özel sektör yatırımcıları ve finansal kuruluşlarla iş birliği içinde çalışır. Başlangıç sermayesi sağlayarak ve riskleri azaltarak, normalde çok riskli ya da ekonomik açıdan cazip olmayan temiz enerji projelerine özel sektörün katılımını mümkün kılar. Yeşil bankalar, özellikle küçük ölçekli projeler ya da sermayeye erişimde zorluk yaşayan yetersiz hizmet alan topluluklar gibi geleneksel finansman mekanizmalarının eksik kaldığı alanlarda oluşan piyasa boşluklarını doldurmak üzere tasarlanmıştır. Örneğin, Coalition for Green Capital, yeşil banka ağında öne çıkan bir kuruluş olarak Amerikan Yeşil Banka Konsorsiyumu şeklinde faaliyet göstermektedir. Bu yapı, çeşitli eyalet ve yerel yönetimlerde yeşil bankaların kurulmasına öncülük etmiş, temiz enerji projelerinin finansmanına hem kamu hem de özel sektör kaynaklarını yönlendirmiştir (Aliano, 2024).

Özetle, yeşil bankalar geleneksel bankalar değil, temiz enerji ve sürdürülebilirlik odaklı projeleri desteklemeyi amaçlayan uzmanlaşmış kuruluşlardır. Devlet desteğini kullanarak, yatırım çekmekte zorlanan projeleri finanse eder ve özel sektör yatırımlarını teşvik eder. Bu yönüyle, sürdürülebilir kalkınma hedeflerine ulaşmakta önemli bir finansal araç işlevi görürler.

Karbon Fiyatlandırması

Karbon vergileri ve emisyon ticareti sistemleri (cap-and-trade) gibi karbon fiyatlandırma mekanizmaları, küresel ölçekte iklim değişikliğiyle mücadelede başvurulan kilit stratejiler arasında yer almaktadır. Bu araçlar, karbon emisyonlarına parasal bir değer atayarak, işletmelere sera gazı salımlarını azaltmaları yönünde ekonomik teşvikler sunar. Karbon fiyatlandırmasının temel ilkesi oldukça basittir: Karbon salımlarını maliyetli hâle getirerek, işletmelerin daha temiz teknolojileri ve uygulamaları benimsemeleri teşvik edilir; böylece mali yüklerini azaltma amacıyla sürdürülebilir çözümlere yönelmeleri sağlanır. Karbon vergisi, doğrudan bir yöntem olup, salınan her ton CO_2 için belirli bir vergi uygulanmasını içerir. Bu uygulama, işletmelere emisyonlarını düşürmeleri için net bir mali teşvik sağlar. Bu teşvik; verimliliği artırmak, yenilenebilir enerji kaynaklarına geçiş yapmak ya da karbon yakalama teknolojilerine yatırım yapmak gibi yollarla işletmelerin sera gazı salımlarını azaltmalarını teşvik eder. Karbon vergisinin etkinliği, büyük ölçüde vergilendirme düzeyine bağlıdır—daha yüksek vergiler, daha güçlü azaltım teşvikleri yaratır. Emisyon ticaret sistemleri ya da diğer adıyla emisyon ticareti sistemleri, toplam sera gazı salımını belirli bir sınırla (tavanla) sınırlandırır ve daha az emisyon üreten sektörlerin fazla emisyon izinlerini, daha fazla salım yapanlara satmasına olanak tanır. Bu sayede emisyon azaltımı için bir piyasa oluşur ve işletmeler, emisyonlarını en düşük maliyetle azaltacak yöntemleri geliştirmeye teşvik edilir. Bu sistemdeki "tavan", toplam emisyonların önceden tanımlanmış bir sınır içinde kalmasını sağlarken; ticaret mekanizması, işletmelere hedeflerine ulaşmada esneklik sunar (Aliano, 2024).

Boutbhirt (2023), karbon fiyatlandırma mekanizmalarının ikili faydasına dikkat çeker. Çevresel açıdan, bu araçlar, karbon emisyonlarının ekonomik maliyetini doğrudan hedef alarak sürdürülebilirlik hedeflerine ulaşmada son derece etkilidir. Emisyonların dışsal maliyetinin içselleştirilmesi yoluyla,

işletmeler karbon ayak izlerini azaltacak uygulamalara ve teknolojilere yönlendirilir. Bu dönüşüm, yalnızca küresel iklim hedeflerine katkı sunmakla kalmaz, aynı zamanda düşük karbonlu ekonomiye geçişi de destekler. Yatırımcılar açısından ise, karbon fiyatlandırması, yeşil teknolojiler ve sürdürülebilir uygulamalar için yeni yatırım fırsatları yaratır. İşletmeler karbon yükümlülüklerini azaltmak adına sıklıkla yenilikçi çözümlere yatırım yapar ve bu çözümler karbon fiyatlandırma çerçevesiyle uyum içinde gelişir. Böylece; yenilenebilir enerji, enerji verimliliği ve karbon yakalama teknolojileri gibi sektörlerde yatırım olanakları artar. Bu yönüyle, karbon fiyatlandırması yeşil yatırımlara olan talebi artırabilir ve yatırımcılar için çekici getiriler sunabilir.

Ancak, karbon fiyatlandırması önemli bir potansiyele sahip olsa da, beraberinde bazı zorluklar da getirmektedir. Bu mekanizmaların tasarımı ve uygulanması, istenmeyen ekonomik sonuçlardan kaçınılması adına dikkatle planlanmalıdır. Örneğin, aşırı yüksek karbon vergileri, tüketiciler için maliyet artışlarına neden olabilir ve doğru şekilde yönetilmezse ekonomik rekabet gücünü zayıflatabilir. Öte yandan, çok düşük seviyedeki vergiler, emisyon azaltımı için yeterli teşvik sunmaz. Emisyon ticaret sistemleri her ne kadar esnek yapılar sunsa da, piyasa oynaklığı ve emisyon izinlerinin dağıtımı gibi konularda zorluklar yaşanabilir. Bu nedenle, emisyon tavanının uygun seviyede belirlenmesi ve ticaret sisteminin şeffaf, verimli ve adil şekilde işletilmesi, sistemin etkililiği ve güvenilirliği açısından kritik önemdedir. Ayrıca, işletmeler açısından karbon fiyatlandırmasının başlangıçtaki etkisi daha belirgin olabilir. İşletmelerin, emisyon azaltım teknolojilerine yatırım yapmak için genellikle daha sınırlı kaynaklara sahip olması, onların karbon fiyatlandırmasından kaynaklanan mali yükü fazla hissetmelerine neden olabilir. Bu nedenle, işletmelere yönelik geçiş süreci destekleri—örneğin sübvansiyonlar ya da yeşil finansmana erişim olanakları—sunulması, karbon fiyatlandırma mekanizmalarına uyum sağlamalarını kolaylaştırabilir ve rekabetçi eşitliğin korunmasına yardımcı olabilir. Karbon fiyatlandırmasının daha etkili olabilmesi, onun daha geniş çevre politikalarıyla bütünleştirilmesiyle mümkündür. Örneğin, karbon fiyatlandırmasının; yeşil teknolojiler için sağlanan hibeler, enerji verimliliği programları ve araştırma-geliştirme teşvikleri gibi destekleyici önlemlerle birlikte uygulanması, emisyonların azaltılması ve sürdürülebilir uygulamaların yaygınlaştırılması için kapsamlı bir politika çerçevesi oluşturabilir. Ayrıca, şeffaflık ve paydaş katılımı, karbon fiyatlandırma politikalarının başarılı şekilde uygulanmasında kilit rol oynar. İşletmelerin, yatırımcıların ve kamuoyunun bu politikalara dair tartışmalara dâhil edilmesi, geniş toplumsal destek oluşturulmasına ve mekanizmaların farklı paydaşların ihtiyaç ve kaygılarını gözeterek tasarlanmasına katkı sağlar. Sonuç olarak, karbon vergileri ve emisyon ticareti sistemleri gibi karbon fiyatlandırma mekanizmaları, sera gazı emisyonlarının azaltılmasında ve sürdürülebilir ekonomiye geçişin sağlanmasında kritik araçlardır. Bu mekanizmalar, işletmelere karbon ayak izlerini azaltmaları için ekonomik teşvikler sunarken, aynı zamanda yeşil teknolojilere yatırım fırsatları da yaratır. Ancak, başarılı bir uygulama için, bu mekanizmaların ekonomik etkiler açısından dikkatle tasarlanması, faydaların adil bir şekilde dağıtılması gerekir. İşletmelere yönelik geçiş desteklerinin sağlanması ve karbon fiyatlandırmasının tamamlayıcı politikalarla entegre edilmesi, bu araçların etkinliğini artırarak daha geniş sürdürülebilirlik hedeflerine ulaşılmasını destekleyebilir (Aliano, 2024).

SONUÇ VE GENEL DEĞERLENDİRME

Yeşil finans, sürdürülebilir kalkınma hedeflerinin gerçekleştirilmesinde kritik bir rol üstlenmekte ve hem kamu hem de özel sektör için yeni fırsat alanları yaratmaktadır. Yeşil tahviller, sürdürülebilirlik bağlantılı tahviller, sosyal tahviller ve karbon fiyatlandırma mekanizmaları gibi yenilikçi finansal araçlar, çevresel ve sosyal etkisi yüksek projelerin finansmanını mümkün kılarak düşük karbonlu bir ekonomiye geçişi teşvik etmektedir. Bu süreçte, yeşil bankalar ve kamu finans kurumları, özel yatırımları harekete geçirerek piyasadaki finansman boşluklarını doldurmakta, özellikle küçük ve orta ölçekli işletmelerin (KOBİ'lerin) dönüşüm sürecine katılımını kolaylaştırmaktadır. Ancak bu araçların etkinliği, yalnızca teknik tasarımlarına değil; aynı zamanda şeffaflık, paydaş katılımı ve tamamlayıcı

politikalarla entegrasyon düzeyine bağlıdır. Karbon fiyatlandırması gibi mekanizmaların sosyal adalet ve ekonomik eşitlik gözetilerek uygulanması, toplumsal kabulü artırmak açısından önemlidir. İşletmelere sağlanacak geçiş süreci destekleri ve yeşil finansmana erişimin kolaylaştırılması, kapsayıcı ve adil bir sürdürülebilirlik yaklaşımının temelini oluşturmaktadır. Sonuç olarak, yeşil finansın bütüncül bir politika çerçevesiyle desteklenmesi, çevresel hedeflerin ekonomik büyümeyle çelişmeden gerçekleştirilebileceğini ortaya koymakta ve geleceğe yönelik dirençli bir ekonomik yapı inşası için vazgeçilmez bir araç hâline gelmektedir.

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ECOLOGICAL EXPERTISE AND ENVIRONMENTAL IMPACT ASSESSMENT (EIA) IN CONTEMPORARY ENVIRONMENTAL LAW

Luminita DIACONU

Assist. Prof. Academy of Economic Studies of Moldova
E-mail: lumidiaconu74@gmail.com
ORCID ID: 0000-0002-6736-6344

Abstract

This paper explores the essential role of ecological expertise within the Environmental Impact Assessment (EIA) framework under contemporary environmental law and policy. EIA represents a proactive, legally mandated process that identifies, predicts, and mitigates potential environmental consequences of development projects, ensuring sustainable development and biodiversity conservation. Ecological expertise supports this process by providing rigorous scientific evaluation of ecosystems, habitats, and species potentially affected, thus guiding effective mitigation and management strategies. The study reviews key legal frameworks, including EU directives and emerging national environmental codes, highlighting methodological approaches for ecological assessments and their integration into decision-making. It also presents case studies, such as wind farm developments, illustrating the practical challenges and successful application of ecological expertise in EIA. Finally, the paper reflects on future directions to enhance ecological data quality, interdisciplinary collaboration, and harmonization of environmental governance worldwide. The findings affirm that robust ecological expertise is indispensable for comprehensive environmental governance and sustainable development outcomes.

Keywords: Environmental Impact Assessment, Ecological Expertise, Biodiversity Conservation, Environmental Law, Sustainable Development, Ecosystem Assessment, Environmental Governance

INTRODUCTION

Environmental Impact Assessment (EIA) stands today as a globally recognized legal and regulatory process essential to sustainable development and environmental governance. Rooted in the 1992 Rio Declaration's principles, EIAs aim to anticipate, evaluate, and mitigate potential adverse environmental effects of development projects prior to their execution (United Nations, 1992). Ecological expertise forms a foundational pillar of this framework, offering the scientific rigor required to understand complex ecosystem dynamics, biodiversity, and habitat interrelations critical to protecting environmental health on a global scale (European Environment Agency [EEA], 2025).

Globally, ecological expertise within EIA has evolved into a multidisciplinary, international endeavor involving diverse stakeholders—governments, scientific institutions, indigenous communities, and non-governmental organizations—to address pressing ecological challenges such as habitat fragmentation, species loss, and climate change impacts. Regional bodies like the European Union have institutionalized ecological assessments via directives mandating ecosystem-based evaluations for projects with foreseeable impacts, ensuring that the precautionary principle guides environmental decision-making (European Commission, 2024). Similarly, several countries worldwide are enacting and updating comprehensive environmental codes and laws integrating ecological expertise explicitly, as illustrated by China's draft Environmental Code and Uzbekistan's recent legislation on Strategic Environmental Assessment (SEA) and EIA processes (Global Green Growth Institute [GGGI], 2025; European Commission, 2024).

This development also reflects the increased recognition that environmental protection transcends borders and requires harmonized standards and expertise exchange. The European Environment Information and Observation Network (Eionet), for example, exemplifies collaborative ecological

monitoring and knowledge-sharing among 32 member states and beyond, enhancing the capacity for integrated impact assessments and adaptive management (EEA, 2025).

At the methodological level, ecological expertise in EIA employs diverse techniques such as habitat mapping, species inventories, ecological modeling, and risk assessment to quantify impacts accurately and design mitigation strategies targeted at conserving biodiversity and ecosystem services. These activities are iterative and adaptive, emphasizing early integration into project planning, public participation, and transparent decision-making (Sadler & Brown, 1999).

Despite advancements, challenges remain including inconsistent implementation, data deficiencies, and often limited incorporation of cumulative and indirect ecological effects. Addressing these gaps requires strengthening interdisciplinary cooperation globally, advancing ecological data infrastructure, and expanding capacity-building initiatives. Ultimately, ecological expertise in EIA contributes critically not only to project-specific environmental safeguarding but also to broader planetary goals of resilience and sustainability amid mounting global environmental pressures (UN Independent Expert, 2025).

MATERIALS AND METHODS

The materials and methodology for ecological assessment within Environmental Impact Assessment (EIA) is a systematic, stepwise process designed to provide robust, evidence-based evaluations of how proposed projects may affect ecological systems and species. This structured approach ensures that decision-makers have comprehensive scientific data to weigh environmental risks and mitigation opportunities effectively (Sadler & Brown, 1999; European Commission, 2024).

The initial step, **screening**, determines whether a proposed project requires a full EIA based on the likelihood of significant ecological or wider environmental impacts. Authorities assess project type, size, and location against legal thresholds to decide the necessity of ecological studies.

Following screening, **scoping** defines the depth and breadth of ecological studies tailored to the project. This phase identifies key environmental features requiring attention, such as protected habitats, critical species, and ecosystem functions. Consultation with regulators, environmental agencies, and stakeholders at this stage refines the scope, ensuring studies focus on relevant ecological receptors.

Once the scope is agreed upon, **baseline data collection** occurs through field surveys, habitat mapping using Geographical Information Systems (GIS), remote sensing, and review of existing ecological literature. These data establish the pre-project environmental conditions, including species distributions, habitat quality, and ecological processes. Rigorous baseline documentation forms the benchmark against which potential project impacts are assessed.

The **impact prediction and evaluation** stage employs ecological modeling, expert judgment, and comparative analysis to forecast direct, indirect, cumulative, and synergistic effects of project activities. This includes assessing impacts such as habitat loss, fragmentation, pollution disturbance, or changes in hydrology and microclimate. Experts evaluate the significance of impacts considering legal protections, ecological sensitivity, and project scale.

Mitigation planning is integral, developing strategies to avoid, reduce, or compensate for predicted negative effects. Mitigation plans may include redesigning project footprints, scheduling activities to minimize disturbance during key biological periods, creating replacement habitats, or enhancing adjacent ecosystems. The preparation of an Environmental Management Plan (EMP) often formalizes mitigation and monitoring commitments.

Finally, **monitoring and follow-up** ensure that commitments are implemented and effective. Post-project monitoring tracks ecological indicators to verify impact predictions, measure mitigation success, and detect unforeseen consequences. This adaptive management framework allows for corrective actions where necessary, safeguarding long-term ecological integrity (European Commission, 2024).

Case Application: Wind Farm Development in Portugal

A large-scale wind farm in Portugal exemplifies the application of ecological expertise in EIA. Field surveys identified the presence of endangered bird species vulnerable to collision with turbines. Habitat modeling and risk analyses predicted areas with high collision probability and habitat disruption during construction. The mitigation strategy involved turbine repositioning to avoid key flight paths, seasonal restrictions on construction activities during breeding periods, and habitat restoration in adjacent areas to compensate for disturbance. Inclusive public consultations, informed by ecological data, enabled stakeholders to engage effectively, balancing renewable energy production with conservation priorities (European Commission, 2024; Sadler & Brown, 1999).

FINDINGS

The Environmental Impact Assessment (EIA) process is enshrined within a complex and evolving legal framework that spans international treaties, regional directives, and national legislation, collectively embodying global efforts to safeguard environmental integrity amid development pressures. This multilayered framework mandates a systematic evaluation of potential ecological, social, and economic impacts of proposed projects prior to their authorization, embedding the precautionary principle into decision-making and advancing sustainability goals (EEA, 2025).

At the international level, key frameworks such as the Espoo Convention (1991) on Environmental Impact Assessment in a Transboundary Context and the Aarhus Convention (1998) on access to information and public participation underpin cooperative environmental governance. The Espoo Convention obliges Parties to assess environmental effects of certain activities during planning stages and notify and consult affected states, fostering cross-border environmental responsibility. Similarly, the Aarhus Convention codifies public rights to environmental information, participation in decision-making, and access to justice, ensuring transparency and accountability in EIA processes (UNECE, 2025).

Regionally, the European Union's EIA Directive (2011/92/EU), updated by the 2014/52/EU amendment, represents a cornerstone of environmental law within the EU. It mandates that significant projects—including energy infrastructure, transportation corridors, waste management facilities, and industrial developments—undergo rigorous environmental examination before approval. Importantly, the Directive requires comprehensive inclusion of ecological parameters such as biodiversity, habitat preservation, and ecosystem services, reflecting an evolved understanding of ecological interdependencies within impact assessments (European Commission, 2024). The Directive prioritizes transparency and public participation, mandating early notification to the public and integration of their inputs, which enhances procedural legitimacy and environmental justice (European Commission, 2024).

National legislations continue to proliferate in scope and sophistication, responding to unique environmental contexts and development challenges while aligning with international principles. For instance, China's Draft Environmental Code (2025) marks a landmark step consolidating fragmented regulations into an integrated legal text. This Code explicitly integrates ecological expertise throughout the EIA process, demanding detailed biodiversity assessments, ecosystem valuation, and systematic monitoring. It reinforces the role of ecological experts in shaping project alternatives and mitigation plans to uphold ecological integrity and sustainable land use (China Draft Environmental Code, 2025). Similar trends appear across Asia, Eastern Europe, and Africa, where countries develop or amend laws to incorporate strategic environmental assessments alongside project-level EIAs, expanding the prospective and cumulative impact considerations in governance frameworks (GGGI, 2025).

The legal framework also reflects advancements in digital and scientific tools supporting more accurate and transparent EIAs. For example, Geographical Information Systems (GIS) and remote sensing are increasingly embedded in legal requirements for baseline data collection and impact quantification. Environmental authorities in many jurisdictions employ digital public consultation platforms to facilitate

participatory governance, tracking project compliance and ecological monitoring data (European Commission, 2024).

Despite these advances, challenges persist. Variability in the rigor of EIA implementation and enforcement across jurisdictions leads to inconsistent ecological protections. Moreover, many legal frameworks struggle to incorporate complex cumulative impacts and ecosystem service assessments adequately. The need for harmonization of standards, improved ecological data infrastructures, and capacity-building within regulatory agencies is increasingly recognized as critical for closing these gaps (IAIA, 2025).

In conclusion, the EIA legal framework is a dynamic, multilayered system critical to contemporary environmental governance worldwide. Its ongoing evolution, integrating ecological expertise and participatory principles, aims to reconcile development aspirations with ecosystem conservation and resilience, thereby contributing decisively to global sustainability targets under frameworks such as the United Nations Sustainable Development Goals (SDGs) and the Convention on Biological Diversity (CBD).

DISCUSSIONS

Ecological expertise is fundamental to the Environmental Impact Assessment (EIA) process, providing the scientific foundation for understanding and mitigating the environmental consequences of development projects. It comprises a diverse range of specialized knowledge, including biodiversity surveys, habitat evaluations, species impact assessments, and ecological risk analyses, which ensure that the ecological integrity of potentially affected areas is rigorously examined and preserved (Sadler & Brown, 1999).

Biodiversity surveys conducted by ecologists identify the presence, abundance, and conservation status of fauna and flora species within the project area. These surveys contribute essential data to establish baseline conditions, against which the potential impacts of a project can be measured. Habitat evaluations assess the quality, extent, and ecological functionality of ecosystems, from forests and wetlands to grasslands and marine environments. Such evaluations are critical not only for recognizing areas of ecological sensitivity but also for understanding ecosystem services—such as water purification, carbon sequestration, and soil stabilization—that sustain human well-being and biodiversity (EcologybyDesign, 2021).

Species impact assessments focus on evaluating how specific species, particularly those protected under national or international law, may be affected by project activities. This includes displacement risks, mortality threats, and reproduction disruption. For example, habitat connectivity analysis evaluates how infrastructure developments might fragment ecosystems, interrupt wildlife corridors, and diminish genetic exchange among populations, thereby increasing species vulnerability. Such analyses guide the design of ecological mitigation measures, including habitat restoration, wildlife crossings, or buffer zones, tailored to maintain landscape connectivity and ecological function (Sadler & Brown, 1999).

Furthermore, ecological risk analyses integrate these data streams to evaluate the likelihood and magnitude of potential ecological disruptions, distinguishing significant impacts requiring mitigation from less consequential effects. This risk-based approach enables prioritization of conservation efforts and helps align mitigation or compensation measures with established biodiversity conservation goals, such as those set by the Convention on Biological Diversity (CBD) and national biodiversity strategies (EcologybyDesign, 2021).

The role of ecological expertise extends beyond technical assessment to influencing project design and public decision-making. Ecologists collaborate closely with planners and engineers to minimize environmental harm by recommending alternative project layouts or construction schedules that avoid sensitive periods, such as breeding seasons. Additionally, ecological data support transparent

communication with stakeholders and facilitate informed public participation by providing clear evidence of environmental risks and benefits (Sadler & Brown, 1999).

Challenges and Future Directions

While substantial progress has been made in integrating ecological expertise into Environmental Impact Assessment (EIA), substantial challenges persist that limit the full effectiveness of EIA in environmental governance. Addressing these challenges is critical for advancing biodiversity conservation and sustainable development globally (IAIA, 2025).

One major challenge is the **persistent data gaps** for many ecosystems, especially in understudied regions such as tropical rainforests, deep-sea environments, and rapidly changing urban-ecological interfaces. These gaps hinder comprehensive baseline assessments, reducing confidence in impact predictions and mitigation planning. Additionally, temporal limitations in standard EIA—often single-season or short-term surveys—fail to capture seasonal or interannual variability critical to understanding species life cycles and ecosystem dynamics (IAIA, 2025).

Methodological inconsistencies across jurisdictions further complicate ecological assessment. Varied standards for survey methods, impact significance criteria, and mitigation requirements undermine comparability and can dilute conservation outcomes. The lack of integration of complex ecological processes, such as ecosystem service valuation and climate change feedbacks, restricts EIA's ability to address cumulative and indirect impacts adequately (Uzbekistan SEA Law, 2025).

Cumulative impact assessment remains particularly challenging. Assessing the additive or synergistic effects of multiple projects or stressors over time requires advanced modeling and data-sharing mechanisms often beyond regulatory capacities. Without robust cumulative assessments, EIAs may underestimate long-term risks to biodiversity and ecosystem resilience.

To address these limitations, **strengthening interdisciplinary integration** is essential. Incorporating emerging ecological science, remote sensing technologies, and social-ecological frameworks can improve data quality and relevance. Advances in ecological informatics and data-sharing platforms enable better integration of disparate data sources, supporting real-time adaptive management and policy responses (IAIA, 2025).

Capacity-building within environmental agencies and among ecological consultants is also necessary to harmonize standards and develop expertise in emerging issues such as ecosystem service accounting and climate adaptation. International cooperation on best practices and legal harmonization can promote consistency, particularly for transboundary ecosystems facing shared pressures.

Innovative approaches such as Strategic Environmental Assessment (SEA) and Environmental Governance Networks further extend ecological expertise beyond project-level assessments, fostering landscape-scale planning and cross-sectoral coordination (GGGI, 2025).

In conclusion, navigating these challenges requires concerted global efforts to improve ecological knowledge, regulatory frameworks, and practical implementation. Enhanced ecological expertise within EIA, supported by collaborative networks and technological innovation, is pivotal to advancing effective biodiversity conservation and resilient ecosystems in a rapidly changing world.

In sum, ecological expertise acts as a critical bridge between complex environmental science and practical governance, ensuring that EIAs move beyond procedural formality toward achieving tangible biodiversity conservation and sustainable development outcomes. As environmental challenges grow increasingly complex and interlinked, the demand for nuanced and adaptive ecological expertise within EIA processes becomes ever more pronounced.

CONCLUSIONS

Ecological expertise stands as an indispensable pillar within the Environmental Impact Assessment (EIA) process, providing the scientific rigor necessary to safeguard ecosystems from adverse developmental impacts. As multifaceted development pressures intensify amidst accelerating global biodiversity loss and climate change, robust, science-based ecological evaluations integrated into legally enforceable frameworks afford essential mechanisms for balancing economic growth with environmental stewardship. The cumulative findings across legal reforms, methodological advances, and illustrative case studies emphasize that embedding ecological considerations in EIA is not merely procedural compliance but a prerequisite for sustainable development and ecosystem resilience.

Strengthening legal frameworks remains paramount to elevate the role of ecological expertise in EIA. Progressive international treaties, regional directives like the European Union's EIA Directive, and emerging national legislations, such as China's draft Environmental Code and Uzbekistan's Environmental Expertise Law, illustrate a global trend toward mandating comprehensive ecological assessments and public participation. However, constant evolution and harmonization of these frameworks are needed to address gaps such as inconsistent enforcement, variability in ecological standards, and insufficient inclusion of cumulative and transboundary impacts (GGGI, 2025; IAIA, 2025). National governments should prioritize legislative reforms that clarify ecological assessment requirements, mandate qualified ecological experts, and promote open data sharing platforms to enhance transparency and regulatory efficiency.

Methodological improvements in ecological assessment also contribute significantly to impact reduction and adaptive management. Employing integrated approaches that merge field surveys, GIS habitat modeling, species risk assessments, and iterative monitoring enables accurate identification of environmental risks and design of mitigation strategies. Innovative tools such as remote sensing, ecological informatics, and ecosystem service valuation should be systematically incorporated into EIA protocols. Furthermore, advancing participatory mechanisms by involving local communities, indigenous groups, and stakeholders at early stages improves the legitimacy and efficacy of ecological interventions (European Commission, 2024; Sadler & Brown, 1999). Training programs to enhance interdisciplinary skills among ecological experts and regulatory authorities are warranted to maintain cutting-edge knowledge and safeguard ecological integrity in decision-making.

Practical case applications underscore the tangible benefits of integrating ecological expertise into EIA, exemplified by the wind farm project in Portugal. There, detailed species surveys and habitat connectivity models informed turbine placement and mitigation measures that balanced renewable energy expansion with biodiversity conservation. This case demonstrates how science-driven recommendations can facilitate multi-stakeholder dialogue and lead to sustainable project outcomes. Scaling such success stories requires replicating best practices across sectors and geographies, supported by guidance documents, capacity-building initiatives, and international cooperation.

Looking forward, key challenges persist including insufficient ecological baseline data in certain regions, limited assessment of cumulative and indirect impacts, and inconsistent global standards. These challenges present opportunities to advance EIA into a more holistic, resilient tool by promoting ecosystem-based management and cross-jurisdictional collaboration. Strategic Environmental Assessments (SEA) can complement project-level EIAs by framing development within wider ecological and social contexts. Enhancing ecological databases, fostering knowledge exchange networks, and leveraging digital technologies will increase the precision and responsiveness of ecological assessments, empowering timely interventions in dynamic environmental conditions.

RECOMMENDATIONS:

1. **Strengthen Legal and Institutional Frameworks:** Harmonize EIA-related laws globally to enforce coherent ecological standards, mandate qualified expertise, and ensure meaningful public participation and transparency.

2. **Advance Ecological Methodologies:** Integrate cutting-edge technologies such as remote sensing, ecological informatics, and ecosystem service valuation in EIA protocols to improve accuracy and adaptive capacity.

3. **Capacity Building and Training:** Develop interdisciplinary training programs for ecologists and regulators to maintain expertise in emerging environmental challenges and innovative assessment techniques.

4. **Promote Public and Stakeholder Engagement:** Institutionalize participatory approaches in ecological assessments to enhance social acceptance and identify localized environmental risks.

5. **Foster International Cooperation:** Create cross-border collaboration frameworks to manage transboundary ecological impacts and share best practices, datasets, and technological innovations.

6. **Implement Cumulative and Strategic Assessments:** Broaden EIA scope through Strategic Environmental Assessments and cumulative impact analyses to capture long-term and landscape-scale ecological dynamics.

In conclusion, ecological expertise embedded within a robust EIA framework is vital not only for mitigating the negative impacts of development but for fostering ecological resilience and sustainability globally. By continuously updating legal, scientific, and participatory practices, EIA can rise to meet the environmental challenges of the 21st century and beyond, ensuring that ecosystems and human communities thrive in harmony.

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TÜRKİYE VE ŞANGAY İŞ BİRLİĞİ ÖRGÜTÜ ARASINDA ENERJİ VE DIŞ POLİTİKA FIRSATLARI

İsmail AKTAR

Doç. Dr., Yalova Üniversitesi, İİBF, İktisat Bölümü

ismail.aktar@yalova.edu.tr

ORCID ID: 0009-0002-5035765X

Öz

Türkiye, Batı ülkeleri ile yaşadığı sorunlar ve dünyada güç dengelerinin değişmesi sonucu yeni bir ortaklığa sıcak bakmış, bu yönde ŞİÖ ile görüşmelere başlamıştır. ŞİÖ Türkiye`nin dış ticaretinde çok önemli bir etken haline gelmesi ile Türkiye'nin çok taraflılık eğilimini de desteklemektedir. Türkiye resmi olarak 2012 yılında ŞİÖ`ye diyalog ortağı olarak katılmış ve üye ülkeler ile ilişkilerini geliştirme aşamasında büyük adımlar atmıştır. Bu çalışma, Türkiye`nin dış politikasında avantaj ve dezavantajlarının da olduğu Şanghay İşbirliği Örgütü (ŞİO) ile gerçekleştirdiği ilişkilerini ele almaktadır. Makalede, ŞİÖ`nün tarihsel gelişimi, üye ülkelerinin, aynı zamanda Türkiye`nin dış ticaret durumu, bununla birlikte Türkiye ve ŞİÖ ilişkilerinin artı ve eksileri, gelecek perspektifleri incelenmiştir.

Anahtar kelimeler: Türkiye, Şanghay İşbirliği Örgütü, dış ticaret, stratejik ortaklık, diyalog ortaklığı.

ENERGY AND FOREIGN POLICY OPPORTUNITIES BETWEEN TÜRKİYE AND THE SHANGHAI COOPERATION ORGANIZATION

Abstract

Türkiye has looked favorably upon a new partnership due to the problems it has experienced with Western countries and the changing balance of power in the world and has started negotiations with the SCO in this direction. The SCO has become a particularly crucial factor in Türkiye's foreign trade, and it also supports Türkiye's tendency towards multilateralism. Türkiye officially joined the SCO as a dialogue partner in 2012 and has taken great steps in developing its relations with member countries. This study examines Türkiye's relations with the Shanghai Cooperation Organization (SCO), which also has advantages and disadvantages in its foreign policy and Energy policy. The article examines the historical development of the SCO, the foreign trade status of its member countries, as well as Türkiye, as well as the pros and cons of Türkiye-SCO relations, and future perspectives including energy policies.

Key words: Türkiye, Shanghai Cooperation Organization, foreign trade, strategic partnership, dialogue partnership.

GİRİŞ

Türkiye Cumhuriyeti`nin dış politikasına bakıldığında 1923 yılından günümüze kadar bazı sürekliliklere bağlı olarak hareket ettiği görülmektedir. Süreklilik dediğimizde ülkenin maceracı ve devlet güvenliği için tehdit oluşturan durumlardan kaçınması, ABD öncülüğündeki Batı ittifakı dahilinde dış politika

yürütmesi amaçlanmaktadır. Ancak Batı ittifakı üyesi olmamız her zaman tek yönlü dış politika üretmemiz anlamına gelmemektedir. Türkiye bu yönde birçok ülkeler veya örgütlerle dış politika ilişkilerinde girişimlerde bulunmuştur. Örneğin Orta Doğu, Kafkasya, Latin Amerika ülkeleri ile ilişkiler buna bir örnektir. Türkiye'nin Şanghay İşbirliği Örgütüne (ŞİÖ) ilgi duymasının nedeni de çok taraflı dış politikasını geliştirmek istemesidir.

Şanghay İşbirliği Örgütü 1996 yılında kurulmasının amacı, örgüte üye olan ülkeler arasında güvenlik, ekonomik ilişkileri ve siyasi istikrarı güçlendirerek bölgesel barışın ve devamlılığın sağlanmasıdır. Örgüt Çin, Rusya, Kazakistan, Kırgızistan ve Tacikistan tarafından oluşturulsa da sonraki yıllarda üye katılımı olmuş ve üye sayısı artmıştır. 2001 yılında Özbekistan, 2017`de Hindistan ve Pakistan, 2021 yılında İran örgüte üye olmuştur. Türkiye 2012 yılında örgüte diyalog ortağı olarak katıldı.

ŞİÖ`nün Rusya ve Çin gibi büyük üyelerinin olması Türkiye`nin dış politikasında örgütün önemini güçlendirmektedir. Bu güç hem ekonomik hem de jeopolitik anlamda sağlana bilir. Ancak ikili ilişki beraberinde bazı zorluk, risk ve dezavantajları da barındırmaktadır. Türkiye`nin ŞİÖ ile ilişkileri, çok yönlü dış politikasının bir parçası olarak fırsatlar sunsa da çeşitli siyasi ve stratejik riskler içermektedir.

Enerji, Türkiye'nin hem iç siyasetinde hem de dış politika yönelimlerinde merkezi bir rol oynamaktadır. Özellikle enerjiye olan talebin her geçen yıl artması, Türkiye'yi hem kaynak ülkelerle hem de enerji güzergâhlarıyla daha güçlü ilişkiler kurmaya zorlamaktadır. Bu bağlamda, Şanghay İşbirliği Örgütü (ŞİÖ), Türkiye açısından yalnızca jeopolitik değil, enerji stratejileri bakımından da dikkate değer bir potansiyele sahiptir. Örgüte tam üyelik ihtimali, Türkiye'nin enerji politikalarını yeniden şekillendirebilecek niteliktedir.

TÜRKİYE`NİN ÇOK TARAFLI DIŞ POLİTİKASI

Türkiye'nin uluslararası alandaki konumunu etkileyen temel faktörler onun coğrafî konumu, doğal ve beşeri kaynakları ve özellikle 1950'lerden beri ekonomik kalkınması olmuştur (Hale, 2021, s. 20). Türkiye`nin dış politikası ele alındığında ülkenin geleneksel müttefiklerinin ABD ve Batı ülkeleri, örgütleri olduğunu görmekteyiz. Dış politikada Batı ile ilişkilerin temeli Lale Devrinden atılmış ve aşağıdaki boyutlarda incelenmiştir:

1. Tarihsel Boyut – Batıcılık akımı Osmanlı Devleti`nin son dönemlerinden itibaren başlamış ve bunun izlerini sosyo-kültürel alanlarda görmekteyiz. Atatürk zamanında bu akım resmi devlet politikası haline geldi ve 1950 yılından sonra NATO ve AB üyelik süreci Batıcılık akımının daha da derinleşmesine sebep oldu

2. Sosyo-ekonomik Boyut – Diğer az gelişmiş ülkelerin sosyo-ekonomik yapısına bakıldığında Türkiye`nin yapısı her zaman Batıya daha yakın olmuştu. Seçimlerindeı yenilenmiş, eğitim ve meslek seçimlerinde sekülerlik ve bilimsellik daha önemli konuma getirilmişti. Giyim, yemek ve diğer yönlerde de Batı tarzına has özellikler görülmekteydi

3. Aydınlar Boyutu – Aydınlar boyutu denildiğinde Batıcılık fikirlerini ülkeye getiren ve savunan kişiler düşünülmektedir. Burada daha çok ülkenin sekülerleşmesi ve bilimsel olarak büyümesi fikirleri dayatılmaktaydı

4. Önder Boyutu – Batıcılık akımını devlet politikası haline getiren önderlerden biri Atatürk olmuş, Batı modelini kadın hakları, eğitim gibi önemli konularda referans almıştır.

1991 yılında Sovyetler Birliğinin çökmesi, ABD`nin Soğuk Savaştan galip ülke olarak ayrılması ve "tek kutuplu dünyanın süper gücü" olarak ilan edilmesiyle artık yeni dünya düzeni oluşmaya başlamıştı (Kut, 2010, s. 5). Artık bölgesel ilişkiler tek kutupluluktan çıkarak çok merkezli uluslararası ilişkilere dönüşmekteydi. Türkiye zamanla bu kavramı anlamaya ve benimsemeye başladı. Bu yönde uluslararası

kuruluşlar başta olmakla, Kafkasya, Rusya, İran, Orta Doğu, Orta Asya ve diğer ülkelerle dış politika ilişkilerini ilerletmeyi hedef aldı. Tablo 1`de Türkiye`nin çeşitli zamanlarda üye olduğu uluslararası kuruluşlar gösterilmiştir.

Tablo 1: Türkiye`nin Üye Olduğu Uluslararası Kuruluşlar

Uluslararası kuruluşlar	Temel amaç
NATO	2. Dünya Savaşı'ndan sonra Sovyet Rusya'nın yayılımcı politikasına karşı 4 Nisan 1949'da kurulmuştur. Türkiye Nato'ya 1952 yılında kabul edilmiştir
BM	2.Dünya Savaşı'ndan sonra barışı ve güvenliği sağlamak, ülkeler arasında dost ilişkileri güçlendirmek amacıyla 1945 yılında kurulmuştur
OECD	Küreselleşen dünyadaki ekonomik, sosyal ve yönetim sorunlarını çözmek ve bu sürecin fırsatlarından faydalanmak üzere birlikte çalışmak amacıyla kuruldu
AGİT	1970'li yılların başında soğuk savaş koşullarındaki Avrupa'nın bölünmüşlüğüne son vermek, güvenlik ve istikrarın kazanılmasını sağlamak, katılımcı devletlerin demokratikleşme, hukukun üstünlüğü ve insan haklarına saygı alanlarındaki çabalarına destek olmak amacıyla kuruldu
G8	Türkiye, İran, Pakistan, Bangladeş, Malezya, Endonezya, Mısır ve Nijerya'nın katılımıyla 1997 yılında 8 ülke arasında ticaret ilişkileri geliştirmek ve yeni fırsatlar yaratmak amacıyla kuruldu
İKÖ	İslam Dünyasının hak ve çıkarlarını korumak, Üye Devletler arasında işbirliği ve dayanışmayı güçlendirmek amacıyla kuruldu
G20	Yükselen ekonomilerin küresel ekonomik karar alma süreçlerinde daha fazla temsil edilmesi ve uluslararası mali sistemin daha istikrarlı bir yapıya kavuşturulması amacıyla kuruldu
AK	Avrupa'da insan hakları, demokrasi ve hukukun üstünlüğünü savunmak amacıyla kuruluştur
KEİ	Üye ülkelerin ekonomik, teknolojik ve sosyal ilişkilerini çeşitlendirmeleri ve daha da geliştirmeleri, böylelikle Karadeniz çevresindeki ülkelerin barış, istikrar ve refah içinde yaşamasını amaçlamaktadır
TK	Türk dünyasının tarihi ve kültürel birikimlerinden en geniş şekilde yararlanılmak suretiyle Türk dili konuşan ülkeler arasındaki çok taraflı işbirliğinin geliştirilmesi amacıyla kuruldu
TİKA	Türk dilinin konuşulduğu ülkeler ve komşu ülkelerle ticari, ekonomik, teknik, sosyal, kültürel ve eğitim alanlarında işbirliğini geliştirmek amacıyla kurulmuştur

Türk dış politikasının son 25 yıl içerisinde en çok vurgulanan ve tartışma konusu yapılan boyutu olan "aktiflik", eğer "pasiflik" karşıtı olarak kullanılırsa, Türk dış politikasının bu dönemde hiçbir zaman pasif olmadığını söylemek gerekir. Türkiye her zaman aktif bir diplomasi yürütmüş, her zaman aktif bir dış politika izleme niyetini beyan etmiş, konjonktürün uygun olduğu durumlarda da bunu başarmıştır. Diğer yandan "aktif dış politika", eğer "reaktif" yani olayları belirlemeye değil, olayların kendi dışında gelişimine göre tepki vermeye planlanmış bir dış politika stratejisinin karşıtı olarak kullanılırsa, Türkiye'nin yine aktif bir dış politika izlediğini, bununla birlikte çevresinde ve dünyada kendi kontrolu dışında ortaya çıkan ve hazırlıksız yakalandığı radikal değişiklikler karşısında ister istemez reaktif tepkiler verdiğini söylemek mümkündür (Kut, 2010, s. 41).

ŞANGHAY İŞBİRLİĞİ ÖRGÜTÜNÜN TARİHÇESİ VE FAALİYETİ

Eski Sovyetler Birliğinin çökmesinin ardından Varşova Paktı`nın hükmünü kaybetmesi birçok ülkenin gözünü Orta Asya`ya çevirmiştir (Altundağ, 2016, s. 104). Ekonomik ve siyasi çıkarların sağlanması amaçlanarak çoğu ülke bu devletlerle ortak işbirliği ve strateji yürütme peşindeydi. Bunun yanı sıra Rusya ve Çin arasında da gerginlik söz konusu olmuştur ve bu bölgedeki istikrarı ve istikrarsızlığı etkileyen en önemli faktörlerden biri de bu olmuştur. Bu yönde Rusya, çöken SSCB`nin izlemeye başladığı Çin ile aradaki buzları eritmeye başlamış ve çabalarının karşılığını da almıştır.

Rusya ve Çin arasındaki sınır anlaşmazlıkları, ekonomik çıkar ilişkilerinin yanı sıra NATO`nun Doğu Avrupa'ya doğru ilerlemesi ve ABD`nin Çin ile Tayvan ticaretinden hoşnut olmaması bu işbirliğinin gerçekleşmesini tetikleyen sebeplerdendir. Orta Asya ülkeleri için dünyanın iki büyük ülkesi olan Rusya ve Çin'le işbirliği durumu oldukça mantıklı gelmektedir. Bu cumhuriyetler de güvenliklerini hem Rusya Federasyonu ve Çin ile ilişkilerini geliştirerek, hem de ülkelerinde ABD'nin askerî faaliyetlerine izin vererek tek bir güce bağlı kalmama eğiliminde olmuşlardır (SIPRI, 2007, s. 190).

Yukarıda da belirttiğimiz gibi, Orta Asya, Rusya ve Çinin ortak çıkarları, ekonomilerini geliştirmek ve diğer problemlerini çözmek amaçlı 1996 yılının nisan ayında ilk ismi ile vurgulamak gerekirse Şanghay Beşlisi kurulmuştur. 26 Nisan 1996 tarihli Şanghay Zirvesi'ni rotasyon usulüne göre 1997 Moskova, 1998 Almatı, 1999 Bişkek ve 2000 Duşanbe Zirveleri takip etmiştir. Beş yıl içerisinde beş üye devletin başkentlerinde düzenlenen zirvelerle Şanghay Beşlisi'nin kurumsal yapısı büyük oranda tamamlanmıştır. Bunlardan 1999 tarihli Bişkek Zirvesi örgüt bünyesinde bir Anti-Terör Merkezi kurulmasının kararlaştırıldığı ve zirve sonunda ilan edilen Bişkek Deklarasyonu'nda terörizme karşı mücadeleye özel önem atfedildiği zirve olmuştur (Altundağ, 2016, s. 106). Şanghay Beşlisi`nin üye sayısı başlangıçta beş idi: Çin, Rusya, Kazakistan, Kırgızistan ve Tacikistan. Sonraki yıllarda Hindistan, Pakistan ve İran'ın katılımıyla Şangay İşbirliği Örgütü kurulduğu 2001 yılından bu yana kurumsal gelişim hızı, her yıl gerçekleştirilen zirveleri ve yeni siyasi modele uygun olan açıklamaları ile kamuoyunda tanınmayı başarmıştır (Öztürk, 2014, s. 251). İlk olarak sınır bölgesindeki güvenliği arttırmak için kurulsa da ilerleyen aşamalarda çok yönlü politika, diplomasi, kültürel ve diğer alanlarda da görüşmeler sağlanmıştır.

Şekil 1: ŞİÖ bölgesi

✓ *Şanghay üyeleri – pembe, gözlemci – yeşil, diyalog – turuncu*

Şanghay İşbirliği Örgütü`nün farklı yıllarda ve şehirlerde Liderler Zirveleri gerçekleşmiştir. Aşağıdaki tabloda her sene gerçekleşen bu zirve toplantıları gösterilmiştir:

Tablo 2: 2001-2022 Yıllarında Gerçekleşen Liderler Zirvesi

Zirve toplantılarının gerçekleştiği yıl	Zirve toplantılarının gerçekleştiği şehirler	Temel konular
14 Haziran 2001	Şanghay	Örgütün resmi olarak kurulması
7 Haziran 2002	St. Petersburg	ŞİÖ Tüzüğünün kabulü
17 Haziran 2004	Taşkent	Bölgesel Anti- Terörizm Merkezinin kuruluşu
5 Temmuz 2005	Astana	ABD`nin Orta Asya'daki varlığına eleştiri
15 Haziran 2006	Şanghay	Enerji sektöründe yapılandırma
28 Ağustos 2008	Duşanbe	Gıda ve enerji sorunu
16 Haziran 2009	Yekaterinburg	Mali krizin yönetilmesi
11 Haziran 2010	Taşkent	Afganistan olaylarına karşı üye ülkelerde istikrar ve barışın sağlanması
10 Temmuz 2015	Ufa	Hindistan ve Pakistan'ın katılım süreci
10 Kasım 2020	Rusya (çevrimiçi)	COVİD-19 nedeniyle sağlık işbirliğinin yapılması
15 Eylül 2022	Semerkant	Çok taraflılığın desteklenmesi

Tabloda yer alan zirve toplantılarının tümünde üye ülkelerin birlik ve dayanışmasına dayalı konular özellikle yer almıştır. Dolayısıyla terör, ırkçılık gibi durumlarda bölgedeki sakinliği korumak amaçlı üye ülkelerinin birliği söz konusudur. Özellikle İslami akımları, Doğu Türkistan, Çeçenistan meselesi bölgedeki ülkeleri rahatsız eden konulardır. Bu amacı desteklemek adına 2004 yılında Taşkent`te anti-terörizm merkezi kurulmuştur.

ŞİÖ`de farklı statülere sahip ülkeler bulunmaktadır:

Tablo 3: Ülkelerin Statüsü

Tam üye ülkeler	Gözlemci ülkeler	Diyalog ortağı ülkeler
Çin	Afganistan	Türkiye
Rusya	Belarus	Azerbaycan
Kazakistan	Moğolistan	Ermenistan
Tacikistan		Nepal
Kırgızistan		Sri Lanka
Pakistan		Kamboçya
Hindistan		Katar

İran	Suudi Arabistan
	Mısır
	BAE
	Kuveyt
	Bahreyn

ŞİÖ`nün resmi dilleri İngilizce, Rusça ve Çincedir. Örgütün iki daimî organı vardır. Bunlardan ilki Çin Halk Cumhuriyeti`nin başkenti Pekin'de bulunan Sekreterlik ve diğeri Özbekistan`ın Taşkent şehrinde yer alan, Terörizme Karşı Bölgesel Yapı`dır. Örgütün karar alma mekanizması, işleyişi ve toplantıları dört temel yapı üzerinden koordine edilmektedir. Bunlar Devlet Başkanları Konseyi, Hükümet Başkanları Konseyi, Dışişleri Bakanları Konseyi, Temsilcilikler Konseyi ve Ulusal Koordinatörler Konseyi'dir (Yardımcıoğlu ve Koçarslan, 2012, s. 169).

ŞANGHAY İŞBİRLİĞİ ÖRGÜTÜ (ŞİÖ) ÜYELERİNİN TEMEL EKONOMİK GÖSTERGELERİ

ŞİÖ kurulduğu yıllarda güvenlik, insani ve kültürel alanda iş birliğini hedeflese de üye ülkelerin ekonomik alanda da birlikte hareket etmek istemesi örgütün büyümesini sağlamıştır. Bu yönde de başarılara imza atmak adına üye ülkeler tarafından "20 yıllık Çok Taraflı Ticaret ve Ekonomik İşbirliği" programı kabul edilmiştir. Amaç bölgede serbest ticaretin oluşumunu sağlamak ve ülkeler arasındaki gümrük, bazı hizmetlerin daha uygun tarifede sürdürülmesini hedeflemektir.

Tablo 4: ŞİÖ Üyelerinin Temel Ekonomik Göstergeleri

Üye	GSYH (Milyar dolar)	Nüfus (Milyon kişi)	Kişi başına (Dolar)	Büyüme (%)	Enflasyon (%)	İşsizlik (%)
Çin	18.7	1.425	13.357	6.8	2.1	4
Rusya	2.174	146	14.890	1.9	7	5.5
Kazakistan	288	20	14.400	3.4	14.6	5
Kırgızistan	17.5	6,7	2611	5.5	6.5	2.2
Tacikistan	14.2	10.8	1314	2.5	8	2.3
Özbekistan	115	39	2.948	4.5	12	8.9

Hindistan	3.91	1.425	2,753	6.7	4.9	8
Pakistan	373	170	2.194	5.7	3.8	6.3
TOPLAM ORTALAMA	25.832	3.242	6808,3	4,62	8,42	10,55

Kaynak. *Dünya bankası*

ŞİÖ`nün tabloda görüldüğü üzere toplam GSYH`si yaklaşık 26 trilyon dolar ve bu tüm dünya GSYH`sı 111 trilyon dolar alındığında, ŞİÖ GSYH'sı yaklaşık %23'ü demektir. Dünya GSYH`sinde bu ölçüde büyük paya sahip olan örgütün ekonomik açıdan üst seviyede olduğunu göz önünde bulundurmak gerekmektedir. Gelecek yıllarda da bu İşbirliğinin güçlenmesiyle ekonomik verilerin artacağı gözlemlenmiştir. Ayrıca ŞİÖ toplam nüfusu 3.242 milyardır ki bu da %40 demektir dünya nüfusu 8 milyar olarak alındığında. Ortalama enflasyon oranı yaklaşık %8,5 iken, ortalama işsizlik ise %10,5 civarındadır.

Tablo 5: ŞİÖ, ABD, AB ve Dünya İçin Ekonomik Göstergeler

Bölge/Ülke	GSYİH (Trilyon USD)	Nüfus (Milyon)	KBDG (USD)	Enflasyon (%)	Büyüme (%)	İşsizlik (%)
ŞİÖ	24,4	3,386	7,206	8,5	4,6	10,5
ABD	26	340,1	76,470	3,01	2,8	4,1
AB	18,4	448	41,071	2,10	0,9	6,1
Dünya	104,8	8,057	13,007	2.9495[2]	3,2[3]	4,89[4]

Kaynak:https://www.statista.com/chart/32538/comparison-of-the-shanghai-cooperation-organization-with-selected-regional-international-organizations/ (erişim tarihi 12/11/2025)

TÜRKİYE ŞİÖ İLİŞKİLERİ

Türkiye dış politikasında kendisini merkeze alan bir strateji yürütmektedir. Dolayısıyla Türkiye tüm bölgelerde – Orta Asya, Akdeniz, Orta Doğu, Kafkasya ve Balkanlarda barış ve refah düzeyini sağlayan bölgesel iş birliği politikaları yönünde adımlar atmıştır. Türkiye, eski politikaların aksine, daha çok taraflı ilişkiler kurarak Batı ve Doğu ilişkilerini dengelemek istemektedir (Ahmad, 2021, s. 116).

Son yıllarda ülkemiz çok taraflı dış politika yürüttüğü için Asya ülkeleri ile de iş birliğini amaçlayan hedefler koymuş ve bu bağlamda ŞİÖ ile ilişkilerini kurmuştur. Bu sayede Türkiye'nin Orta Asya'da ekonomik ve doğal kaynaklara erişimi dahada kolaylaşmıştır. 2017 yılında ülkemizin ŞİÖ Enerji Kulübü Başkanlığını üstlenmesiyle birlikte Asya ülkeleri, Çin ve Rusya'ya meylettiği gözükmektedir. Çok

[2] WorldBank Collection data in 2024
[3] World Economic Outlook data in 2024
[4] https://www.statista.com/statistics/279777/global-unemployment-rate/#:~:text=In%202024%2C%20the%20unemployment%20rate,rather%20than%20a%20steady%20trajectory. Erişim Tarihi 12/11/2025

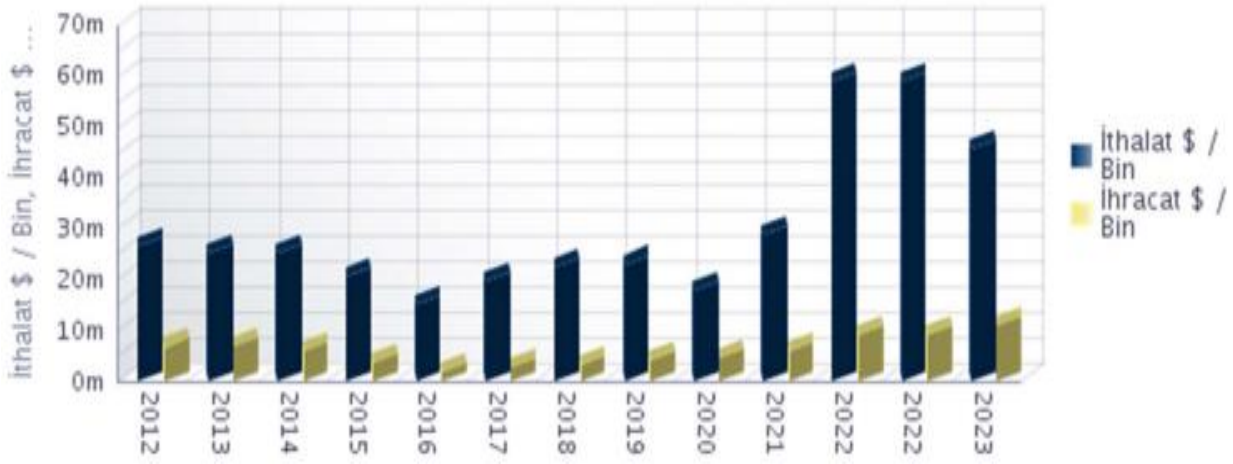
taraflı dış politika yürütmeyi amaçlamış Türkiye için ŞİÖ ile kurulan ilişkiler çok önemlidir. Ayrıca Türkiye'nin bu ülkeler içerisinde tek NATO ülkesi olması Türkiye'nin Doğu ve Batı ülkeleri arasındaki iş birliği geliştirme yeteneği kazanmasını sağlamıştır.

Türkiye ŞİÖ`nün diyalog ortağı olarak herhangi bir karara imza atma gibi bir yetkisi yoktur. Lakin bu ortaklık örgütle ilişki kurulmasının başlangıcı olarak belirlenmiştir. Diyalog ortağı olarak Türkiye ŞİÖ toplantılarına kendi fikirlerini sunarak katılabilmektedir. Türkiye örgütle karşılıklı refah ve iş birliği içerisinde ilişkilerini daha üst seviyeye çıkarabilir. Bu yönde ilk hedef gözlemci statüsüne yükselmektir. Bu ilişkilerin üst düzeyde olması yönünde dış ticarette kendini göstermesi gerekmektedir. Türkiye'nin ŞİÖ ülkeleriyle dış ticareti farklı yapıdadır ve son yıllarda artışın olduğu gözlenmektedir. Dış ticarette genellikle enerji, tekstil, gıda, inşaat gibi sektörlerde ön planda olmakla birlikte ihracat ve ithalatta Çin ve Rusya önemli konumdadır.

Rusya ve Türkiye arasında 2000 yılında 4,5 milyar dolar olan ticaret hacmi, artan petrol fiyatlarının da etkisiyle 2008 yılında rekor seviye olan 37,8 milyar dolara yükselmiş, 2022 yılında ise 68,1 milyar dolar seviyesinde gerçekleşmiştir. 2021 yılında 5,8 milyar dolar olan ihracatımız, 2022 yılında %61,8'lik bir artışla 9,3 milyar dolar seviyesine çıkmıştır (8'inci sıra). 2023 yılında ise, 2022 yılına kıyasla, %16,9'luk bir artışla 10,9 milyar dolar seviyesinde gerçekleşmiştir. Anılan dönemde Rusya'nın toplam ihracatımız içerisindeki payı ise %4,3 olmuştur (Rusya Federasyonu Ülke Raporu, 2024).

Kaynak. *TUİK*

Grafik 1. Türkiye-Rusya Dış Ticaret Hacmi



Türkiye ve Çin arasındaki dış ticaret yapısını incelediğimizde 2022 yılında ihracatın 3,28 milyar dolar, ithalatınsa 41,3 milyar dolar olduğunu görmekteyiz. Aynı yılın istatistik verilerine göre Çin ihracat yaptığımız devletler sırasında 18. yerde karar kılmış ve ihracat payının %1,3 olduğu gözlemlenmiştir. İthalatta Çin 2. sırada olmuş ve ithalattaki payı %11,4 olarak belirlenmiştir. Çin ile ihracat ve ithalattaki ürünler aşağıdaki tabloda gösterilmiştir:

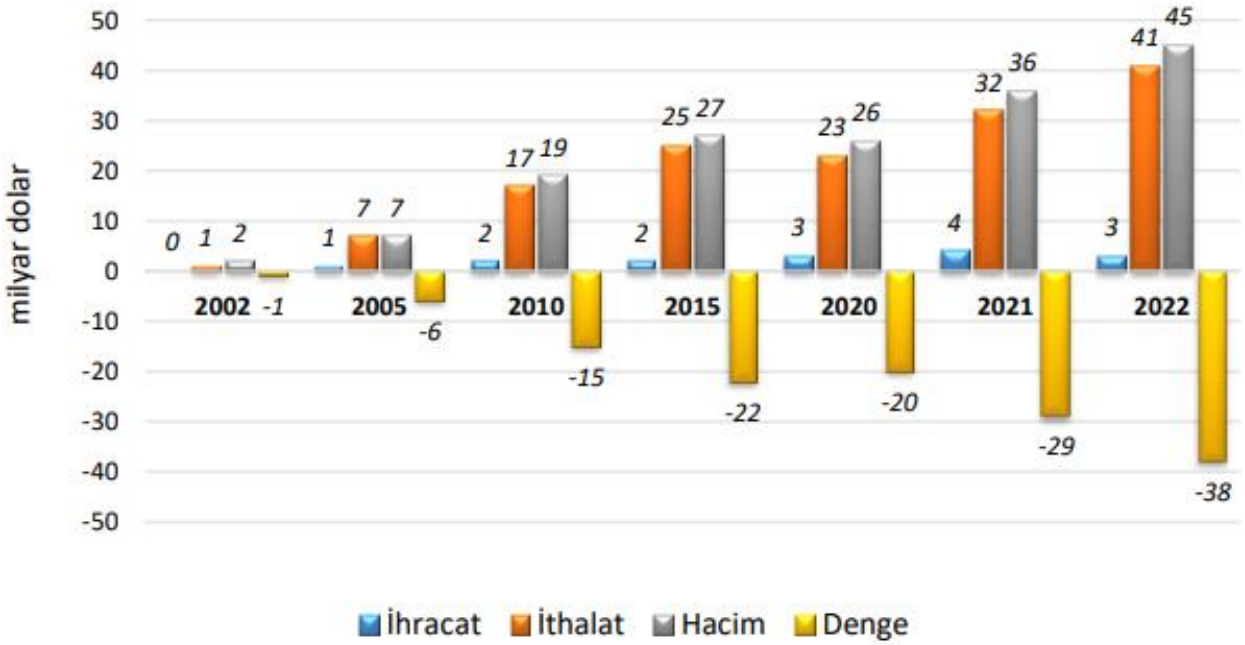
Tablo 6: Türkiye'nin Çin ile İhracat ve İthalatında Başlıca Ürünler

İhracat	İthalat
Mermer	Telefon ve diğer cihazlar
Traverten	Diyotlar
Maden cevherleri	Polikarboksilik asitler
Tıp alet ve cihazları	Anhidritler

Kaynak. *Çin ülke profili, 2023.*

Kaynak. *Trademap*

Grafik 2. Türkiye'nin Çin ile Ticareti (milyar dolar)



Türkiye, Kazakistan ile dış ticaretinde net ithalatçıdır. 2013 – 2023 yılları arasındaki dış ticaret hacmi incelendiğinde düşüş ve artışların olduğunu görmek mümkündür. 2013 yılına bakıldığında dış ticaretin 2,8 milyar dolar olmuş, 4 yıl içerisinde düşüşler yaşanmış ve 2017 yılında 2,2 milyar dolar hacminde hesaplanmıştır. 2020 yılında dahada düşerek 2,1 milyar dolara inmiştir.

2021 yılında hem ihracat hem de ithalat seviyesinin yükselmesiyle dış ticaret hacmi artmıştır. İhracat 1,3 milyar, ithalat 1,6 milyar dolar olarak hesaplanmıştır. Sonraki yıl uygun olarak 1,8 ve 3,5 milyar

dolar seviyesine ulaşmıştır. 2023 yılının ilk iki ayında ihracat 347,6 milyon dolar, ithalatın 571,2 milyon dolar olduğu gözlemlenmiştir. İstatiksel verilere uygun olarak aşağıdaki grafik hazırlanmıştır:

Grafik 3. Türkiye-Kazakistan Dış Ticareti

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
İhracat	1,1	1,0	0,8	0,7	0,8	0,8	0,9	0,98	1,3	1,8
İthalat	1,7	1,2	1,1	1,1	1,4	1,6	1,4	1,1	1,6	3,5

Kaynak: TÜİK

Avantaj ve Dezavantajlar

Türkiye ŞİÖ ülkeleriyle tüm alanlarda – kültürel, ekonomik, ticari ilişkilerini genişletme ve örgüte tam üye olma ihtimali durumunda bazı fırsatlar ve riskleri göz önünde bulundurması gerekmektedir. Dolayısıyla, Türkiye–ŞİÖ ilişkileri çerçevesinde bazı avantaj ve dezavantajlar belirtilmelidir:

Avantajlar

1. ŞİÖ ülkeleriyle ticari ilişkilerin genişletilmesi, ekonomik duruma artı katkısı, ihracat yönünde yeni pazarlara girişin elde edilmesi en önemli avantajlardan biridir. Özellikle, AB ile ticari ilişkilerin zayıfladığı dönemde bölgede iki büyük ülke olan Rusya ve Çin ile ithalat ve ihracat hacminin yükselmesi Türkiye için büyük fırsattır. Türkiye'nin AB ve ŞİÖ ülkeleri ile dış ticaret hacmi karşılıklı olarak incelenmiştir. (Tablo 5)

Tablo 7: 2010-2017 yıllarında Türkiye'nin AB ve ŞİÖ Ülkeleri ile Dış Ticareti (milyar dolar)+

Yıllar	AB'ye (İhracat)	AB'den (İthalat)	İhracatın ithalatı KO (%)	ŞİÖ'ye (İhracat)	ŞİÖ'den (İthalat)	İhracatın ithalatı KO (%)
2018	90	85	105,9	14*	50*	28,0
2019	95	90	105,6	14,1	55,6	25,4
2020	88	80	110,0	13,9	49,6	28,0
2021	105	95	110,5	18,4	76	24,2

2022	103	93,3	110,4	23	120,2	19,1
2023	104,3	106	98,4	26,1	106,3	24,6

Kaynak. *T.C. Ekonomi Bakanlığı* +Rakamlar yuvarlanmıştır *Tahmini veriler

Tablo 7`de Türkiye'nin AB ve ŞİÖ ülkeleriyle yaptığı ihracat ve ithalat rakamları ile ihracatın ithalatı karşılama oranları 2018-2023 yılları için verilmiştir. Türkiye AB ile dengeli bir ticaret hatta yer yer dış ticaret fazlası verirken, ŞİÖ dış ticaretinde dezavantajlı konumdadır. ŞİÖ ile çok yüksek dış ticaret açığı vermekte ve ihracatın ithalatı karşılama oranı ortalama da yaklaşık %24 gibi çok düşük bir oranda kalmaktadır. Örneğin 2018 yılında Türkiye'nin ŞİÖ'den ithalatı ihracatının yaklaşık 3,5 katı iken, 2023 yılında bu oran 4,1 katıdır. ŞİÖ ülkeleriyle yapılan ihracatın büyük kısmında Çin ve Rusya önemli rol oynamaktadır. Özellikle Rusya'dan enerji ithalatı ve Çin ve Hindistan'dan mamul mal ithalatı dış ticaret açığının en önemli nedenleridir.

2. Türkiye – ŞİÖ ilişkilerinde Türkiye için ikinci büyük avantaj enerji kaynaklarına erişiminin sağlanmasıdır. ŞİÖ`nün amacı zaten enerji güvenliğini artırmaktır. Hazar kıyısı ülkeleri petrol ve doğalgaz rezervleri bakımından bölgede önemli yere sahiptir. ŞİÖ ilişkileri Rusya, Kazakistan, İran ve diyalog ortağı olan Azerbaycan ile Türkiye arasında enerji anlaşmalarının artmasına neden ola bilir. Hazar Denizi Bölgesi'nin bilinen petrol rezervleri 16-32 milyar varil, doğal gaz rezervleri ise 6,7-9,6 trilyon m³ olarak hesaplanmıştır; bunların Basra Körfezi'ndekilerin ardından dünyanın ikinci büyük rezervleri olduğu tahmin edilmektedir (Timor, 2000, s. 214).

Tablo 8: Hazar Denizi Bölgesi Petrol ve Doğalgaz Rezervleri

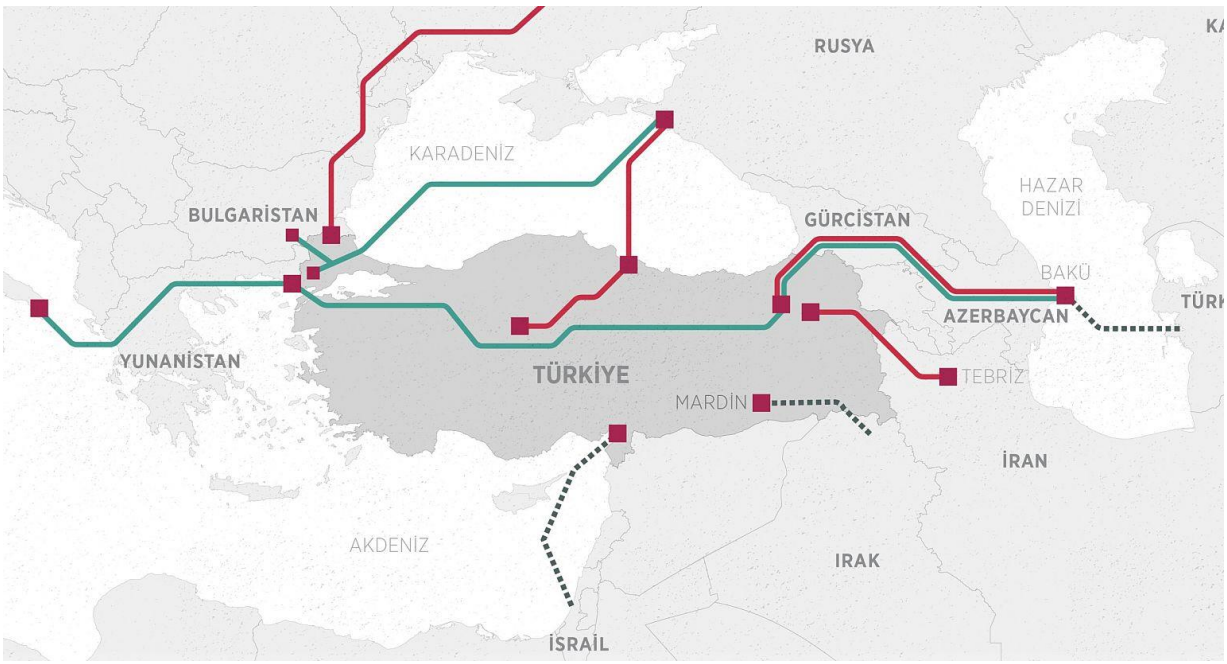
Ülkeler	Petrol (toplam rezerv, milyar varil)	Doğalgaz (toplam rezerv, trilyon m^3)
Azerbaycan	31-40	1.3
Rusya	5	-
İran	12	0.3
Kazakistan	95-103	4.0-4.8
Türkmenistan	34	8.9
Özbekistan	1	3.1-3.5

Tablo 8`de de görüldüğü üzere ŞİÖ ülkeleri olan Kazakistan, Rusya, İran ve diyalog ortağı olan Azerbaycan petrol ve doğalgaz rezervleri olarak zengin yataklara sahiptir. Türkiye'nin ŞİÖ üyesi olma durumunda enerji ihracat ve ithalatında önemli konumda olacaktır.

3. Ulaşım ve lojistik alanında gelişme de ŞİÖ ile ilişkilerin avantajlarından biridir. Sovyetler Birliği'nin parçalanmasından sonraki dönemlerde başlayan enerji kaynakları çekişmesinde Türkiye büyük avantajlara sahip olsa da bunu değerlendirememiştir. Türkiye aracılığıyla enerji kaynaklarının Avrupa'ya ulaşması, İran veya Hazar Denizi'nin altından gerçekleşmekteydi. Türkiye'nin Rusya ile mutabakat gerçekleştirmesi neticesinde AB'nin "Nabucco Projesi" olarak adlandırılan girişimin hayata

geçme ihtimali düşmüş ve bunun sonucunda da Türkiye enerji konusunda %65 civarında Rusya'ya bağımlı duruma gelmiştir (Abdullah, 2019, 122). Şekil 1`de görüldüğü gibi Türkiye lojistik alanda çok önemli stratejik konumda yerleşmektedir. Hazar kıyısı ülkelerinin enerji kaynaklarının Avrupa'ya ulaştırılmasında ülkemiz için büyük fırsatlar mevcuttur.

Şekil 2. Ulaşım ve Lojistik alanında Türkiye'nin Konumu



4. Yabancı yatırım ve iş birliklerinin çoğalması büyük avantajlardan biridir. Lojistik, enerji, sanayi ve diğer alanlarda yapılan yabancı yatırımlar Türkiye ekonomisinin kalkınmasına pozitif yönde etki gösterebilir.

Dezavantajlar

Türkiye-ŞİÖ ilişkisi ülkemiz için olası fırsatlar sunmakla birlikte bazı riskleri de beraberinde getire bilir:

Tablo 9: Türkiye – ŞİÖ İlişkisinde Olası Riskler

Olası Risk	Olası Etkiler
Batı ülkeleriyle olası gerilim	ŞİÖ ülkeleriyle ilişkilerin üst düzeyde devam etmesi, olası üyelik durumu AB ve NATO ülkeleriyle ticari güven kaybına yol açabilir
Yönetim ve Hukuk sistemlerindeki uyuşmazlıklar	Örgüt ülkelerinin yönetim ve hukuk sistemlerindeki farklılıklar yerli firma ve yatırımcıların bu pazarlarda faaliyetine negatif anlamda etki edebilir

Ekonomik bağımlılık riskleri	Rusya ve Çin gibi büyük devletlerle ekonomik ve ticari iş birliği dış ticaret açığının artmasına neden olabilir
İç pazarda rekabetin artması	Örgüt ülkelerinden yerli pazara dahil olan ucuz maliyetli ürünler Türk üreticiler için sorun oluşturabilir, rekabette kaybedebilir
Ticari ve teknik standartlardaki uyum sorunları	Ürünün kalitesi, gümrük vergileri, üretimde farklılıklar maliyetleri artıra bilir.

Türkiye'nin Enerji Stratejisi ve ŞİÖ ile İş Birliği Olasılığı

Türkiye, coğrafi olarak önemli bir noktada konumlanmış olup, hem enerji tüketiminde artan bir talebe sahip olması hem de enerji kaynaklarının taşınmasında köprü görevi görmesi nedeniyle kritik bir konuma sahiptir. Enerji ihtiyacının giderek yükselmesi, ülkenin enerji güvenliğini sağlamaya, ithalata olan bağımlılığı azaltmaya ve enerji kaynaklarını çeşitlendirmeye yönelik kapsamlı politikalar oluşturmasını zorunlu hale getirmiştir (Yıldırımçakar, 2019).

Bu doğrultuda temel stratejik hedefler şunlardır:

- **Arz güvenliğinin teminat altına alınması**: Hidroelektrik, rüzgâr, güneş ve jeotermal gibi yerli ve yenilenebilir kaynakların enerji üretimindeki payı artırılmakta, böylece dışa bağımlılık kademeli olarak azaltılmaktadır.
- **Doğalgazda bölgesel merkez olma hedefi**: Türkiye, TANAP, TürkAkım ve Mavi Akım gibi büyük enerji projeleriyle Asya ile Avrupa arasında önemli bir doğalgaz geçiş ve ticaret merkezi haline gelmiştir.
- **Nükleer enerji yatırımları**: Akkuyu Nükleer Güç Santrali başta olmak üzere, enerji arz çeşitliliğini sağlamak amacıyla nükleer enerji alanında somut adımlar atılmıştır.
- **Yenilenebilir enerji projelerinin yaygınlaştırılması**: YEKA ihaleleri aracılığıyla güneş ve rüzgâr enerjisine dayalı üretim kapasitesi ciddi oranda genişletilmiştir.

Türkiye, enerji bakımından büyük ölçüde dışa bağımlı bir ülkedir. Enerji talebinin karşılanması için sürdürülebilir, çeşitli ve güvenli kaynaklara ulaşmak temel hedeflerden biridir. ŞİÖ üyesi ülkeler – özellikle Rusya, Kazakistan, Çin ve Türkmenistan– dünya enerji pazarında belirleyici aktörlerdir. Bu ülkelerle daha yakın iş birliği, Türkiye'nin enerji temininde elini güçlendirebilir (Yıldırımçakar, 2019).

Aynı zamanda Türkiye'nin enerji geçiş yolları üzerindeki stratejik konumu, ŞİÖ için de önemli bir avantaj sunmaktadır. Bu durum, karşılıklı enerji çıkarlarını ortak platformlarda buluşturma imkânı yaratır. Dolayısıyla ŞİÖ üyeliği, enerji politikası alanında hem kısa vadede hem uzun vadede önemli açılımlar sağlayabilir.

ŞANGHAY İŞBİRLİĞİ ÖRGÜTÜ: ENERJİ TEMELLİ BİR BÖLGESEL AKTÖR

2001 yılında kurulan Şanghay İşbirliği Örgütü; Çin, Rusya, Hindistan, Pakistan ve Orta Asya ülkelerini kapsayan, güvenlik, ekonomi ve siyaset eksenli iş birliğini hedefleyen çok taraflı bir platformdur.

Özellikle Çin ve Rusya'nın küresel enerji üreticileri olmaları, ŞİÖ'nün enerji diplomasisi ve bölgesel enerji politikalarında önemli bir aktör olmasını sağlamaktadır.

Örgütün enerji konusundaki öncelikli hedefleri şunlardır:

- Enerji kaynaklarının sürdürülebilir ve dengeli biçimde değerlendirilmesi,
- Enerji altyapılarının geliştirilmesi ve bölgesel entegrasyonun sağlanması,
- Enerji üretimi ve ticaretinde teknik ve ekonomik iş birliklerinin artırılması.

Türkiye ile ŞİÖ Arasında Enerji Alanında Ortaklık İmkanları.

Türkiye, ŞİÖ'nün tam üyesi olmamakla birlikte, 2012 yılından bu yana "Diyalog Ortağı" sıfatını taşımaktadır. Bu statü, Türkiye'nin örgütle ekonomik ve enerji alanlarında daha yakın ve yapıcı ilişkiler kurması açısından fırsatlar yaratmaktadır.

Muhtemel iş birliği başlıkları şu şekildedir:

- **Doğalgaz ve petrol temini**: Türkiye, Rusya, Kazakistan ve İran gibi ŞİÖ üyesi veya gözlemci ülkelerle enerji ithalatını artırabilir.
- **Enerji ulaştırma altyapısı**: Türkiye'nin doğu-batı eksenindeki enerji geçiş tecrübesi, ŞİÖ ülkeleriyle ortak projeler geliştirilmesine katkı sunabilir.
- **Yenilenebilir enerji teknolojileri**: Çin başta olmak üzere üyelerle güneş ve rüzgâr enerjisi alanlarında ortak Ar-Ge faaliyetleri yürütülebilir.
- **Nükleer bilgi paylaşımı ve teknoloji transferi**: Akkuyu NGS deneyimi, nükleer enerji teknolojilerinde ŞİÖ ülkeleriyle bilgi alışverişi için örnek teşkil edebilir.

Jeopolitik Dinamikler ve Türkiye'nin Çok Boyutlu Dış Politika Yaklaşımı

Türkiye'nin enerji stratejisi sadece ekonomik çıkarlar doğrultusunda değil, aynı zamanda jeopolitik önceliklerle şekillenmektedir. Batı ittifakının bir parçası olan Türkiye'nin ŞİÖ ile yakın temas kurması, çok yönlü dış politika anlayışı çerçevesinde değerlendirilmektedir.

Bu kapsamda:

- Türkiye hem Batı ile olan ilişkilerini sürdürmekte, hem de Avrasya merkezli oluşumlarla stratejik bağlantılar kurarak alternatif denge mekanizmaları geliştirmektedir.
- ŞİÖ ile derinleşecek enerji iş birlikleri, Türkiye'nin denge unsuru olma pozisyonunu güçlendirebilir.

Genel Değerlendirme: Türkiye'nin Avrasya Enerji Sistemindeki Yeri

Türkiye'nin enerji güvenliği politikaları, yalnızca iç kaynaklara dayanmakla sınırlı kalmamakta; aynı zamanda çok taraflı ve uluslararası düzeyde kurulan iş birliklerine de yaslanmaktadır. ŞİÖ ile geliştirilecek enerji temelli ortaklıklar, Türkiye'nin bölgesel enerji merkezi olma idealini destekleyici niteliktedir. Ancak bu sürecin başarılı şekilde yürütülmesi, Batı ile olan geleneksel ittifak dengelerinin korunmasına bağlıdır.

Olası Fırsatlar

1. Enerji Kaynaklarında Alternatifler ve Güvenlik: ŞİÖ üyeleriyle kurulacak güçlü ilişkiler sayesinde Türkiye, enerji temininde daha geniş bir yelpazeye sahip olabilir. Rus gazına bağımlılığı azaltmak adına Orta Asya ülkeleriyle doğrudan enerji anlaşmaları yapmak, kaynak çeşitliliğini artırabilir.

2. Yeni Projelere Katılım ve Teknoloji İş Birliği: Özellikle Çin'in enerji altyapısı yatırımlarında önemli bir aktör olduğu dikkate alınırsa, Türkiye bu süreçlerde hem finansal hem teknolojik destek bulabilir. Ortak projeler sayesinde enerji altyapısının güçlendirilmesi ve yenilenebilir enerji yatırımlarının artırılması mümkün hâle gelebilir.

3. Enerji Taşımacılığında Ana Rota Olma İmkânı: Türkiye, ŞİÖ ülkeleri ile Avrupa arasında enerji geçişini sağlayabilecek en kritik konumda yer almaktadır. Bu sayede enerji taşımacılığında vazgeçilmez bir aktöre dönüşebilir ve enerji transitinden ekonomik kazançlar sağlayabilir.

Olası Riskler

1. Batı İttifakı ile Denge Problemleri: Türkiye'nin ŞİÖ ile olan yakınlaşması, NATO ve Avrupa Birliği gibi mevcut müttefikleriyle olan ilişkilerinde güven sorunlarına yol açabilir. Enerji merkezli bu yönelim, Türkiye'nin dış politikada tarafsızlığını korumasını zorlaştırabilir.

2. Uzun Vadeli Bağımlılık ve Ekonomik Baskılar: ŞİÖ ülkeleriyle yapılacak enerji anlaşmalarının bazıları, Türkiye'yi belirli ülkelerin politik etkisi altına alabilir. Özellikle otoriter rejimlerle yapılan uzun vadeli kontratlar, dış politika esnekliğini kısıtlayabilir.

3. Teknik ve Çevresel Uyum Sorunları: Enerji altyapılarında kullanılacak teknoloji ve çevresel standartlar bakımından ŞİÖ ülkeleri ile Türkiye arasında farklılıklar oluşabilir. Bu durum, enerji projelerinin sürdürülebilirliğini olumsuz etkileyebilir.

Stratejik Öneriler

1. Enerji Diplomasisinin Kurumsal Bir Çerçeveye Oturtulması. Türkiye'nin enerji diplomasisini yalnızca ikili ilişkiler düzeyinde değil, aynı zamanda çok taraflı ve bölgesel platformlarda da kurumsal bir yapıya kavuşturması gerekmektedir. Bu bağlamda, Şanghay İşbirliği Örgütü gibi bölgesel kuruluşlar bünyesinde kalıcı enerji temsilcilikleri oluşturulması, Türkiye'nin bölgesel enerji denklemindeki etkisini belirgin şekilde artıracaktır.

2. ŞİÖ ile Ortak Enerji Verisi ve Strateji Altyapısı Kurulması. Türkiye ve ŞİÖ üyeleri arasında enerjiye dair üretim, tüketim, altyapı yatırımları ve piyasa eğilimlerine ilişkin karşılıklı veri akışını sağlayacak bir bilgi platformunun hayata geçirilmesi önerilmektedir. Bu yapının oluşturulması, enerji arz ve talep analizlerinin yanı sıra stratejik planlamaların da daha sağlıklı bir zemine oturmasına katkı sağlayacaktır.

3. Çok Taraflı Enerji İletim Ağlarının Geliştirilmesi. Türkiye'nin doğu ile batı arasındaki geçiş konumu değerlendirilerek, ŞİÖ ülkeleriyle birlikte Orta Asya'dan Avrupa'ya kadar uzanacak şekilde bölgesel doğalgaz ve elektrik taşıma projeleri geliştirilebilir. Bu tür altyapı girişimleri, hem enerji güvenliğini kolektif düzeyde güçlendirir hem de entegrasyonu destekler.

4. Türkiye Öncülüğünde Yenilenebilir Enerji İş Birliği Mekanizması. Yenilenebilir enerji alanında üretimden teknolojiye kadar uzanan süreçlerde ortaklıklar kurmak amacıyla, Türkiye liderliğinde bir ŞİÖ Yenilenebilir Enerji Teknoloji Ağı oluşturulabilir. Bu tür bir yapılanma, özellikle Çin gibi teknolojik avantajlara sahip ülkelerle daha etkin iş birliklerinin önünü açacaktır.

5. Nükleer Enerji Alanında Ortak Eğitim ve Kapasite Geliştirme. Akkuyu NGS projesinden kazanılan tecrübeye dayanarak, nükleer enerji güvenliği, teknik yönetim ve mühendislik alanlarında ŞİÖ ülkeleriyle ortak eğitim programları ve uzman değişim projeleri geliştirilebilir. Böylece bilgi birikimi paylaşımı kurumsal düzeye taşınabilir.

6. Enerji Güvenliği Konusunda Ortak Risk Analizleri Yapılması. Enerji arz güvenliği yalnızca teknik bir mesele değil, aynı zamanda siyasi istikrarsızlıklar ve jeopolitik belirsizliklerle de doğrudan ilişkilidir. Bu çerçevede Türkiye ile ŞİÖ arasında enerji odaklı ortak risk senaryoları geliştirilerek, olası tehditler karşısında önleyici stratejiler oluşturulmalıdır.

7. Ortak Enerji Yatırımlarının Finansmanı İçin Yeni Mekanizmalar. Türkiye, enerji projelerine finansman sağlama noktasında ŞİÖ bünyesindeki yatırım fonlarıyla daha derin ilişkiler kurabilir. Özellikle Çin'in Kuşak ve Yol Girişimi kapsamında oluşturduğu mali altyapı, ortak enerji projelerinin desteklenmesi açısından işlevsel modeller sunabilir.

Gözlemci Statüsünden Tam Üyelik Sürecine Stratejik Geçiş. Türkiye, dış politika ekseninde çok yönlü denge politikalarını sürdürme niyetindeyse, bu yaklaşımın enerji iş birliğiyle uyumlu hale getirilmesi adına ŞİÖ'ye tam üyelik uzun vadeli bir seçenek olarak değerlendirilmelidir. Böyle bir üyelik, Türkiye'nin Avrasya enerji haritasındaki pozisyonunu daha sağlam ve kalıcı kılacaktır.

Türkiye'nin Şanghay İşbirliği Örgütü'ne tam üyelik ihtimali, enerji alanında ciddi fırsatlar sunmakla birlikte, dikkatle yönetilmesi gereken bazı riskleri de beraberinde getirir. Enerji güvenliğini artırma, yeni projelere katılma ve kaynak çeşitliliğini sağlama gibi kazanımlar oldukça cazip görünse de siyasi dengelerin bozulma ihtimali, ekonomik bağımlılık ve teknik uyumsuzluklar göz ardı edilmemelidir (Zeyrek, 2010).

Enerji temelli bakıldığında, ŞİÖ üyeliği Türkiye'ye önemli stratejik katkılar sağlayabilir. Ancak bu süreçte Türkiye'nin kendi ulusal çıkarlarını önceleyen dengeli, çok kutuplu ve uzun vadeli bir enerji diplomasisi yürütmesi hayati önemdedir. Hem doğuyla hem batıyla dengeli ilişkiler kurarak, enerji arz güvenliğini sağlama hedefi doğrultusunda ŞİÖ ile iş birliği dikkatlice yapılandırılmalıdır.

Türkiye'nin enerji politikaları, sadece ulusal çıkarlar temelinde değil, aynı zamanda Avrasya merkezli çok taraflı iş birlikleriyle şekillenmelidir. Bu bağlamda, ŞİÖ ile geliştirilecek kurumsal ve teknik düzeyde enerji ortaklıkları, Türkiye'nin enerji güvenliğini ve uluslararası etkinliğini pekiştirecek niteliktedir.

SONUÇ VE DEĞERLENDİRME

ŞİÖ bölgede istikrarı korumak ve beraberinde birlikte hareket etmek amacıyla kurularak aşağıdaki hedefler üzere yol kat etmektedir:

- ŞİÖ dahilinde karşılıklı güven ve komşuluk ilişkilerini ilerletmek
- Politika, eğitim, ekonomi ve ticaret, enerji, teknoloji ve diğer alanlarda üyeler arasındaki işbirliğini güçlendirmek
- Üye ülkelerin barış ve güven içinde olması için birlik olmak
- Birlikte tüm güçleri birleştirerek uluslararası ticari ve ekonomik alan yaratmak.

ŞİÖ`nün gelecekteki amaç ve faaliyetlerini genişletmek adına üyeler 2014 yılında toplanmış ve 2025 yılına kadar Örgütün dahada güçlenmesi için bir yol stratejisi belirlenmiştir. Geliştirme Stratejisi`nde esas hedef ve amaçlar ülkeler tarafından onaylanmıştır:

- ŞİÖ bölgesini güven, dostluk, barış ve ekonomik güç merkezine çevirmek
- ŞİÖ`yü, askeri ve politik bir blok ya da uluslarüstü yönetişim organları olan, bir ekonomik entegrasyon birliği olarak öngörmeyen çok formatlı bir bölgesel örgüt olarak büyütmek
- ŞİÖ ülkeleri arasında yatırım ve ticaret odaklı yeni projelerin sunulması ve gerçekleştirilmesi adına ŞİÖ İş Konseyi ve Bankalararası Birliği ile ortak adımların atılması
- Bölgeyi de kapsayan İpek Yolu Ekonomik Kuşak girişimi için üye ülkeler arasında yeni iş birliklerinin gerçekleştirilmesi.

ŞİÖ hem ekonomik hem de jeopolitik anlamda Türkiye için büyük avantajdır. Ülkemizin esas amacı AB ve NATO ile ilişkilerini de dengeleyerek örgüte üye olma yolunda istikrarlı adımlar atmaktır. Üyelik durumunda Türkiye, Orta Aysa ülkeleri, Rusya ve Çin ile ticari ilişkilerini arttırarak ekonomik kalkınmaya destek olabilir. Batı ve Doğu odaklı örgütlere üye olunması iki tarafta da olumlu dengeyi korumayı başarabilir. Türkiye'nin Şanghay İşbirliği Örgütü (ŞİÖ) ile kurmaya çalıştığı ilişkiler, son yıllarda özellikle ekonomik ve ticari anlamda dikkat çekici bir yön kazanmıştır. Batı merkezli ekonomik düzenin sarsıldığı, küresel güç dengelerinin yeniden şekillendiği bir dönemde Türkiye'nin yüzünü doğuya çevirmesi, aslında yalnızca bir tercihten değil, aynı zamanda bir zorunluluktan da kaynaklanmaktadır. Özellikle Çin, Rusya, Hindistan gibi büyük ekonomilerin bir araya geldiği bu yapı, Türkiye için hem yeni fırsatlar hem de bazı belirsizlikler barındırmaktadır.

Ekonomik anlamda bakıldığında, Türkiye açısından ŞİÖ ülkeleriyle geliştirilecek ilişkiler, ihracatın çeşitlenmesi, enerji kaynaklarına daha uygun şartlarda erişim sağlanması ve doğrudan yabancı yatırımların artması gibi olumlu sonuçlar doğurabilir. Türkiye'nin jeopolitik konumu, Asya ile Avrupa arasında bir köprü olması açısından büyük bir avantaj sağlamaktadır. Bu avantaj, Kuşak ve Yol Girişimi gibi dev altyapı projelerinde daha etkin bir rol alınmasını mümkün kılabilir. Özellikle Orta Asya ülkeleriyle tarihi ve kültürel bağların bulunması da ticari iş birliklerini kolaylaştırabilecek bir etkendir. Ancak bu sürecin bazı riskleri de beraberinde getirdiğini unutmamak gerekir. Türkiye'nin ŞİÖ ile olan ilişkilerini aşırı şekilde derinleştirmesi, Avrupa Birliği ve NATO gibi geleneksel ortaklarla olan ilişkilerde güvensizlik yaratabilir. Ayrıca ŞİÖ ülkelerinde demokratik standartların, hukuk sistemlerinin ve ekonomik şeffaflığın Türkiye'nin alışkın olduğu yapılarla birebir örtüşmediği de bir gerçektir. Bu durum, uzun vadede iş yapma ortamında belirsizliklere neden olabilir.

Sonuç olarak Türkiye'nin ŞİÖ ile ekonomik ilişkilerini güçlendirmesi, doğru bir stratejiyle yürütülürse önemli fırsatlar yaratabilir. Ancak bu ilişkilerin Batı ile olan bağları zayıflatmayacak şekilde, denge politikası çerçevesinde sürdürülmesi büyük önem taşımaktadır. Türkiye için önemli olan; yalnızca yeni pazarlar bulmak değil, aynı zamanda bu süreçte ekonomik bağımsızlığını ve diplomatik dengelerini koruyabilmektir. Bu da dikkatli ve çok yönlü bir dış politika anlayışını gerektirir.

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OVERCOMING ENERGY DISEQUILIBRIUM: A REVIEW OF SOME EXPERIENCES[5]

Corresponding Author: Saeed Rasekhi, Professor of Economics, Department of Energy Economics, University of Mazandaran, Iran, srasekhi@umz.ac.ir

Seyyedeh Soheila Miri Ledari, PhD in Economics, University of Mazandaran, Iran, parnea.miry@yahoo.com

Abstract

Energy disequilibria cause disequilibrium and instability in economic sectors, especially the manufacturing sector, which subsequently puts economic growth and development in danger. The main objective of this study is to review the successful experiences of some selected countries in facing energy disequilibrium. For this purpose, following Guarascio et al. (2025), the selected countries were divided into four main groups (also Iran and Turkiye) and, while examining their energy transition status, their experiences in relation to energy were reviewed. The results of this study show that the countries under study, by relying on a binding, committed and accountable approach in formulating and implementing the energy transition strategy and with a strong emphasis on the energy transition sub-indicators, have been able to overcome energy challenges and increase their resilience in facing energy disequilibrium. By utilizing these models, a set of executive and implementable solutions can be developed for sustainable improvement of the energy situation.

Keywords: Energy Disequilibrium, Selected Developing and Developed Countries, Energy Transition.

JEL classification: Q40, Q48, P18.

1- Introduction

Energy is one of the main pillars of economic development, social welfare and environmental sustainability in the contemporary world. Since the beginning of the Industrial Revolution, countries' economic and industrial growth has relied heavily on fossil resources, but the consequences of this dependence, including environmental instability, climate change and severe fluctuations in global energy markets, have led many countries to move towards an energy transition; a transition that aims to reduce dependence on fossil fuels, improve productivity, diversify the energy portfolio, develop renewable resources and protect the environment. Countries that have realized the importance of this transition earlier have been able to chart a more sustainable path for their development by adopting coherent and forward-looking policies. In this regard, the experience of Northern European countries such as Denmark and Sweden holds a special place, because they were able to use the energy crises of the 1970s as an opportunity to rethink their energy policies. Denmark, once heavily dependent on oil, is now a global leader in the development of wind energy and energy efficiency. Sweden has also been able to use its existing resources to sustainably meet its energy needs by adopting a multifaceted and long-run approach. In southern Europe, Spain is another example of a gradual energy transition. By investing heavily in solar and wind energy, the country has become a world leader in renewable energy over the past two decades. France has also chosen a different path in the post-oil crisis era, relying on nuclear energy to generate the bulk of its electricity with minimal carbon emissions. Other industrialized countries have also taken distinct paths in their energy transition. As a country with limited natural resources, Japan has long understood the importance of demand management and energy efficiency. Its experience after the 1973 oil shock showed that economic growth can be decoupled from energy

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consumption growth by investing in technology, public education and standardizing consumption. Among the emerging economies, China plays a decisive role in the future of the global energy system. As the world's largest consumer and producer of energy, China's recent policies in developing clean energy, investing in storage technologies, electric vehicles, and smart grids indicate a fundamental shift in its energy model. On the other side of the Atlantic, the United States, despite its diverse resources and complex federal structure, is an example of a combination of state policies and private sector innovation in the energy transition. Extensive investment in storage technologies, electric vehicles, and smart grids indicates a gradual but dynamic transition to a more efficient and low-carbon energy system in the United States. Among the countries of the Middle East region, Turkiye is one of the few countries that has been able to take effective steps towards the energy transition in the last decade. According to data from the International Energy Agency (IEA, 2023), Turkiye has increased the share of renewable energy in its electricity generation to more than 45 percent. Reforming the electricity market, introducing a competitive pricing system, and supporting private investment have been key factors in Turkiye's success on this path. In addition, Turkiye has been able to reduce its energy intensity by more than 20 percent over the past two decades. These achievements show that Turkiye has taken serious steps towards security of supply and environmental sustainability through coherent policies, despite resource constraints and growing energy demand. In contrast, Iran, despite having vast oil and gas resources, has performed poorly on the energy transition path. A heavy subsidy structure, unrealistic energy pricing, lack of a long-run strategy for demand management, and weak energy governance have resulted in Iran's energy intensity remaining very high compared to the global average. In addition, the share of renewable energy in the country's electricity generation portfolio is less than 6 percent, and development plans in this sector face serious institutional and financial obstacles. It seems that the root of this failure should be sought in the weakness of energy governance, the multiplicity of decision-making institutions and the lack of coordination between economic, environmental and industrial policies.

The experience of leading countries in the energy transition shows that success in this path does not depend on rich natural resources, but on efficient management, institutional coordination and political foresight. In this regard, the following article reviews the experiences in the successful energy transition and overcoming energy imbalance and presents some successful experiences in this path, using the classification of Guarascio et al. (2025). This article is organized into 4 sections. After the introduction in the first section, the experience of successful countries is presented by separating the aforementioned categories. The third section is dedicated to the summary and conclusion, and the fourth section presents the references.

2- Experiences of selected countries

By using the experiences of countries in successful energy transitions, a set of actionable and implementable solutions can be developed to sustainably improve the energy situation. In this framework, Guarascio et al. (2025) classify countries into four main groups: countries with high dependence on Russian energy, countries leading in the development of renewable energies, countries with high energy intensity and resilience challenges, and countries with successful policies to reduce energy dependence. The experiences of selected countries (also Iran and Turkiye) are examined in the following, within the framework of Guarascio et al.'s classification.

2-1- A country dependent on Russian energy

Germany, with an energy transition index of 66.5 and ranking 11th (WEF, 2024), despite its dependence on Russian gas, managed the 2022 crisis with a mixed policy that included reducing consumption, replacing coal, developing renewables, importing LNG, and cooperating with the European Union. The country has generated more than 50% of its electricity from renewables and, through FIT policies, carbon pricing and ongoing support, has increased the share of clean energy from 6% in 2000 to 48% in 2023, creating 300,000 jobs (Ruhnau et al., 2023; Enerdata, 2024b). The German experience has shown that a combination of short- and long-run policies, specifically renewables development, gas

consumption optimization, strategic reserves and regional cooperation, is the key to overcoming the energy imbalance. As Figure (1) shows, the country has managed to significantly reduce its energy intensity over the period 2010-2024, from 0.09 koe/$15p[6] in 2010 to around 0.05 koe/$15p in 2024.

Figure (1): Energy intensity in Germany during the time 2010-2024 (koe/$15p)

Reference: Present research based on Enerdata (2025)

2-2- Leading countries in renewable energy

Combining clean energy diversification and energy efficiency is a strategic priority in the energy transition. In this framework, countries rely more on renewables and nuclear energy and less on fossil fuels, and include energy efficiency in design and planning (e.g. regional heating systems, energy-efficient buildings, and smart metering). Figure (2) presents the share of renewables in electricity generation for several distinct groups of countries (pioneers including Denmark and Sweden, emerging giants including China and the United States, and slow-growing countries including Iran). As the figure shows, Denmark and Sweden are leading the way in the use of renewables for energy generation. The interesting point to note in this figure is the stunning situation of Turkiye, which, unlike Iran, which has been on a nearly flat trend for various reasons, including weak energy governance and international sanctions, has been on an upward trend, even higher than China and the United States.

Figure (2): Share of renewables in electricity generation of the selected countries during the time 2010-2024 (Percent)

Reference: Present research based on Enerdata (2025)

Among the selected countries, **Sweden** ranks first in the ETI[7] 2024 with a score of 78.4 (ETI, 2024) and has low import dependence with a highly diversified energy mix, development of hydropower, nuclear and wind power and innovative policies. The country is highly resilient and Sweden prioritizes decarbonization goals and support for innovation and clean industries (Guarascio et al., 2025). The Swedish experience demonstrates the importance of diversifying the energy portfolio, reducing energy intensity, and private sector investment in clean energy.

Denmark, ranked second with a score of 75.2 (ETI, 2024), has built resilience by expanding wind, reducing energy imports, and investing in energy storage. The cooperative and social participation model has led to 40% of electricity generation from wind farms and public acceptance of the projects (Guarascio et al., 2025; Enerdata, 2024b). The country's experience shows that the energy transition index can be improved by expanding renewables, social participation, and supporting the private sector.

China, with an index of 64.1, ranked 17th (ETI, 2024), has increased the share of renewables to 30% despite its dependence on coal (60% of electricity generation). By investing in indigenous technologies, the country has become the world's largest producer of solar equipment and has increased solar capacity to 610 GW by 2023. Protective policies and the allocation of natural gas to high-value-added industries have strengthened China's energy security (WEF, 2024; Dinçer, 2025). According to Figure (2), China has clearly experienced a huge and accelerated transformation towards renewable energies from 18.4% in 2010 to 32.6% in 2024. This movement is clearly evident both in the overall renewable energy portfolio and in the more advanced sectors such as wind and solar, from 1.88% in 2010 to 18.20% in

[6] Kilo of oil equivalent per dollar at PPP of the year 2015
[7] Energy Transition Index (ETI)

2024, which shows the country's focus on new technologies and a fundamental transformation of its energy infrastructure. Countries like Iran can optimize electricity and gas consumption by developing solar and wind power, upgrading power plants to combined heat and power (CHP) plants, and implementing tiered tariffs.

The United States is a net energy exporter with an index of 64 (ETI, 2025), with imbalances largely regional and seasonal. According to Figure (2), the share of renewables in electricity generation has increased from 10.6% in 2010 to 23.4% in 2024. The country is highly resilient with abundant natural resources, a competitive market, extensive infrastructure, and investments in technologies such as renewable hydrogen and energy storage (IRENA, 2025). The main success of the United States in the renewable energy sector is in the "growth rate and development of new capacity", especially in solar and wind energy, which has increased from 2.7% in 2010 to 16.55% in 2024 (Enerdata, 2025). However, two key points indicate its progress; As part of the G7, the United States has a high share of wind energy (34.1% of its total renewables) and solar (19.9%), indicating that it is rapidly developing modern technologies rather than relying on traditional hydroelectric power, and its role in global development, with solar and wind accounting for 97.5% of the world's new renewable capacity in 2024, with the United States being a major player in this expansion (IRENA, 2025).

In comparison, **Turkiye,** with an index of 55.8, ranked 59th (ETI, 2025), shows a remarkable performance in energy transition. In contrast, **Iran**, with an index of 49, ranked 102nd in the Energy Transition 2024, has performed poorly. Iran's performance is due to poor energy governance and management, reinforced by economic sanctions.

2-3- Countries with high energy intensity and resilience challenges

Russia, with its vast oil and gas reserves, is one of the world's fossil energy superpowers, but it is a developing country in terms of energy efficiency and renewables. High energy intensity, sanctions, and the need to modernize infrastructure are among the country's main challenges. At the same time, investment in energy increases grid resilience, and financial constraints hinder this type of investment. The decline in Russia's share of gas exports to the EU in 2021-2023 and the political use of gas clearly demonstrate the structural imbalance in the Russian energy system (Enerdata, 2023c; Abdolahinia et al., 2024).

Iran is in a similar situation in terms of energy intensity, financial constraints, and sanctions, and at the same time, it lacks the economic-political will to take major steps in the energy sector. Heavy dependence on fossil fuels combined with weak energy governance has led to energy imbalances in Iran. This country, with a population of 89.4 million, will have a total energy consumption of 317 Mtoe and a per capita consumption of 3.5 tons of crude oil equivalent in 2023. Natural gas accounts for 70% of energy consumption. Iran's energy intensity has increased by 75% over the past three decades, and electricity and natural gas consumption have continued to grow. The development of renewable energy has been limited (350 MW of wind and 1 GW of solar). The reasons for the backwardness of the energy system in Iran include weak policymaking, energy subsidies, sanctions, a weak transmission network, and restrictions on foreign investment. However, Iran can become a leading producer of clean energy by reforming policies and taking advantage of its high solar radiation capacity (5.5 kWh/m2) and wind-prone areas (Enerdata, 2024a).

With high energy intensity (Figure 3) but low per capita energy consumption (6,768 kWh in 2023), **India** has managed its energy imbalances by focusing on renewable energy. The country has an installed wind capacity of 44.74 GW and significant solar development. Regional policies, competitive bidding, and private investment have driven down the cost of energy and increased solar power generation in India. India's energy intensity is on a downward trend, and the country's experience shows that gas resource constraints can be managed through energy diversification and appropriate policymaking (Dinçer, 2025; Enerdata, 2024b). According to Figure (4) and based on the IEA report, the share of

renewable sources in electricity generation in India has increased from 17% in 2010 to 22% in 2022. Accordingly, in 2023, hydroelectric power plants with a share of 40% and solar photovoltaic power plants with a share of 33% of total electricity generation from renewable resources were the largest sources of clean (non-combustion) electricity generation in India.

Figure (3): Energy intensity in India, Russia and Iran during the time 2010-2024 (koe/$15p)

Reference: Present research based on Enerdata (2025)

Figure (4): Share of renewables in the electricity generation during the time 2010-2024 (Percent)

Reference: Present research based on Enerdata (2025)

2-4- Countries with successful policies in reducing energy dependency

Japan has adopted long-run energy policies with a focus on low-carbon energy, especially renewable and nuclear, with the aim of achieving zero carbon by 2050. After the Fukushima disaster, the country conducted a deep review of energy policies, developed advanced technologies, increased electricity efficiency, and reduced dependence on gas imports. Japan's experience shows that overcoming the energy imbalance is not possible by increasing production capacity alone, but also by reforming the consumption structure, new technologies, and effective long-run policymaking. As shown in Figure (5), the country has an upward trend in the share of renewables in electricity generation during the period 2010-2024, and with the set of measures it has taken, it has achieved a relatively high rank in the Energy Transition Index (ETI). Japan's ETI in 2024 was 62.4, ranking 26th out of 120 countries (Dinçer, 2025).

Figure (5): Share of renewables in electricity generation in Japan during the time 2010-2024 (Percent)

Reference: Present research based on Enerdata (2025)

France, relying on nuclear energy and developing clean energy infrastructure, has achieved 5th place and a score of 71.1 in the Energy Transition 2024. By diversifying to low-carbon domestic sources, the country has reformed its consumption pattern and reduced its dependence on fossil fuels. Sustainable policymaking, investment in new energy, and support for renewable projects have strengthened the resilience of the French energy system against crises (Dinçer, 2025). According to Tugcu and Menegaki (2023), increasing the share of renewable energies in European countries such as France, in addition to reducing energy security risks in the long run, has also significantly reduced energy security risks in the short run; so that every 1% increase in the share of renewables in electricity generation has reduced energy security risks by 0.3%. By diversifying energy sources including wind, solar, and nuclear and reducing dependence on Russian gas, these countries have been more successful in reducing carbon emissions while increasing their energy security. As Figure (6) shows, the share of renewables in electricity generation has increased significantly and almost doubled during the period 2010-2024.

Figure (6): Share of renewables in electricity generation in France during the time 2010-2024 (Percent)

Reference: Present research based on Enerdata (2025)

Spain has diversified its gas sources and developed renewables, achieving 16th place and a score of 64.3 in the Energy Transition 2023. More than half of the country's annual electricity comes from renewable sources (wind 24%, photovoltaic 14%), with nuclear and CHP plants also making significant contributions. Figure (7) shows the impressive share of renewables in Spain's electricity generation. The Spanish government's protective policies, reformed tariffs, public investment, and integrated governance have helped the country overcome its energy imbalance and increase resilience. The country has managed to close its coal-fired power plants by 2023 without social crisis (Mazarrón et al., 2025).

Figure (7): Share of renewables in electricity generation in Spain during time 2010-2024 (Percent)

Reference: Present research based on Enerdata (2025)

In contrast to these countries, **Iran** is highly dependent on fossil fuels and the share of renewables in its electricity production has fluctuated to less than 6% in 2024. While **Turkiye** has shown a successful performance in the field of renewables and has increased the share of renewables in electricity production to over 45%, which clearly indicates the difference in energy governance between the countries. Figure (8) compares the share of renewables in electricity production between Iran and Turkiye.

Figure (8): Share of renewables in electricity generation in Iran and Turkiye during the time 2010-2024 (Percent)

Reference: Present research based on Enerdata (2025)

Summary and Results

The main purpose of this research is to study the experiences of selected countries in facing energy imbalance. To examine the experiences of countries in overcoming energy imbalance, upstream energy policy documents of selected countries have been carefully reviewed and analyzed in detail.

According to the present research, a successful transition from traditional energy systems to clean energy has become a global necessity. In this framework, leading countries such as Denmark and Sweden have been able to reduce their dependence on fossil fuels by adopting coherent policies, developing green technologies, and linking energy policy with industry. Japan and France have also pursued security of energy supply and emission reduction by focusing on energy efficiency and nuclear power plants, while Spain has become a successful model in energy transition through electricity market reform and the expansion of solar and wind energy. China plays a decisive role in the future of global energy by investing in clean technologies, and the United States is taking a gradual but dynamic path with private sector innovation and state policies. In the region, Turkiye is a successful example of sustainable energy

policymaking by increasing the share of renewable energy to more than 45 percent in the electricity generation and reducing energy intensity. In contrast, Iran, despite its rich resources, has failed in the energy transition due to weak energy governance and inefficient energy system.

Global experience shows that success on the path depends more on efficient energy management and governance, foresight, requirements, and institutional coordination than on resources.

Acknowledgment: This article is an extract from a research project titled "Economic Analysis of the Effects of Energy Imbalance (Electricity and Gas) on the Industrial Sector of Mazandaran Province and Providing Operational Solutions" with the support of the Mazandaran Governorate, which was conducted at the University of Mazandaran.

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LOST VALUE ADDED OF INDUSTRIES DUE TO ENERGY IMBALANCE IN MAZANDARAN PROVINCE, IRAN

Saeed Rasekhi

Professor of Economics, Department of Energy Economics, University of Mazandaran, Iran.
E-mail: srasekhi@umz.ac.ir
ORCID ID: 0000-0002-6280-7243

Roya Saedi

PhD Candidate in Economics, University of Mazandaran, Iran
E-mail: roya.saedi19@gmail.com
ORCID ID: 0009-0002-8419-078X

Abstract

Energy imbalance imposes significant costs on the manufacturing industry. This study estimates the economic losses of energy (electricity and natural gas) imbalances on the manufacturing industry in Mazandaran Province (Iran). For this purpose, data from 18 manufacturing industries (in two-digit ISIC codes) during the period 2018-2022 were employed. The results of this study using a dynamic panel data model (GMM) show that first, the sensitivity of the value added of manufacturing industries to natural gas is much greater than that of electricity. Secondly, energy supply constraints impose irreparable losses on the province's manufacturing production, and specifically, imposing energy supply constraints (natural gas and electricity) reduces the province's value added by about 2 percent.

Keywords: Energy imbalance, Electricity, Natural gas, Mazandaran Province

INTRODUCTION

Energy imbalances in the industrial sector, especially in economies with inefficient energy structures and high energy consumption intensity, are one of the most serious obstacles to sustainable growth and economic productivity. In a situation where energy acts as a vital input in the industrial production process, any disruption in its supply directly leads to a decrease in production, a drop in value added, and a loss of potential growth capacities. Energy in industries is not only a fuel for production, but also a driving force for value creation; from this perspective, an imbalance in its supply or consumption is equivalent to the loss of a part of national production that could have been realized in the form of commodities, employment, and income. Therefore, energy imbalances are not merely a technical issue, but also an economic waste on a national scale, the effects of which are evident in macroeconomic indicators such as GDP growth, total factor productivity, and industrial exports.

Every unit of energy that is not made available to the industrial sector at the right time and in the required quantity is equivalent to a part of production that is stopped in the value chain. Large energy-intensive industries such as steel, cement, aluminum, and petrochemicals, due to their high dependence on electricity and natural gas, are forced to reduce or stop production during periods of energy restrictions or outages. The result is a decrease in the value added created in industrial chains and a loss of part of the industrial GDP.

Energy imbalances affect industrial value added in various ways. First, reducing energy supply or imposing consumption restrictions leads to a decrease in the actual production capacity of industries. Many units operate at only a fraction of their nominal capacity during peak consumption periods, while fixed production costs remain unchanged. Second, increasing energy replacement costs through the use of liquid fuels or independent generators increases the cost price of products and reduces the profit margins of enterprises. Third, frequent fluctuations in energy supply lead to equipment wear, increased machinery depreciation, and reduced labor productivity. All of these factors ultimately lead to a decrease in industrial value added and a loss of competitiveness.

On the other hand, energy imbalance also causes a deviation in the optimal allocation of resources. When energy supply is insufficient, the government is forced to ration or prioritize industries for energy. This usually ends up benefiting large and state-owned industries, while small and medium-sized enterprises, which play an important role in employment and innovation, are deprived of access to energy. As a result, part of the potential value added that could have been created in downstream industries and with new technologies is never realized. This situation pushes the country's industrial production structure towards energy-intensive and low-value-added industries, and the opportunity to create knowledge-based and low-consumption products is lost.

In economies like Iran, where the price of energy carriers is kept artificially low and there is no incentive system for energy efficiency, imbalance is not only caused by a lack of supply but also by suboptimal consumption. Low energy prices make it difficult for firms to modernize equipment or optimize processes, and energy intensity remains high. This creates an excessive demand for energy that the existing supply cannot meet. The end result is a gradual decline in the return on industrial investment and the loss of some of the value added that could be recovered by modifying consumption patterns and technology. In the long run, energy imbalances cause lasting losses to national production by reducing industrial investment and shifting capital to unproductive sectors. When firms are unsure about the sustainability of their energy supply, they postpone decisions to expand capacity or invest in new technologies. This distrust of the future of energy leads to a stagnation of investment and, as a result, a slowdown in the growth of industrial value added. From a macroeconomic perspective, this situation leads to a decrease in the industry's share of GDP and a transfer of capital to low-yield sectors such as real estate and non-productive services. In addition to the direct effects on production, attention should also be paid to the chain effects of energy imbalance. Reduced production in resource-based industries such as petrochemicals and steel negatively impacts the performance of downstream industries such as auto parts manufacturing, automobiles, tires, and chemicals. These domino effects cause a double loss to the value added of the entire industry, because a decrease in production in each link means a decrease in value added in the following links. Therefore, even if a power outage or shortage occurs in only a part of the industries, its final effect will be widespread throughout the entire industrial chain.

The Iranian Parliament's Industries and Mines Commission[8] has calculated the daily loss of power outages in the industry in 2023 (based on this year's exchange rate) at about $184 million. According to this report, among the industrial activities, the first three industries in terms of damage are the basic metals industry with a daily loss of about $18 million, the chemicals industry with a daily loss of about $13.2 million, and the non-metallic mineral products industry with a daily loss of about $12.48 million. Regarding natural gas, the loss of benefit to industries from the natural gas cut in 2024 was about $2 billion. The steel industry is one of the largest and most important industries that is heavily dependent on natural gas. Steel producers' forecasts show that the lack of production of 6 million tons of steel this year is a result of gas restrictions. Cement companies are also in a similar situation regarding gas supply. This industry is facing a 75% gas restriction, and currently only 25% of the gas in this sector is supplied. With the natural gas cut off, these industries are forced to use alternative fuel, namely Mazut (fuel oil), for production, which is polluting.

In summary, the energy imbalance in the industrial sector is not only an infrastructure challenge but also an economic problem that directly leads to the loss of national value added. Every unit of energy that is not supplied or consumed in a suboptimal manner is equivalent to a part of industrial production that is never realized. To prevent this situation from continuing, policymakers need to implement fundamental reforms in energy governance, gradually (not abruptly) increase energy prices, develop production infrastructure, and deploy efficient technologies, while simultaneously paying attention to efficiency,

[8] Industries and Mines Commission of the Islamic Consultative Assembly, 2025

sustainability, and equity. Only in this way can the cycle of losses caused by the imbalance be broken and the lost value added of the industry be returned to the path of growth.

Numerous empirical studies at the global and national levels have shown that energy imbalance has significant effects on the performance, production, and value added of the industrial sector. Alcott et al. (2016) used data from Indian factories to examine the impact of power outages on manufacturing performance. The results of this study showed that, on average, in 2005, power outages reduced producer surplus by 9.5 percent, firm income by 5.5 percent, and firm productivity by 1.5 percent. The World Bank (2017) analyzed firm survey data in Pakistan to examine the relationship between power outages and economic performance. The results of this study show that a 10 percent increase in power outages can reduce revenue by about 0.14 percent and value added by 0.36 percent. The impact of this phenomenon is more severe for energy-intensive industries, and small firms are much more affected than large firms. In another study, Fakih et al. (2020), using survey data of industrial enterprises for countries in the Middle East and North Africa, showed that the frequency of power outages in this region is higher than the global average and its direct impact on industrial performance in this region is quite noticeable. Thomas and Fung (2022) examined the impact of power disruptions on downstream industries and showed that outages do not only cause direct production losses, but also have domino effects along the supply chain. They show that 36.8% of supply chain losses in these industries are due to disruptions in power supply. Entele et al. (2024) showed that the average monthly cost of a power outage for a firm is about $976, which is 9 times the bill paid and 2.22% of the firm's monthly revenue. A review of empirical evidence suggests that energy imbalance is one of the hidden but effective factors in the decline in productivity and industrial growth in developing countries. Iran's experience also shows that the continuation of the gap between energy demand and supply growth leads to the loss of a significant portion of industrial value added, a decrease in corporate income, an increase in production costs, and ultimately a decrease in the competitiveness of domestic industries at the regional and global levels. In this regard, we can mention the studies of Rasekhi et al. (2023 and 2022) according to which, based on the exchange rate in 2020, the willingness to pay (WTP) for each kilowatt-hour of electricity not supplied in the livestock industry of Isfahan, without prior notice, is at least 5 cents and at most about 32 cents. They also show that the WTP for outage costs per kilowatt-hour of electricity for unannounced outages in the poultry industry of Mazandaran is at least about 4 cents and at most about 84 cents.

The main purpose of the present study is to investigate the effect of energy imbalance on the value added of all manufacturing industries in Mazandaran province. For this purpose, the GMM method was used and the value added function of 18 manufacturing industries in Mazandaran province was estimated and analyzed.

This article is organized into five sections. After the introduction, and materials and methods, the estimation of the model and the effects of energy imbalance (electricity and natural gas) are presented in the third section (findings). The fourth section is dedicated to the discussion and conclusion of the article, and the final section contains the references.

MATERIALS AND METHODS

To estimate the lost value added, we first estimated the value added (VAD) function of the manufacturing industries with a dynamic panel data model. Then, based on the actual conditions of the outages, we imposed restrictions on energy, including electricity and natural gas. Finally, based on the estimated function and the restrictions imposed on energy supply, we estimated the lost value added due to energy supply restrictions. The VAD function of manufacturing industries has been estimated using the dynamic panel data model (GMM) for 18 manufacturing industries in Mazandaran province during the period 2018-2022. Specifically, the value added function of the manufacturing industries is estimated as equation (1):

$$\ln V_{it} = \hat{\alpha}_1 \ln K_{it} + \hat{\alpha}_2 \ln L_{it} + \hat{\alpha}_3 \ln E_{gas_{it}} + \hat{\alpha}_4 \ln E_{elec_{it}} \quad (1)$$

As Roodman (2009) notes in his guide for panel GMM estimators, this method provides a general framework for managing different types of explanatory variables, including strictly exogenous, predetermined, and endogenous variables. This methodology is not limited to the lagged dependent variable, and GMM-style instruments (using lags as instruments) can be utilized for any regressor whose endogeneity is established (Roodman, 2009).

FINDINGS

Economic losses due to energy imbalances are widespread and diverse at the national level, and accordingly, different data have been provided. According to published reports, the annual costs due to Iran's electricity imbalances are estimated to exceed $20 billion annually, leading to a 10 to 15 percent drop in industrial production. Also, the cost of natural gas interruption in Iran has varied between $7.2 and $21 billion annually, depending on the type of industry.

Given that manufacturing industries use a range of energies, especially electricity and natural gas, in the production process, this section is dedicated to estimating the costs of energy imbalances and imposing restrictions on both electricity and natural gas on manufacturing industries in Mazandaran province. As Table (1) shows, the coefficient validity tests, Sargan test and Arellano-Bond test, confirm the validity and accuracy of the model.

Table 1: Diagnostic tests for the VAD function of manufacturing industries in Mazandaran province

	lnK	lnL	lnE_{gas}	lnE_{elec}
Coefficients	0.89	0.46	0.197	0.058
P-value	0.000	0.000	0.000	0.000
		Arellano-Bond Test		**Sargan Test**
	AR(1)=0.098	AR(2)=0.62		Prob=0.79

Reference: Present Research

The estimation results of equation (1) show that the capital elasticity is (0.89) and this elasticity is greater than the labor elasticity (0.46). Furthermore, the sensitivity of manufacturing industries' value added to natural gas is much greater than that of electricity; the elasticity of natural gas (0.197) is more than three times that of electricity (0.058). This significant difference indicates a more vital role of natural gas in production than electricity.

Assuming the same elasticity of production to energy for manufacturing industries, the loss of value added of manufacturing industries in Mazandaran province can be calculated under different scenarios of energy constraints (electricity and natural gas). Specifically, by imposing 5, 10 and 15 percent restrictions on electricity supply, the value added decreases by about 0.29, 0.58 and 0.87 percent, respectively. Also, by imposing restrictions of 7.5, 10 and 12.5 percent on natural gas supply, value added is reduced by 1.48, 1.97 and 2.46 percent respectively. Obviously, if electricity and natural gas restrictions are implemented simultaneously, the amount of damage caused by energy imbalance increases. For example, if two restrictions of 7.5 percent for natural gas and 5 percent for electricity are implemented simultaneously, the total damage to value added is equal to a reduction of 1.77 percent. It is worth noting that the cost of energy imbalance in the lost value added method estimates only direct losses to industries and does not include other costs such as damage to machinery and effects on the

supply chain. The results of the damage caused by the 5% electricity and 7.5% natural gas restrictions during the period 2018-2022 are presented in Table (2).

Table 2: Average lost value added of Mazandaran province's manufacturing industries with an annual restriction of 5% on electricity and 7.5% on natural gas supply

Industry	Average value of damage caused by a 7.5% gas imbalance: Million Dollars	Rank	Average value of damage caused by a 5% electricity imbalance: Million Dollars	Rank
Manufacture of food products and beverages	4.087675	1	0.802319	1
Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	1.432763	2	0.281219	2
Manufacture of other non-metallic mineral products	0.726263	3	0.142549	3
Manufacture of motor vehicles, trailers and semi-trailers	0.695074	4	0.136427	4
Manufacture of rubber and plastic products	0.735848	5	0.14443	5
Manufacture of textiles	0.461869	6	0.090654	6
Manufacture of fabricated metal products, except machinery and equipment	0.431965	7	0.084785	7
Manufacture of paper and paper products	0.310488	8	0.060942	8
Manufacture of chemicals and chemical products	0.424404	9	0.083301	9
Manufacture of basic metals	0.318133	10	0.062442	10
Manufacture of electrical equipment	0.279863	11	0.054931	11
Manufacture of furniture	0.162663	12	0.031927	12
Manufacture of coke and refined petroleum products	0.158135	13	0.031038	13
Manufacture of machinery and equipment n.e.c.	0.150552	14	0.02955	14
Manufacture of other transport equipment	0.088875	15	0.017444	15
Printing and reproduction of recorded media	0.055562	16	0.010905	16
Manufacture of wearing apparel	0.02886	17	0.005665	17

Manufacture of computer, electronic and optical products	0.010386	18	0.002038	18
Total	10.55938		2.072567	

Reference: Present Research

The results of Table (2) clearly show that the food and beverage industry, as one of the most important manufacturing industries in Mazandaran Province, is by far the most vulnerable sector to energy imbalance. In a 7.5% natural gas supply constraint, the value of the energy imbalance cost for this industry is over $4 million. This cost peaked in 2022 and alone accounted for 42% of the total imbalance loss to the manufacturing sector in Mazandaran Province. This finding emphasizes the critical importance of maintaining a stable energy flow for this important manufacturing industry. In particular, this industry, unlike heavy industries, cannot easily stop its production in one season. The food industry is highly dependent on both electricity in the summer (for cooling, cold storage, and processing of perishable agricultural products) and natural gas in the winter (for thermal processes and cooking).

Based on the results obtained in the present study, five industries including food products, manufacture of wood and of products of wood and cork; manufacture of other non-metallic mineral products; motor vehicle production, trailers and semi-trailers; and rubber and plastic products have experienced the highest direct losses to production due to energy imbalance. These industries require a stable flow of energy, although it is expected that they will help reduce the effects of energy imbalance by increasing production productivity and improving energy consumption efficiency.

Based on the calculations, the losses from natural gas imbalance are an increasing function of the severity of energy supply constraints. A key finding is the strong asymmetry in the risk of constraints between the two energy carriers, such that the losses from a 7.5% natural gas imbalance for manufacturing industries are, on average, 5 times greater than the losses from a 5% electricity imbalance. This indicates the important and essential role of natural gas in the manufacturing industry of Mazandaran province. Of course, this does not mean that electricity is unnecessary or unimportant in the industrial process, and as previously discussed, the value added elasticity for this input is positive and in the area of necessary input. Also, as shown, the welfare loss of electricity restriction for manufacturing industries is significant, which shows the importance of this essential input in the development of the province's economic scales. In these circumstances, electricity restriction will have a domino effect on the province's economic activities and impose a high opportunity cost on Mazandaran Province. Overall, given the importance and role of both types of energy in the manufacturing industries of Mazandaran Province, there is a systemic risk and loss in relation to the imposition and expansion of restrictions on the supply of these essential inputs for the province's economy. To deal with such a risk, in addition to ensuring the security of energy supply, there is a need to increase the resilience of the industries in the face of energy imbalances.

Table (3) shows the costs of energy constraints (electricity and natural gas) in Mazandaran's manufacturing industries during the period 2018 to 2022. These costs are considered in the form of lost value added. As this table shows, lost value added has an upward trend during the period under review, indicating the importance of the effects of energy imbalance in the long run and over time.

Table 3: Lost value added for manufacturing industries in Mazandaran province due to restrictions of 5% on electricity supply and 7.5% on natural gas supply during 2018-2022

5% restriction on electricity supply	2018	2019	2020	2021	2022
In Dollars	1416152	16117698	1713162	2767946	2767130
7.5% restriction on gas supply	**2018**	**2019**	**2020**	**2021**	**2022**
In Dollars	7215055	8243127	8728268	14102213	14098053

Reference: Present Research

DISCUSSION AND CONCLUSION

Energy imbalance imposes numerous and significant losses on manufacturing industries. This study, using the GMM method, estimates the economic losses caused by energy imbalance (electricity and natural gas) on manufacturing industries in Mazandaran Province (Iran). For this purpose, data from 18 manufacturing industries (in two-digit ISIC codes) during the period 2018-2022 were used and the lost value added due to supply constraints of these two types of energy was estimated. The results of this study show that the highest lost value added is related to the food and beverage industries. This is justified given the contribution of this industry to the industrial value added of the province. The estimates of the present study also show that the sensitivity of the value added of manufacturing industries to natural gas is much higher than electricity, which indicates the importance of natural gas in the manufacturing industry process of the province. Also, the trend of the cost of imbalance is upward during the period under study, which indicates the profound effect of energy imbalance on manufacturing industries in the long run. Energy supply constraints impose irreparable losses on the province's manufacturing output, and in particular, imposing energy supply constraints (natural gas and electricity) reduces the province's value added by about 2 percent. The main recommendation and message of this research is optimal management and governance of the energy system.

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ANALYSIS OF THE STATE OF THE BANKING SYSTEM AND BANK LENDING IN UKRAINE

Vadym SHVED
Prof.Dr., University Ukraine
E-mail: osvitav@gmail.com
ORCID ID: 0000-0001-5497-0975
Hanna DAVYDENKO

Prof.Dr., University Ukraine
E-mail: ganna.davydenko@gmail.com
ORCID ID: 0000-0002-6893-8869

Olena OMELCHENKO
Prof.Dr., University Ukraine
E-mail: 2sciencev@gmail.com
ORCID ID: 0000-0002-5121-0222

Bohdan VAPELNYK
Student, University Ukraine
E-mail: osvitav@gmail.com
ORCID ID: 0000-0001-6947-1562

Abstract

This paper examines the transformation of Ukraine's banking system during the 2019–2024 period, focusing on the effects of Russia's full-scale invasion and the subsequent war-related challenges. It analyses the dynamics of key financial indicators such as total assets, loan volumes, inflation, profitability, and non-performing loan ratios. The study highlights the strategic role of the National Bank of Ukraine in maintaining macrofinancial stability through anti-crisis measures, monetary policy adjustments, and the adoption of a new Financial Sector Development Strategy. The analysis identifies major internal and external post-war challenges, including structural weaknesses in banks, reduced international support, and economic reconstruction needs. Despite significant pressure, the banking system has demonstrated resilience, with gradual improvements in credit quality and profitability in 2023–2024. The paper concludes that a stable, competitive, and technologically advanced financial sector is essential for Ukraine's long-term recovery and integration into the European financial space.

Keywords: banking sector, non-performing loans, financial stability, macroeconomic risks, Ukraine, war economy

INTRODUCTION

Since the start of the Russian Federation's full-scale invasion of Ukraine, the country's banking system has been under unprecedented pressure. Losses of assets, a shrinking customer base, a growing share of non-performing loans, and the threat of systemic risks have posed a serious challenge to the stability of the financial sector. Under these conditions, the National Bank of Ukraine played a key role in maintaining macrofinancial balance by promptly introducing anti-crisis measures and updating its financial sector development strategy. This paper discusses the main changes in the banking system in 2019-2024, analyses the dynamics of assets, lending, profitability, and the level of non-performing loans, and outlines the internal and external challenges facing the banking sector in the post-war period.

MATERIALS AND METHODS

To write the article, the authors used such methods as documentary analysis, information synthesis, graphical representation, classification, comparative analysis, and investigation to support the study, which confirmed the fact that the Ukrainian banking system has withstood the multi-year crisis, maintained its manageability, and demonstrates the prerequisites for growth. This study of the banking system was based on specialised articles, reports, statistics, analysis of information provided by the official regulator, and relevant conclusions were drawn on the trends in the Ukrainian banking system over the past five years.

FINDINGS

Following the large-scale invasion of Ukraine by the Russian Federation, the Ukrainian economy was severely disrupted, which had a significant impact on the banking sector. The occupied territories, massive outflow of population abroad, destruction of industry and infrastructure resulted in the loss of a large share of assets, a decrease in the number of customers and an outflow of qualified personnel due to migration.

In such circumstances, the share of non-performing loans in bank portfolios increased significantly, putting additional strain on the risk management system. In general, financial risks have become more acute, with credit, currency, market, and liquidity risks standing out. In addition, the likelihood of a systemic risk occurring has increased, which threatens the stability of the entire banking sector and requires comprehensive government intervention and support from international financial institutions.

The National Bank of Ukraine, acting as the primary regulator of the financial and credit system, responded to the military invasion by implementing a number of urgent anti-crisis measures to preserve macrofinancial stability and maintain confidence in banks. Key actions included adjustments to monetary policy, the introduction of currency restrictions to tighten control over foreign exchange transactions, and increased regulatory capital requirements for banking institutions.

These measures allowed financial institutions to overcome the initial shock, stabilise internal processes, adapt to new realities, and maintain their performance even in the face of high volatility. At the same time, despite achieving a certain level of functional stability, the Ukrainian banking sector faces new and complex challenges after the end of hostilities.

These challenges will be both internal - caused by structural problems of the banks - and external - related to the overall state of the economy, post-war reconstruction needs, changes in effective demand and the impact of global economic trends on international financial markets.

We agree with the position of Y. Danylenko, who suggests that all potential risks and threats that may complicate the further development of the banking system should be divided into two broad groups: general economic and specific (Table 1).

Table 1. Post-war challenges to the development of the banking system

General economic	Specific
- inflationary risk; - growth of public debt; - reduction of international support; - payment imbalance; - decline in foreign trade due to global trade fragmentation; - underdevelopment of the stock market; - non-return and further outflow of qualified personnel; - new structural adjustment of the economy of Ukraine; - security risks, etc.	- Increase in the share of non-performing loans; - dominance of state-owned banks; - increased regulatory pressure on banks; - increased competition from non-bank financial institutions, including innovative ones; - increased competition from international financial institutions; - limited choice of financial resources for the formation of bank capital, etc.

The author further emphasises that the general economic challenges facing the banking system of Ukraine in the post-war period will be determined by the nature and dynamics of the national economic recovery. They are closely linked to the pace of economic growth, the level of investment activity, the volume of external assistance, and the internal solvency of households and businesses. External factors will also play a significant role, primarily global economic trends, global fluctuations in financial markets, the geopolitical situation, and decisions of leading international institutions and countries that will directly or indirectly affect Ukraine's macroeconomic stability and the ability of its banking system to integrate into the global financial space.

Instead, specific challenges are of a sectoral nature and relate directly to the functioning of the banking sector. They include improving the system of banking regulation and supervision, adapting the regulatory framework to new conditions, ensuring transparency of lending operations, expanding the range of banking products, and maintaining competitiveness in the financial services market. In addition, these challenges include the impact of digitalisation, cyber threats, innovative business models, and changes in customer behaviour that are shaped by global trends in modern banking [1].

Bank lending is one of the cornerstones of the banking system and is an important tool for financing economic growth, as it is mainly directed at the development of highly profitable industries, including trade, manufacturing, agriculture and real estate. These sectors are characterised by fast capital turnover, stable profits, and lower risk for banking institutions. At the same time, other less profitable industries receive credit resources on a residual basis, mostly in limited volumes, due to low profitability. Exceptions to this are strategically important sectors that receive government support in the form of funding programmes or guarantees.

For business entities, bank loans are a source of both short- and long-term financial resources. This is especially important in an underdeveloped stock market, where corporate financing instruments are limited and bank loans remain the main form of external capital raising.

In the area of households, bank lending supports effective demand, contributes to improving living conditions and enhancing social stability. In particular, consumer lending enables large purchases to be

made on a deferred basis, while mortgage programmes, partially subsidised by the state, contribute to the realisation of the right to housing.

In addition, bank lending serves to optimise circulation costs by replacing cash payments with non-cash financial instruments such as bills, cheques, and bank transfers. This increases the efficiency of cash circulation and reduces transaction costs. At the same time, the use of such instruments in Ukraine is limited due to regulatory and legal imperfections, lack of legal certainty and an unstable business environment, which reduces confidence in non-cash payment mechanisms.

The National Bank of Ukraine, as the state regulator, is developing a key strategic document that defines the principles of strengthening the resilience of Ukraine's financial system, adapting it to the conditions of a full-scale war with the Russian Federation, and laying the groundwork for post-war economic recovery.

In fulfilling its functions, in 2023 the NBU cancelled the previous Strategy for the Development of the Financial Sector of Ukraine until 2025, which was designed to overcome the effects of the pandemic and did not take into account the new economic realities that emerged after the outbreak of war.

The updated 'Financial Sector Development Strategy: Confronting the Challenges of War in the Financial Sector and Supporting the Economic Recovery of Ukraine' is currently in effect [2].

In response to the deep crisis caused by Russia's full-scale aggression, the National Bank of Ukraine has revised its strategic approaches to financial sector development, adapting them to wartime conditions, the need for post-war recovery, and European integration. The Strategy has five strategic objectives: ensuring macroeconomic stability, financial stability, active participation of the financial sector in the country's reconstruction, provision of modern financial services, and strengthening the institutional capacity of regulators and the Deposit Guarantee Fund.

Ukraine's financial sector is defined as a central element of the economy, which must be sustainable, competitive, technologically advanced and able to respond effectively to crises. The updated model is based on a transition to a flexible exchange rate, a return to inflation targeting, tighter capital requirements for banks, and the introduction of European standards in all segments of the financial market.

The document emphasises the importance of the domestic capital market, the need to develop pension, insurance, investment funds, and guarantee systems for non-banking institutions. Considerable attention is paid to the reform of state-owned banks, digitalisation, the fight against corruption, and the implementation of EU standards in the areas of transparency, supervision, and insolvency.

Strengthening cybersecurity, developing payment infrastructure, including Ukraine's integration into the Single Euro Payments Area (SEPA), and ensuring equal access to financial services are among the main vectors of the digital transformation of the financial system.

Overall, the Strategy defines a systematic and phased action plan that will ensure the transition to a sustainable financial sector model that is ready to meet the challenges of war, the requirements of European integration, and the economic recovery of the country. It is the basis for the formation of a financial system capable of supporting long-term economic development, the welfare of citizens and the security of the country [2].

Given the above, let us analyse the state of bank lending in 2019-2024 (Figure 1).

Analysing the data in Figure 1 and the general trends in the country's economy, we can conclude that in the period from 2019 to 2024, the Ukrainian banking sector experienced a gradual reduction in the number of operating banks, reflecting the processes of structural transformation, regulatory clean-up and adaptation to the difficult economic and political environment. At the beginning of 2019, there were

75 banking institutions operating in Ukraine, of which 35 had foreign capital and 23 were wholly foreign-owned banks. However, by 2024, the number of banks had already fallen to 61, of which 26 had foreign participation and 19 were wholly foreign-owned. The number of state-owned banks did not change during the analysed period [3].

These dynamics are driven by a number of internal and external factors. First, the consequences of the COVID-19 pandemic have been a severe test for the financial system, with the economic downturn, lower corporate and household incomes, and deteriorating credit discipline leading to stricter requirements for bank stability. Secondly, Russia's full-scale invasion of Ukraine in 2022 led to a significant deterioration in the operating environment of banking institutions: loss of assets in the temporarily occupied territories, an increase in the share of non-performing loans, evacuation of staff and a decline in business activity.

In response to these challenges, the National Bank of Ukraine has pursued a tight regulatory supervision policy, increasing capital and liquidity requirements, which has helped to drive weak and inefficient banks out of the market. At the same time, the decline in the number of foreign banks is partly due to global financial groups reviewing their strategies for presence in high-risk markets.

Figure 1: Dynamics of the number of banks in Ukraine in 2019-2024 [3]

When analysing the state of the banking system, it is advisable to pay attention to the volume of banks' assets in 2019-2024 (Figure 2) [3].

Based on the data in Figure 2, we can say that in 2019, the assets of the Ukrainian banking system totalled UAH 1,493.3 million, and the total volume of loans issued was UAH 1,033.4 million. At the same time, the inflation rate was 104.1%, which indicates a moderate increase in prices. Overall, this year was characterised by a stable macroeconomic situation and continued positive trends in the financial sector after the banking system was cleaned up in previous years.

In 2020, despite the COVID-19 pandemic, banks' assets increased to UAH 1,822.8 million, demonstrating increased confidence in the banking system, an increase in deposit portfolios, and the use of banking products. At the same time, the volume of loans issued decreased to UAH 960.6 million, indicating that banks are cautious in lending due to increased credit risks. The inflation rate rose to 105%, but remained within acceptable limits, reflecting the NBU's controlled monetary policy.

In 2021, banks' assets grew further to UAH 2053.2 million, and the volume of loans issued recovered and even exceeded the 2019 figure, reaching UAH 1065.3 million. This indicates a revival in lending activity and increased demand for financial resources from businesses and households. However, the inflation index rose to 110%, indicating an increase in inflationary risks associated with the recovery of economic activity and rising global energy prices.

In 2022, amid the full-scale war, banks' assets continued to grow to UAH 2,351.7 million, but the volume of loans slightly decreased to UAH 1,036.2 million, indicating that banks were cautious in new lending due to high default risks. At the same time, inflation accelerated significantly to 126.6%, driven by supply chain disruptions, production cuts, and a sharp rise in logistics and energy costs.

Figure 2. Dynamics of banks' assets, loans and inflation in 2019-2024 [3].

In 2023, banks' assets increased to UAH 2,945.0 million, demonstrating a continuing trend of resource accumulation and strengthening of the banking system. However, the volume of loans issued remained at around UAH 1,024.7 million, indicating a restrained lending policy in a highly uncertain environment. The inflation index declined to 105.1%, reflecting the first signs of price stabilisation due to the NBU's monetary measures and support from international partners.

In 2024, the volume of bank assets reached UAH 3,422.6 million, which is a record figure for the period under review and indicates further strengthening of the financial system. The volume of loans issued increased to UAH 1,138.0 million, which is the largest for the entire analyzed period, which may indicate an increase in economic activity, an expansion of demand for investment resources and an increase in confidence in the financial system. The inflation index was 112%, which, although it exceeds the target level, is much lower compared to the peak indicators of 2022, which indicates a gradual stabilization of the economic situation.

The next step is to analyse the level of profitability of the banking system and compare it with the level of non-performing loans (Figure 3) [3].

Thus, in 2019, the Ukrainian banking system demonstrated stable results. Net profit amounted to UAH 58.4 billion, which is a significant figure compared to historical data. The total volume of loans issued reached UAH 1,033.4 billion, but the level of non-performing loans remained high at 48%. This indicated that, despite banks' profitability, the quality of loan portfolios was far from optimal due to the effects of the previous years' crisis.

In 2020, banks' net profit declined to UAH 39.7 billion. This decline can be attributed to the economic difficulties caused by the COVID-19 pandemic. The volume of loans disbursed also decreased to UAH 960.6 billion, reflecting the overall decline in business activity. At the same time, the NPL ratio decreased to 41%, partly due to active debt restructuring and temporary support programmes.

Figure 3. Dynamics of net profit and non-performing loans in the banking system of Ukraine [3].

In 2021, the banking system showed a significant improvement, with net profit rising to a record UAH 77.4 billion, reflecting a recovery in banking profitability after the shocks of the previous year. The volume of loans issued increased to UAH 1,065.3 billion. It is very important that the level of non-performing loans decreased significantly to 30%, reflecting the improved quality of loan portfolios and the growing financial discipline of borrowers.

In 2022, against the backdrop of a full-scale war, the banking sector came under pressure again, with net profit falling sharply to UAH 21.9 billion. The decline in profitability is attributed to the significant costs of making provisions for credit risks and the overall deterioration in the financial environment. The volume of loans disbursed decreased only slightly (to UAH 1,036.2 billion), which demonstrates that a certain level of lending activity was maintained due to government support programmes. At the same time, the share of non-performing loans increased to 38%, which was expected amid a sharp rise in economic risks.

In 2023, the situation began to improve: banks' net profit increased to UAH 83.0 billion, which even exceeded the pre-war figures for 2021. The volume of loans issued remained at UAH 1024.7 billion. The level of non-performing loans decreased to 37%, indicating a gradual recovery of loan portfolios as the economy adapts to the war conditions.

In 2024, the banking system showed the best results for the entire analysed period: net profit reached UAH 103.7 billion. Loan disbursements also increased to UAH 1,138.0 billion. It is particularly important that the level of non-performing loans decreased again to 30%, returning to the level of the most successful year of 2021. This is evidence of increased financial discipline, improved risk management procedures, and a more thorough approach by banks to assessing borrowers' creditworthiness.

Thus, the banking sector's net profit fluctuated, but the growth in 2023-2024 indicates that banks have successfully adapted to the new environment. The volume of loans issued remained relatively stable overall, even during years of severe economic challenges. The most important positive trend is the gradual decline in NPLs, which indicates a recovery in bank portfolios and a reduction in credit risks.

DISCUSSION AND CONCLUSION

An analysis of the dynamics of Ukraine's banking sector in 2019-2024 shows that the financial system is gradually adapting to the difficult conditions of the wartime and postwar periods. Despite asset losses, insolvency risks, and high economic fluctuations, banks managed to maintain operations, increase assets, and significantly improve the quality of their loan portfolios. The decline in the share of non-performing loans and the increase in profitability in 2023-2024 are evidence of improved risk management and restored confidence in the banking system. Going forward, the sustainable functioning of the financial sector requires the active involvement of the state and international partners, reform of state-owned banks, development of digital tools, and implementation of European standards in banking regulation and supervision.

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AZƏRBAYCAN RESUBLİKASI ELM VƏ TƏHSİL NAZİRLİYİ İQTİSADİYYAT İNSTİTUTUNUN

"Regional inkişaf və təbi sərvətlərdən istifadə problemləri" şöbəsi Böyük elmi işçi Nəcəfli Svetlana Xalid qızı

necefli.lana@mail.ru ; mob: (050) 5591370

Qarabağ iqtisadi rayonunda sosial-iqtisadi inkişafın mövcud vəziyyəti

Xülasə

Məqalədə, Qarabağ iqtisadi rayonunda sosial-iqtisadi inkişaf, ölkə Prezidenti tərəfindən verilən Dövlət Proqramları əsaında, qarşıya qoyulan məqsəd və vəzifələr yüksək səviyyədə yerinə yetirilməkdədir. Bu bölgələrdə bəzi layihələrə artıq başlanıb. Əsas məqsədimiz işğaldan azad olunmuş torpaqlarımızın bərpasıdır. Böyük tikinti-quruculuq işlərinə başlanılıb. Belə ki, Qarabağda beynəlxalq hava limanı, avtomagistrallar tikilir, dəmir yol xətləri inşa edlir. Bütün Qarabağ ərazisi bu ilin sonuna kimi enerji təchizatı ilə 100 % (faiz) tamamlanacaq. Digər əhəmiyyətli layihələr də yerinə yetiriləcək. Ən mühüm layihələr Azərbaycanin tarixi ərazisi olan Zəngəzurdan başlanacaq. Bildiyimiz kimi Azərbaycanın əsas, ayrılmaz hissəsi olan Naxçıvan Respublikasını və Türkiyəni birləşdirəcək yeni nəqliyyat dəhlizi yaranacaq. İqtisadi rayonda əhalinin sosial rifahı və həyat səviyyəsinin yüksəldilməsinə, ölkə iqtisadiyyatının ayrı-ayrı sahələrinə təsirinə, yeni iş yerlərinin açılması, sosial iqtisadi inkişaf istiqamətlərinin daha yüksək naliyyətlər əldə etməsi, əmək ehtiyatlarının səmərəli yerləşməsinin yüksək səviyyədə inkişaf etdirilməsi istiqamətinə yönəlmiş tədbirlərin həyata keçirilməsi təhlil edilmişdir.

Açar sözlər: Qarabağ, sosial-iqtisadi,iqtisadi inkişaf, iqtisadi rayon, region, bölgə, sosial rifah, əmək ehtiyatları.

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Giriş/*Introduction*

Prezident İlham Əliyevin diqqəti, əzmkarlığı, müdrik sərkərdəliyi ilə ərazi bütövlüyümüzü təmin edilməsi Azərbaycanın beynəlxalq arenadakı nüfuzunu möhtəşəm səviyyədə daha da yüksəlməsinə böyük qürurverici səbəb oldu. Böyük fəxrlə deyə bilirik ki, ölkəmiz 44 günlük Vətən müharibəsindəki şanlı Qələbədən sonra region qüdrətli güc mərkəzlərindən birinə çevrilmişdir. Bölgədə yaranmış yeni iqtisadi və siyasi konfiqurasiya dünya ictimayətinin, həm də beynəlxalq iqtisadi təşkilatların diqqət mərkəzindədir. İşğaldan azad olunmuş torpaqlarımızda əlverişli iqtisadi rejim formalaşdırılmaqla həm biznesin yranması həm də inkişaf etdirilməsi üçün əlverişli investisiya mühiti yaradılmaqdadır.

İnvestisiya iqlimini 4 (dörd) istiqamətli (siyasi, iqtisadi, hüquqi və sosial) amillər normal hala doğru gəlməkdədir. Xarici investisiyaların prioritetləri dəqiq müəyyənləşdirilir. Qarabağ və Şərqi Zəngəzurun siyasi və hüquqi mövqeyi olan dövlətləei təmsil edən şirkətlərin bu regionun biznes subyekti olmasına daha çox üstünlük verilir. Azərbaycan Respublikası Prezidentinin 2021-ci il 2 fevral tarixli "Azərbaycan 2030: sosial-iqtisadi inkişafa dair Milli Prioritetləri" in təsdiq edilməsi haqqında Sərəncamının 2.1-ci bəndində nəzərdə tutulmuş, haızrda son müzakirələr mərhələsində olan [1] "2022-2026-cı illərdə sosial-iqtisadi inkişaf Strategiyası"nda iqtisadiyyatın genişlənməsinə və investisiyaların cəlb edilməsinə vergi siyasətinin effektiv dəstəyinin təmin edilməsi və investisiya mühitinin daha da mükəmməl olması üçün bir çox tədbirlər nəzərdə tutulur: [2]. İşğaldan azad edilmiş torpaqlarımızın inkişafı üçün vergi təşviqlərinin tətbiq olunması; Yeni istehsal sahələrinin qurulmasına görə kapital qoyuluşularına uyğun olaraq mənfəət vergisinə güzəştlərin verilməsi; Turizmin inkişafı üçun vergi təşviqlərinin verilməsi və s. Böyük layihələr əsasında Qarabağ və Şərqi Zəngəzurun inkişafında investisiyaların rolu region sektorunda yeni imkanlar yaradacaq. Prezident İlham Əliyev Əməkdaşlıq Təşkilatının üzv dövlətlərini də Zəngəzur dəhlizindən faydalanmağa dəvət edir. Qarabağ və Şərqi Zəngəzur iqtisadi rayonlarına investisiya qoymaq üçün iqtisadi baxımdan kifayət qədər səbəblər var.

Qeyd etməliyik ki, işgaldn azad olunmuş torpaqlrımızda təyinatı üzrə səmərəli istifadə etmək məqsədilə həm qəsəbə həm də kənd evlərinin bərpası və ya yenidən salaınmsı gedişatında sistemli yerləşməyə üstünlük verilməsi daha cox əlverişlidir. Bu istiqamətdə rayonlarda yşayan əhaliyə ərazinin torpaqlarının relyefini nəzərə almınqla əvvəllər itirdikləri əmlakların öz gücü ilə yenilənməsinin hər kvadrat metri üçün, müasir istilik sistemi təchiz edilməklə 600-1000 manat civarında əmək haqlarının dövlət tərəfindən ayrılması daha yaxsı olardı. Eləcə də işğaldan azad edilmiş ərazilər minalardan təmizləndikdən və dağıntılar aradan qaldırılıb bərpa edildikdən sonra torpaq islahatları qaydalarına yenidən baxılıb hairlznmalıdır. Pezidentimizin tapşırığı və dövlət proqrqmlarına əsasən məqsəd və vəzifələrin yerinə yetirilməsi nəticəsində işğaldan azad edilmiş torpaqlarımıza qayıdan əhalini təhlükəsiz yaşayışı təmin edilr və edilməkdədir. Bu regionun ölkənin ən yüksək səviyyədə ən abad guşələrindən birinə çevrilməkdədir. Müasir həyatın layiqli yaşayışının bərpası üçün bütün sahələrdə quruculuq daha da inkişaf olunmalıdır. Təbii sərvətlərin, faydalı qazıntıların işlənilməsi investisiyaların qoyuluşu baxımından böyük perspektivdən xəbər verir. Bildiyimiz kimi Azərbaycanda qeyri-neft ixracında qızılın mühüm yeri var. Dünya bazarlarında qızılın qiymətinin yüksəlməsi, bu sahədəki şirkətlərin müasir istehsal texnologiyalarına sahib olmasına görə deyə bilərik ki, işğaldan azad olunmuş topaqlarımızda qızıl yataqlarının istismarı qarşıdakı illərdə ölkə iqtisadiyyatına böyük uğur verəcəkdir.

Deməliyik ki, yaşayış binaları, mədəniyyət evləri, xəstəxanalar, orta məktəblərin tikilməsi, musiqi diyarı Şuşada musiqi məktəblərinin bərpası, ali Təhsil ocağı olan Xankəndi şəhərində 1969-cü ildə yaradılmış Azərbaycan Pedaqoji İnstitutunun binası müasir avadanlıqlarla təmin edilərək, Beynəlxalq standartlara uyğun Qarabağ Universiteti adı ilə fəaliyyət göstərir. Bu az muddət beş ildə böyük işlər görülmüşdür. Aparılan sürətli işlər arasında isə hava limanlarının tikintisi ön planda duran məsələlərdəndir. İlk olaraq Füzuli hava limanı, sonra Zəngilan, Laçın, Xankəndi şəhərinin 10 km-liyində Xocalı hava limanları tikilmişdir. Qarabağda qısa müddət ərzində həyata keçirilən bərpa işləri sözün əsl mənasında heyrət doğurur. Türkiyə Prezidenti Rəcəb Tayyib Ərdoğan Zəngilan Beynəlxalq Hava Limanının açılışında söylədiyi çıxış nitqində heyrətini belə dilə gətirmişdi: "İşğaldan azad edilən qədim Azərbaycan torpaqlarında bir il ərzində ən müasir ikinci hava limanını açmaq bu qədər çətin dövrdən sonra hər ölkənin bacara biləcəyi bir iş deyil" [7].

Qürur hissi ilə qeyd etmək lazımdir ki, artıq beş ildir işğaldan azad olunmuş Qarabağ torpaqlarında quruculuq işləri tam sürətlələ davam etməkdədr. "Böyük Qayıdış" çərçivəsində həyata keçirilən tədbirlər fasiləsiz minatəmizləmə fəaliyyəti ilə müşayiət olunur. İşğaldan azad olunmuş Qarabağda ötən bir il ərzində 20 min hektara yaxın ərazi minalardan təmizlənib. Bir sözlə, çox tezliklə orada zərrə qədər də erməni faşizminin izi qalmayacaq. Beləcə, dövlət rəhbərimizin dediyi kimi, döyüş meydanlarında əldə etdiyimiz tarixi Zəfər sülh və quruculuq qələbəsi ilə davam edir [8].

Sosial inkişaf – sosial qayğının artırılmasını, bu sahədə göstərilən xidmətlərin davamlı olaraq keyfiyyətinin yüksəldilməsini ön plana çəkir. Ölkəmizdə sosial siyasət davamlı olaraq genişlənməkdə, bu sahədə silsilə tədbirlər həyata keçirilməkdədir [3]. Azərbaycan Konstitusiyasında dövlətin - xalqın və hər bir vətəndaşların rifahının yüksəldilməsinə, onların sosial müdafiəsinin və layiqli həyat səviyyəsinin qayğısına qalmağı bir vəzifə olaraq müəyyən etmişdir [4]. Ölkəmizdə qəbul edilən "Azərbaycan 2030": sosial-iqtisadi inkişafa dair Milli Prioritetlər"ində sosial inkişafın müasir standartlara uyğunlaşdırılması da bir məqsəd olaraq seçilmişdir [5]. Bu baxımdan da, əhaliyə sosial xidmətlərin göstərilmə mexanizmlərinin və tənzimlənmə sisteminin səmərəliliyinin artırılması xüsusi zərurətdən çıxış edir.

Prezidentimizin müdrik sərkərdəliyi, tapşırığı, dövlət proqramlarının məqsəd vəzifələri əsasında deyə bilərik ki, nəticədə ölkəmizdə perspektiv iqtisadi inkişaf və eyni zamanda tikinti-quraşdırma, abadlaşdırılma işləri, əhalinin yüksək səviyyədə sosial rifahının yaxsılaşdırılmasına regionların tarazlı sosial-iqtisadi inkişafında sosial sferanın rolu böyükdür. Həm ölkəmizin bütün iqtisadi rayonlarında həm də inzibati ərazilərdə tarazlı sosial-iqtisadi inkişaf istiqamətində yüksək səviyyədə irəliləyişlər var və olmaqda davam edir. Təbii sərvətlərin, faydalı qazıntıların işlənilməsi investisiyaların qoyuluşu baxımından böyük perspektivdən xəbər verir. Bildiyimiz kimi Azərbaycanda qeyri-neft ixracında qızılın mühüm yeri var. Dünya bazarlarında qızılın qiymətinin yüksəlməsi, bu sahədəki şirkətlərin müasir istehsal texnologiyalarına sahib olmasına görə deyə bilərik ki, işğaldan azad olunmuş topaqlarımızda qızıl yataqlarının istismarı qarşıdakı illərdə ölkə iqtisadiyyatına böyük uğur verəcəkdir [9].

Nəticə göz qabağındadır, ölkə Prezidenti İlham Əliyevin işğaldan azad olunmuş Qarabağ ərazilərində sürətlə aparılan sosial-iqtisadi inkişafın və kompleks bərpa işlərinin mövcud vəziyyəti dünyaya səs salıbdır. Bu qürur verici sözlər Prezident İlham Əliyevin qətiyyətinin və iradəsinin təcəssümüdür. Eyni zamanda işğaldan azad edilmiş ərazilərdə hərbi quruculuq işləri də sürətlə həyata keçirildi, yeni hərbi hissələr yaradıldı. Prezident İlham Əliyev: "Hər şey əsaslı olmalıdır və ora qayıdacaq insanlar ən yaxşı şəraitlə təmin edilməlidir" [6]. dediyi bu sözləri hər birimizin borcudur ki, verilən tapşırıqları, görüləcək işləri yuksək səviyyədə layiqincə yerinə yetirək.

Najafli Svetlana Khalid a senior researcher at the Economics Institute of the Ministry

of Science and Education of the Republic of Azerbaijan

***E-mail: necefli.lana@mail.ru*; mob: (050) 5591370**

Current status of socio-economic development in the Karabakh economic region.

The article states that the socio-economic development in the Karabakh economic region, based on the State Programs issued by the President of the country, the goals and objectives set are being fulfilled at a high level. Some projects have already been launched in these regions. Our main goal is the restoration of our lands liberated from occupation. Major construction work has begun. Thus, an international airport, highways are being built in Karabakh, and railway lines are being built. The entire Karabakh territory will be 100% (percent) complete with energy supply by the end of this year. Other important projects will also be implemented. The most important projects will start from Zangezur, the historical territory of Azerbaijan. As we know, a new transport corridor will be created that will connect the Nakhchivan Republic, which is the main and integral part of Azerbaijan, and Turkey. The economic region has analyzed the implementation of measures aimed at improving the social welfare and living standards of the population, its impact on individual sectors of the country's economy, opening new

jobs, achieving higher achievements in the directions of socio-economic development, and developing the efficient placement of labor resources at a high level.

Keywords: Karabakh, socio-economic, economic development, economic region, region, area, social welfare, labor resources.

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SOME ISSUES OF EFFICIENCY INCREASE IN OIL AND GAS RESOURCES USAGE IN AZERBAIJAN

Nasimi Ahmadov
Associate Professor, Ph.D. in Economics
Baku Business University, 88a H. Zardabi St., Baku AZ1122, Azerbaijan
ahmadov.nasimi@bbu.edu.az
ORCID ID: 0000-0001-8657-3544

Abstract
The oil factor has a significant impact on the macroeconomic stability and prosperity achieved in the Azerbaijani economy. At the same time, the fluctuating nature of oil prices on the world market, changes in production indicators lead to instability of the incomes obtained, and thus the formation of the GDP volume in the country cannot leave the sphere of influence of the oil sector, which constitutes the main part of the industry. The economic growth model of active investment in fixed capital, implemented at the expense of oil revenues during 2000-2014, faced limited financial opportunities with the sharp decline in oil prices on the world market since the end of 2014, which negatively affected the balance of payments and economic activity, the national currency was devalued twice, and financial and fiscal risks arose. All this indicates the necessity of transformation from a capital-based model to a productivity-efficiency-based growth model. In 2025, the country is expected to transition from an efficiency-based model to an innovation-based model. The article examines the current state of the oil and gas production industry, the profitability of capital investments in the oil and gas sector, analyzes the cost structure of oil and gas production, and makes a number of proposals.
Keywords: Azerbaijan, oil and gas production, oil refining, capital investments, operating depth, deduction percentage of light oil products

AZƏRBAYCANDA NEFT VƏ QAZ RESURSLARINDAN İSTİFADƏNİN SƏMƏRƏLİLİYİNİN YÜKSƏLDİLMƏSİNİN BƏZİ MƏSƏLƏLƏRİ

Nəsimi Əhmədov
Dosent, İqtisad üzrə fəlsəfə doktoru
Bakı Biznes Universiteti, 88a H. Zərdabi küç., Bakı AZ1122, Azərbaycan
ahmadov.nasimi@bbu.edu.az
ORCID ID: 0000-0001-8657-3544

Xülasə
Azərbaycan iqtisadiyyatında əldə edilmiş makroiqtisadi sabitlik və rifah üzərində neft amili mühüm təsirə malikdir. Eyni zamanda dünya bazarında neft qiymətlərinin tərəddüdlü xarakteri, hasilat göstəricilərinin dəyişməsi əldə edilən gəlirlərin qeyri-sabit olmasına səbəb olur və beləliklə də ölkədə ÜDM-in həcminin formalaşması sənayenin əsas hissəsini təşkil edən neft sektorunun təsir dairəsindən çıxa bilmir. 2000-2014-cü illər ərzində neft gəlirlərinin hesabına reallaşdırılmış aktiv şəkildə əsas kapitala investisiya qoyuluşu xarakterli iqtisadi artım modeli 2014-cü ilin sonlarından dünya bazarında neftin qiymətlərinin kəskin şəkildə ucuzlaşması ilə məhdud maliyyə imkanları ilə üzləşmiş, bu isə tədiyyə balansına, iqtisadi aktivliyə mənfi təsir etmiş, milli valyuta iki dəfə devalvasiyaya uğramış, maliyyə və fiskal risklər yaranmışdır. Bütün bunlar kapital əsaslı modeldən məhsuldarlıq-səmərəlilik əsaslı artım modelinə transformasiyanın zəruri olduğunu göstərir. 2025-ci ildə isə ölkənin səmərəlilik əsaslı modeldən innovasiya əsaslı modelə keçməsi nəzərdə tutulur. Məqalədə neft-qaz hasilatı

sənayesinin müasir vəziyyəti, Neft-qaz sektorunda kapital qoyuluşlarının gəlirliliyi araşdırılır, neft-qaz hasilatının istehsal xərclərinin strukturunun təhlil olunur və bir sıra təkliflər verilir.
Açar sözlər: Azərbaycan, neft və qaz hasilatı, neft emalı, kapital qoyuluşları, emal dərinliyi, açıq rəngli neft məhsullarının çıxım faizi.

GİRİŞ

Milli iqtisadiyyat və iqtisadiyyatın əsas sektorları üzrə Strateji yol Xəritələrində (SYX, 2023) orta və uzunmüddətli perspektivdə Azərbaycan iqtisadiyyatının inkişafına təsir edəcək qlobal meyllərdən biri kimi neft-qaz amili və qiymətləri göstərilir, həmçinin əldə edilmiş makroiqtisadi sabitlik və rifah üzərində neft amilinin mühüm təsirə malik olduğu qeyd olunur. Bununla yanaşı, dünya bazarında neft qiymətlərinin tərəddüdlü xarakteri, hasilat göstəricilərinin dəyişməsi əldə edilən gəlirlərin qeyri-sabit olmasına səbəb olur və beləliklə də ölkədə ÜDM-in həcminin formalaşması sənayenin əsas hissəsini təşkil edən neft sektorunun təsir dairəsindən çıxa bilmir. 2000-2014-cü illər ərzində neft gəlirlərinin hesabına reallaşdırılmış aktiv şəkildə əsas kapitala investisiya qoyuluşu xarakterli iqtisadi artım modeli 2014-cü ilin sonlarından dünya bazarında neftin qiymətlərinin kəskin şəkildə ucuzlaşması ilə məhdud maliyyə imkanları ilə üzləşmiş, bu isə tədiyyə balansına, iqtisadi aktivliyə mənfi təsir etmiş, milli valyuta iki dəfə devalvasiyaya uğramış, maliyyə və fiskal risklər yaranmışdır. Bütün bunlar kapital əsaslı modeldən məhsuldarlıq-səmərəlilik əsaslı artım modelinə transformasiyanın zəruri olduğunu göstərir. 2025-ci ildə isə ölkənin səmərəlilik əsaslı modeldən innovasiya əsaslı modelə keçməsi nəzərdə tutulur. Bu isə neft-qaz sərvətlərindən milli iqtisadiyyatın davamlı və inklüziv inkişafını təmin edəcək istiqamətdə səmərəli və optimal istifadə edilməsini tələb edir. Tədqiqatın məqsədi Azərbaycanda sənayenin davamlı inkişafında neft-qaz sərvətlərindən istifadənin səmərəliliyinin yüksəldilməsi istiqamətlərinin müəyyən edilməsindən ibarətdir.

MATERİAL VƏ METODLAR

Mineral-xammal sərvətlərinin iqtisadi qiymətləndirilməsinin metodoloji əsasları, təbii sərvətlərdən səmərəli istifadə problemləri xarici ölkə alimlərindən K.Q. Qofman, M.N. Loyter, S.Q. Strumilin, A.S. Astaxov, A.A.Mints, N.F.Reymers, N.Q. Feytelman, N.P. Fedorenko, S. El Serafi, A. Markandiya, M. Rubio del Mar, Fomenko, G.A., Fomenko, M.A., Loshadkin, K.A., D.De Ferranti, T.Qilfason, E.Limer və başqalarının əsərlərində öz əksini tapmışdır.

Azərbaycan iqtisadiyyatının inkişafında neft-qaz sərvətlərindən istifadənin ümumi inkişaf problemləri A.A. Nadirov, N.Ə. Nəbiyev, X.B. Yusifzadə, Q.Ə. Səfərov, T.N. Əliyev, M.C. Atakişiyev, B.S. Xıdırov, E.M. Hacızadə, A.Q. Qədimov, G.Z.Yüzbaşova və başqalarının əsərlərində tədqiq olunmuşdur. Lakin Azərbaycanda neft-qaz sərvətlərinin iqtisadi qiymətləndirilməsi məsələləri, neft-qaz sərvətlərindən səmərəli istifadə istiqamətləri kompleks şəkildə kifayət qədər öyrənilməmişdir.

Tədqiqat işi qruplaşdırma, elmi abstraksiya, informasiya, xətti reqressiya metodu, müqayisəli, analitik-statistik təhlil və digər üsullar əsasında yerinə yetirilmişdir.

NƏTİCƏLƏR

1. Neft-qaz hasilatı sənayesinin müasir vəziyyəti

Son dövrlərdə dünya bazarlarında neftin qiymətinin kəskin azalması və bir sıra region ölkələrinin milli valyutalarının ucuzlaşması kimi xarici amillər, 2020-ci ilin əvvəllərində koronavirus epidemiyasının bütün dünyaya yayılaraq pandemiyaya çevrilməsi şok effekti yaratmaqla, ölkənin makroiqtisadi göstəricilərinə təsir göstərməkdədir. Bu amillərin mənfi təsiri fonunda neft sektoru azalmağa doğru meyl etməklə, ÜDM-in real artımı əsasən qeyri-neft sektorunun hesabına baş verir.

Mənbə: Azstat, 2022 əsasında müəllif tərəfindən tərtib edilmişdir.

Ölkənin mədənçıxarma sənayesində ümumi məhsul buraxılışının 2010-cu ildə 96,8%-i, 2021-ci ildə 93,3%-i, yaradılmış əlavə dəyərin 2010-cu ildə 98,7%-i, 2021-cı ildə 96,7%-i xam neft və təbii

qaz hasilatının payına düşmüşdür. Azərbaycanın emal sənayesində ümumi məhsul buraxılışının 2010-cu ildə 37,6%-i, 2021-cı ildə 30,0%-i neft məhsullarının istehsalı sahəsində həyata keçirilmiş, əlavə dəyərin 2010-cu ildə 49,0%-i, 2021-ci ildə 34,5%-i bu sahədə yaradılmışdır.

Neft-qaz sektorunda kapital qoyuluşlarının gəlirliliyi

Xam neft və təbii qaz hasilatında əsas kapitala investsiyaların həcmi 2009-2016-cı illərdə əsasən xarici investisiyaların hesabına yüksəlmiş, daxili investisiyaların payı isə azalmışdır. Lakin 2017-2021-ci illərdə investsiyaların həcmi azalmışdır ki, bu da əsasən xarici investisiyaların azalması ilə bağlı olmuş, buna görə də daxili investisiyaların xüsusi çəkisi yüksəlmişdir. Ölkədə neft məhsullarının istehsalına yönəldilmiş investisiyalar isə 2011-2015-ci illərdə azalmağa doğru meyl etmiş, lakin 2016-2021-ci illərdə artım meyli göstərmiş, orta illik artım tempi 157% təşkil etmişdir. Neft emalı sənayesində 2005-2021-ci illərdə əsas kapitala yönəldilmiş investisiyaların, yalnız 2009-cu ildəki 0,2 mln manat xarici investisiya istisna olmaqla, hamısı daxili investisiyalardır. Kapital qoyuluşlarının gətirdiyi gəlir xam neft və təbii qaz hasilatında 2011-ci ildə qoyulan hər 1 manata görə 7,59 manat təşkil etdiyi halda, 2019-cu ildə 6,43 manat və 2020-ci ildə daha da azalaraq 3,07 manat olmuşdur.

Mənbə: Azstat, 2022 əsasında müəllif tərəfindən tərtib edilmişdir.

Neft-qaz hasilatının istehsal xərclərinin strukturunun təhlili

2010-2020-ci illər üzrə neft hasilatının istehsal xərclərinin strukturunun xətti reqressiya metodundan istifadə etməklə təhlili nəticəsində 1 ton neftin istehsal maya dəyərinin əsas vəsaitlərin amortizasiyası, mədən vergisi, nəqliyyat və nəqliyyat vasitələrinin istismarı və əsaslı təmir xərclərindən çox yüksək dərəcədə asılı olduğu müəyyən edilmişdir. Burada x_1 – əsas vəsaitlərin amortizasiyası; x_2 – mədən vergisi; x_3 – nəqliyyat və nəqliyyat vasitələrinin istismarı; x_4 – əsaslı təmir xərcləridir; Y – 1 ton neftin istehsal maya dəyəridir. Xətti reqressiya modelinin son variantı belədir: Y=109.98+0.0002939X1-0.0008418X2+0.0001419155X3+0.00001432X4; R^2 = 0,97-dir.

1 ton neftin istehsal xərcləri

X1- Əsas vəsaitlərin amortizasiyası

X2- Mədən vergisi

Regression Statistics	
Multiple F	0.894257423
R Square	0.799696339
Adjusted I	0.777440376
Standard E	7.248391166
Observati	11

ANOVA

	df	*SS*	*MS*	*F*	*gnificance F*
Regressio	1	1887.826048	1887.826	35.93178	0.000204
Residual	9	472.8525705	52.53917		
Total	10	2360.678618			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	31.67548008	11.67750385	2.712521	0.023899	5.259131	58.091829	5.2591311	58.0918291
X Variable	0.000576279	9.61377E-05	5.994312	0.000204	0.000359	0.0007938	0.0003588	0.00079376

X3- Nəqliyyat və nəqliyyat vasitələrinin istismarı

X4- Əsaslı təmir

Beləliklə, 2010-2020-ci illər üzrə verilmiş neft hasilatının istehsal xərcləri göstəriciləri əsasında hesablanmış modelin son variantı göstərir ki, əsas vəsaitlərin amortizasiyası xərclərinin min vahid artması 1 ton neftin istehsal maya dəyərinin 0,29 vahid artmasına, mədən vergisi xərclərinin min vahid artması 1 ton neftin istehsal maya dəyərinin 0,84 vahid azalmasına, nəqliyyat və nəqliyyat vasitələrinin istismarı xərclərinin min vahid artması 1 ton neftin istehsal maya dəyərinin 0,14 vahid artmasına, əsaslı təmir xərclərinin min vahid artması 1 ton neftin istehsal maya dəyərinin 0,01 vahid artmasına səbəb olur.

2010-2020-ci illər üzrə qaz hasilatının istehsal xərclərinin strukturunun xətti reqressiya metodundan istifadə etməklə təhlili nəticəsində 1000 kubmetr qazın istehsal maya dəyərinin əsas vəsaitlərə texniki xidmət və mühafizə xərclərindən yüksək dərəcədə asılı olduğu müəyyən edilmişdir. Burada x_1 – əsas vəsaitlərə texniki xidmət; x_2 – mühafizə xərcləridir; Y – 1000 kubmetr qazın istehsal maya dəyəridir. Xətti reqressiya modelinin son variantı belədir:

$Y=19.683016+0.000748*X1+0.003023*X2$; $R^2=0,97$-dir.

Beləliklə, 2010-2020-ci illər üzrə verilmiş təbii qaz hasilatının istehsal xərcləri göstəriciləri əsasında hesablanmış modelin son variantı göstərir ki, əsas vəsaitlərə texniki xidmət xərclərinin min vahid artması 1000 kubmetr qazın istehsal maya dəyərinin 0,75 vahid artmasına, mühafizə xərclərinin min vahid artması 1000 kubmetr qazın istehsal maya dəyərinin 3,02 vahid artmasına səbəb olur.

1000 kubmetr qazın istehsal xərcləri
x_1- əmək haqqı; x_2 – əsas vəsaitlərə texniki xidmət; x_3 – mühafizə; x_4 – digər xidmətlər üzrə xərclərdir

Açıq rəngli neft məhsullarının çıxım faizi 2005-ci ildə əvvəlki ilə nisbətən 2,2% azalaraq 54,4% təşkil etmiş, lakin 2006-cı ildən 2010-cu ilə qədər ilbəil artım meylinə malik olmaqla 17,5% yüksələrək 71,9%-ə çatmışdır. 2020-ci ildə açıq rəngli neft məhsullarının çıxım faizi 66,7%-ə yüksəlsə də, bu göstərici 2010-cu illə müqayisədə 5,2% aşağıdır.

Mənbə: ARDNŞ, 2009 – ARDNŞ, 2020 əsasında müəllif tərəfindən tərtib edilmişdir.

Xam neftin emalının səmərəlilik səviyyəsini əks etdirən ən mühüm göstəricilərdən biri də neftin emal dərinliyidir. Diaqram 3.5-dən göründüyü kimi, neftin emal dərinliyi 2014-cü ildə 93,2%-ə yüksəlsə də, 2016-cı ildə isə 89,5%-ə enmiş, lakin 2020-ci ildə 94,9%-ə çatmışdır ki, bu da 1995-2020-ci illərdə ən yüksək göstəricidir.

Mənbə: ARDNŞ, 2009 – ARDNŞ, 2020 əsasında müəllif tərəfindən tərtib edilmişdir.

Enerji Trilemma İndeksində Enerji təhlükəsizliyi subindeksinin "İdxaldan asılılıq" göstəricisində ümumi enerji istehlakında ölkənin xalis idxaldan asılılığı yüksək qiymət əldə etməyə imkan versə də, beynəlxalq enerji təchizatçılarının diversifikasiyası (Azərbaycan üzrə HHİ 2018-ci ildə - 4925, 2020-ci ildə -3348) asılılığın yüksək olduğunu göstərir və bu da gələcəkdə ölkənin idxaldan asılılıq göstəricisinə mənfi təsir edə bilər.
Emal kompleksində texnoloji qurğuların xammal ilə yüklənməsinə dair məlumatların əsasında (ARDNŞ, 2016; ARDNŞ, 2010, s.32,38; ARDNŞ, 2020) aparılan hesablamalar göstərir ki, texnoloji qurğuların proqnoza görə faktiki orta yüklənməsi 2010-cu ildə SOCAR üzrə 102,8%, o cümlədən H.Əliyev ad. BNEZ-də 104,9%, "Azərneftyağ" NEZ-də 100,7% təşkil etdiyi halda, 2016-cı ildə SOCAR üzrə 88,3%, o cümlədən BNEZ-də 92,9%, "Azərneftyağ" NEZ-də 82,4%, 2020-ci ildə isə SOCAR üzrə 101,7%, o cümlədən BNEZ-də 92,2%, "Azərneftyağ" NEZ-də 128,9% olmuşdur. Göründüyü kimi, 2010-2016-cı illərdə bu göstərici emal kompleksində 14,5, BNEZ-də 12,0, "Azərneftyağ" NEZ-də isə 18,3% bəndi aşağı düşmüşdür. 2020-ci ildə 2016-cı ilə nisbətən orta yüklənmə ümumi emal kompleksində 13,4, "Azərneftyağ" NEZ-də 46,5% bəndi yüksəlsə də, H.Əliyev ad. BNEZ-də 0,7 bəndi azalma ilə yenə də aşağı səviyyədə olmuşdur. Bu isə xam neftin emal potensialından istifadənin səmərəliliyini azaldır.
N.N. Klyuevin "ekoloji vergi"nin müəyyən edilmə metodundan istifadə etməklə ilk dəfə olaraq Azərbaycanın Abşeron və Şəki-Zaqatala iqtisadi rayonları üzrə ekoloji renta göstəriciləri müəllif tərəfindən hesablanmışdır:

$$N = \frac{E_T + E_F}{S} \times \frac{S_P}{S_F} \times \frac{S - S_V}{S} \times \frac{P_c}{P_R} \qquad (1)$$

Burada E_T və E_F - enerjinin texnoloji və fizioloji istehlakı; $E_F = K \times İ$ (K – əhalinin qidalanmasının

orta kaloriliyi, İ – əhalinin sayı); S - regionun ərazisi; S_P və S_F – əkin yerləri və meşələrlə tutulmuş torpaq sahələri; S_V - praktik olaraq mənimsənilməmiş, "xam" torpaqların və mühafizə edilən təbii ərazilərin sahəsi; P_c və P_R – ölkənin və regionun təbii landşaftlarının orta bioloji məhsuldarlığıdır. Ekoloji rentanın kəmiyyəti əsasən təbii neft rentası hesabına Azərbaycanda sənaye məhsulunun, məhsul buraxılışının, əmtəə dövriyyəsinin, investisiyaların əsas payına malik olan Abşeron regionu üzrə 37,1902, həmin göstəricilər üzrə çox aşağı xüsusi çəkiyə, lakin mühüm iqtisadi-ekoloji potensiala malik, zəngin meşə örtüyü ilə böyük həcmdə oksigen istehsal edən Şəki-Zaqatala regionu üzrə 0,4117-dir. Burada neftin regionlar üzrə istehlakı da nəzərə alınmışdır.

Daimi Gəlir Hipotezi fiskal qaydasına görə, qeyri-resurs ilkin büdcə balansı daha aşağı olmalıdır. 2019-cu ildə ölkədə qeyri-neft ilkin büdcə balansı 30,4% olmuşdur ki, bu da məqbul sayıla bilməz. Belə ki, dayanıqlı balans zaman keçdikcə Bird in Hand (BIH) fiskal qaydasında Daimi Gəlir Hipotezi (PIH) qaydası ilə müqayisədə daha yüksək olur. Bu onunla əlaqədardır ki, BIH qaydasına görə, aktivlər tədricən toplanır və onlar artdıqca hökumət sonrakı illərdə daha böyük kəsirə yol verə bilər. PIH qaydasına görə isə hökumət gələcək aktivlərin təminatı ilə borc götürməklə kəsirə yol verə bilər. Nəticədə hökumətin maliyyə aktivləri toplamaq imkanları az olur. Buna görə də ilk dövrlərdə Bird in Hand qaydasında dövlət xərcləri Daimi Gəlir Hipotezi qaydasında olduğundan daha aşağı olur. Beləliklə, Azərbaycanda qeyri-resurs ilkin büdcə balansı dayanıqlı səviyyədə olmaqla, tükənən təbii resursların qiymət dəyişkənliyindən asılılığı azaltmalı, protsikilliyi aradan qaldırmalıdır.

MÜZAKİRƏ VƏ SON NƏTİCƏ

Uzunmüddətli istismar dövrü keçmiş neft yataqlarının işlənilməsi təkmilləşdirilməli, ehtiyatları yenidən hesablanmalı, maddi, əmək, material ehtiyatlarından, əsas fondlardan istifadənin səmərəliliyi artırılmalı, əmək haqqı və amortizasiya xərcləri optimallaşdırılmalı, xammal itkilərinin qarşısı alınmalıdır. Neft məhsullarının maya dəyərində xam neftin əldə edilməsinə çəkilən xərclərin xüsusi çəkisi 85-90% təşkil etdiyinə görə, maya dəyərinin azaldılması ehtiyatlardan səmərəli istifadə etməyə imkan verəcəkdir. Lisenziya və konsessiya metodları ilə yerli şirkətlərin vergi güzəştləri edilməklə köhnə yataqlara cəlb edilməsi hasilat göstəricilərini yaxşılaşdıra bilər.

Neftin, xüsusilə naftenli karbohidrogenlərin Azərkimya İB-də istifadəsinin "H.Əliyev ad. Bakı" və "Azərneftyağ" NEZ-dən daha səmərəli olmasını nəzərə alsaq, emal zavodlarında avadanlıqların orta yüklənməsinin optimal həddinin müəyyən edilməsi zəruridir. Texnoloji proseslərin səviyyəsinin yüksəldilməsi ilə neft-qaz emalı və neft-kimya məhsullarının çeşidinin artırılması, keyfiyyətinin yüksəldilməsi və dünya standartlarına çatdırılması, təbii və səmt qazlarının emal səviyyəsinin yüksəldilməsi təmin ediləcəkdir.

Müəllif tərəfindən hesablanmış regional ekoloji renta göstəricisi davamlı inkişafın regional indikatoru kimi istifadə edilsin, bu göstərici təbii sərvətlərin iqtisadi qiymətləndirilməsində, ekoloji-iqtisadi səmərəliliyin müəyyən edilməsində, vergi münasibətlərinin təkmilləşdirilməsində də faydalı ola bilər. Beləliklə, təbii sərvətlərin renta yanaşması əsasında iqtisadi qiymətləndirilməsinə dair tədqiqatların daha geniş inkişaf etdirilməsi, yüksək iqtisadi faydalılığın təmin olunması ilə ekoloji mühitin mühafizəsi, davamlı inkişaf məqsədləri arasındakı dərin ziddiyyətin həll edilməsi mümkündür.

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İNNOVATIV KƏND TƏSƏRRÜFATI: REGIONLARIN TARAZLI İNKIŞAFI VƏ ƏRZAQ TƏHLÜKƏSIZLIYI

A.R. Elm və Təhsil Nazirliyinin

İqtisadiyyat institutu,

“Regional inkişaf və təbii sərvətlərdən

istifadə problemləri” şöbəsi,

a.e.i., i.ü.f.d., V.Z.Ramazanov

e mail: vilayet1980@yahooşcom

https://orcid.org/0000-0002-0615-2166

Xülasə: Məqalədə regionlar üzrə kənd təsərrüfatı və məhsul istehsalı məsələləri tədqiq edilir. Kənd təsərrüfatı ölkənin ərzaq təhlükəsizliyində, regionların inkişafında, əhalinin rifahının yüksəldilməsində və işsizliyin azaldılmasında həlledici rol oynamaqla yanaşı, sosial problemlərin həllinə, tarixi ənənələrin qorunmasına, ekoloji tarazlığın bərpasına və torpaqların eroziyadan mühafizəsinə xidmət edir.

İnnovativ texnikanın, aqrar elminin nailiyyətlərinin köməyi ilə torpağa, suya, məhsul istehsalına, istehsal dəyərinin azaldılmasına, ekoloji mühitin qorunmasına, təbii proseslərin pozulmasına səbəb olan amillərin aradan qaldırılması məsələlərinə baxılmışdır.. Son dövrlərdə yaranmış belə neqativ halların aradan qaldırılması, kəndlinin torpağa olan maddi marağının artırılması və dövlətin iqtisadi siyasətinin tərkib hissəsi olduğu üçün bunun yerinə yetirilməsi müvafiq təşkilatların iştirak yardımı ilə həll edilməlidir.

Açar sözlər: kənd təsərrüfatı, innovasiya, tarazlı inkişaf, ərzaq təhlükəsizliyi, kənd təsərrüfatı, səmərəli istifadə, istehsal həcmi

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Giriş/ Introduction

Ölkədə həyata keçirilən sosial-iqtisadi inkişaf siyasəti digər sahələrlə yanaşı, kənd təsərrüfatının da innovativ yanaşma ilə yenilənməsini və sahənin elmi əsaslarla strateji inkişaf istiqamətlərinin müəyyən olunmasını zəruri edir. Ümumilikdə kənd təsərrüfatı ölkənin ərzaq təhlükəsizliyinin təmin edilməsində, regionların sosial-iqtisadi inkişafının sürətləndirilməsində, əhalinin rifahının yüksəldilməsində və işsizliyin əhəmiyyətli dərəcədə azaldılmasında mühüm rol oynayır. Bundan əlavə, sahə sosial problemlərin həllinə, regionların tarixi adət və ənənələrinin qorunmasına, ekoloji tarazlığın bərpa olunmasına, torpaqların eroziyadan qorunmasına və sağlam ekoloji mühitin formalaşmasına da xidmət edir.

Kənd təsərrüfatı, kompleks bir sosial-iqtisadi sistem olaraq, dövlətin, əhalinin və sahibkarların maraqlarını nəzərə alır və sahədaxili və sahələrarası istehsal amilləri arasında qarşılıqlı aqrar münasibətləri formalaşdırır. Sahənin inkişafı ölkə iqtisadiyyatının sabitliyi, əhalinin ərzaq təminatı, emal sənayesinin xammal bazasının gücləndirilməsi və bütövlükdə siyasi müstəqillik və iqtisadi təhlükəsizliyin qorunması baxımından vacibdir.

İnnovativ kənd təsərrüfatı. Azərbaycanda ümumi kənd təsərrüfatına yararlı torpaq sahəsi təqribən 4,8 milyon hektardır ki, bu da ölkə ərazisinin 55-56%-ni təşkil edir. Bu torpaqların strukturuna daxil olan əsas kateqoriyalar aşağıdakılardır: təqribən 1,9 milyon hektar əkin sahələri, 2,7 milyon hektar çayır və otlaq sahələri, təxminən 200 min hektar bağ, üzüm və meyvə sahələri və 1,6 milyon hektar özəlləşdirilmiş pay torpaqları. Bu sahələrin düzgün idarə olunması kənd təsərrüfatının məhsuldarlığını və effektivliyini artırmaq baxımından əhəmiyyətlidir.

2024-cü il üzrə demoqrafik məlumatlara əsasən, ölkə əhalisinin sayı təxminən 10,2 milyon nəfər təşkil edir. Bu göstəricilərlə müqayisədə, adambaşına kənd təsərrüfatına yararlı torpaq sahəsi təqribən 0,47 hektar (4700 m²), əkin sahəsi isə 0,19 hektar (1900 m²) səviyyəsindədir. Bu nisbətlər regionlar üzrə dəyişiklik göstərə bilər və bu da torpaq resurslarının istifadəsində ərazi-səviyyəli yanaşmanın vacibliyini ortaya qoyur.

Əkin sahələrinin strukturunda əsas məhsullar taxıl, tərəvəz, kartof, meyvə və üzüm, texniki bitkilər (pambıq, şəkər çuğunduru) və yem bitkiləridir. Taxıl istehsalı xüsusilə diqqətçəkicidir. 2022-ci ildə 3,4 milyon ton taxıl istehsal olunmuş, bu rəqəm 2024-cü ildə hava şəraitindən və məhsuldarlıq göstəricilərindən asılı olaraq nisbətən dəyişmişdir.

Heyvandarlıq sahəsində də irəliləyişlər müşahidə olunur. Mal-qaranın sayı və ət, süd, yumurta istehsalı göstəricilərində davamlı artım meyilləri qeydə alınmışdır. 2023-cü ildə diri çəkidə ət istehsalı 560 min ton, süd istehsalı isə 2,3 milyon ton səviyyəsində olmuşdur. Yumurtanın illik istehsalı isə 1,7 milyard ədədə yaxınlaşmışdır.

Kənd təsərrüfatı bitkiləri üzrə 2023-cü ildə qarğıdalı da daxil olmaqla tarlalardan 3248,6 min ton və ya 2022-ci ilə nisbətən 2,8 faiz çox dənli və dənli paxlalı bitkilər, 1010,5 min ton (5,9 faiz az) kartof, 1825,6 min ton (0,1 faiz çox) tərəvəz, 438,2 min ton (6,6 faiz az) bostan məhsulları, 1261,3 min ton (0,7 faiz çox) meyvə və giləmeyvə, 224,5 min ton (5,6 faiz çox) üzüm, 1,1 min ton (12,3 faiz çox) yaşıl çay yarpağı, 29,3 min ton (0,2 faiz az) günəbaxan, 219,8 min ton (1,3 faiz az) şəkər çuğunduru, 6,3 min ton (24,9 faiz çox) tütün və 276,1 min ton (14,4 faiz az) pambıq yığılmışdır.

Heyvandarlıq üzrə 2023-cü ildə diri çəkidə 647,7 min ton ət, 2284,0 min ton süd, 2188,2 milyon ədəd yumurta, 15,1 min ton yun, 357,0 ton barama istehsal olunmuşdur. 2022-ci illə müqayisədə ət istehsalı 3,1 faiz, süd istehsalı 0,9 faiz, yumurta istehsalı 8,4 faiz, barama istehsalı 4,6 faiz artmış, yun istehsalı isə 3,9 faiz azalmışdır. 2022-ci illə müqayisədə kənd təsərrüfatının ümumi məhsulu 3,0 faiz, o cümlədən heyvandarlıq məhsulları istehsalı 3,2 faiz, bitkiçilik məhsulları istehsalı 2,7 faiz artmışdır.

Cədvəl 1

Əkinçilik sahəsində əsas növ məhsullarının istehsalı, min ton

İllər	Dənli və dənli paxlalılar	Pambıq	Tütün	Kartof	Tərəvəz	Bostan məhsulları
2011	2458.4	66.4	3.6	938.5	1214.8	478.0
2012	2802.2	57.0	4.3	968.5	1216.2	428.0
2013	2955.3	45.2	3.5	992.8	1236.3	429.8
2014	2383.3	41.0	2.9	819.3	1187.7	440.9
2015	2999.4	35.2	3.5	839.8	1275.3	484.5
2016	3065.1	89.4	3.6	902.4	1270.6	464.8

2017	2928.8	207.5	5.3	913.9	1405.6	438.1
2018	3309.2	233.6	6.3	898.9	1521.9	401.9
2019	3538.5	295.3	6.0	1004.2	1714.7	447.6
2020	3257.1	336.8	6.9	1037.6	1738.9	448.1
2021	3363.0	287.0	6.4	1062.0	1815.5	459.9
2022	3161.3	322.5	5.1	1074.3	1823.3	469.3
2023	3248.6	276.3	6.3	1010.5	1825.6	438.2

Mənbə: https://stat.gov.az məlumatlarına əsasən

Dənli və dənli paxlalıların istehsal həcmi 2011-ci ildə 2 458,4 min ton olduğu halda, 2023-cü ildə bu göstərici 3 248,6 min tona yüksəlmişdir. Bu, ümumilikdə **790,2 min ton və ya 32,1% artım** deməkdir. Dənli və dənli paxlalıların istehsalı 2019-cu ildə 3538.5 min tonla pik nöqtəyə çatmışdır. Ən aşağı istehsal isə 2014-ci ildə 2383.3 min ton olmuşdur. Orta illik istehsal 3036.2 min tondur. Bu məhsul qrupu ölkənin taxıl təhlükəsizliyinin təminində əsas rol oynayır.

Pambıqçılıq sahəsində də dinamik artım qeydə alınıb. 2011-ci ildə cəmi 66,4 min ton pambıq istehsal edildiyi halda, 2023-cü ildə bu göstərici 276,3 min tona çatmışdır. Ən aşağı istehsal isə 2015-ci ildə 35.2 min ton olmuşdur. Orta illik istehsal 176.4 min tondur. İstehsal 2020-ci ildə 336.8 min tonla ən yüksək səviyyəyə çatmışdır. Bu pambıqçılığın dövlət səviyyəsində dəstəklənməsinin birbaşa nəticəsidir. Sahəyə yönəldilən subsidiyalar, infrastrukturun inkişafı və ixrac yönümlü siyasət bu artımı şərtləndirən əsas amillərdir.

Tütün istehsalında da müsbət dinamika müşahidə olunur. 2011-ci ildə 3,6 min ton tütün istehsal olunduğu halda, 2023-cü ildə bu rəqəm 6,3 min tona çataraq **75% artım** nümayiş etdirmişdir. Tütün istehsalı nisbətən az dəyişiklik göstərsə də, 2017-ci ildən sonra artım müşahidə olunur. Ən yüksək göstərici 2020-ci ildə qeydə alınmışdır. Orta illik istehsal 4.9 min tondur. Tütünçülük əsasən regional iqtisadiyyatlarda, xüsusilə Şəki-Zaqatala zonasının inkişafında mühüm rol oynayır.

Kartof istehsalında isə artım **7,7%** təşkil etmişdir. 2011-ci ildə 938,5 min ton olan istehsal 2023-cü ildə 1 010,5 min tona çatmışdır. Kartof istehsalı ümumilikdə artmaqdadır və 2022-ci ildə 1074.3 min tonla ən yüksək səviyyəyə çatmışdır. Bu artım nisbətən zəif olsa da, sahənin stabilliyini göstərir. Orta illik istehsal 958.7 min tondur. Lakin məhsuldarlığın artırılması və saxlama infrastrukturunun yaxşılaşdırılması zəruridir.

Tərəvəzçilik sahəsində **sürətli və davamlı artım** müşahidə olunmuşdur. 2011-ci ildə 1 214,8 min ton olan istehsal 2023-cü ildə 1 825,6 min tona çatmışdır. Tərəvəz istehsalı davamlı olaraq artmış və 2023-cü ildə 1825.6 min ton səviyyəsinə çatmışdır. Bu, **50,2% artım** deməkdir. Orta illik istehsal 1480.5 min tondur. Tərəvəz məhsulları həm daxili tələbatı, həm də ixracı təmin edən əsas sahədir.

Bostan məhsulları üzrə isə geriləmə qeydə alınıb. 2011-ci ildə 478,0 min ton olan istehsal 2023-cü ildə 438,2 min tona düşmüşdür. Bostan məhsullarında isə dəyişikliklər nisbətən sabit olmuş, 2015-ci ildə 484.5 min tonla ən yüksək istehsal qeydə alınmışdır. Bu, **8,3% azalma** deməkdir. Orta illik istehsal 1480.5 min tondur. Məhsuldarlığın aşağı düşməsi və bazar tələbinin zəifləməsi bu sahədə dəstək siyasətinin aktuallığını artırır.

Kənd təsərrüfatı sahəsinin inkişaf etdirilməsi regionların iqtisadi potensialının genişlənməsi, yeni iş yerlərinin açılması, ərzaq təhlükəsizliyinin təmin olunması və əhalinin rifahının yaxşılaşdırılmasında xüsusi rol oynayır. Bu məqsədlə kənd təsərrüfatının səmərəli inkişaf istiqamətləri və müvafiq tədbirlərin planlaşdırılması zəruridir.

Regionlar üzrə kənd təsərrüfatının əhəmiyyəti və inkişaf istiqamətləri

Region	Ümumi məhsul buraxılışında kənd təsərrüfatının payı (%)	İnkişaf imkanları
Mərkəzi Aran	41.3	Yüksək suvarma potensialı
Qarabağ	30.5	Ərzaq istehsalında artım
Şəki-Zaqatala	38.9	Meyvəçilik və fındıqçılıq
Lənkəran-Astara	42.7	Sitrus meyvələri və çayçılıq
Quba-Xaçmaz	35.6	Bağçılıq və tərəvəzçilik
Mil-Muğan	39.8	Taxılçılıq və pambıqçılıq
Abşeron-Xızı	14.7	İstixana təsərrüfatları

Mənbə: https://stat.gov.az məlumatlarına əsasən hazırlanmışdır

Mərkəzi Aran (41.3%) regionu ölkənin ən iri suvarma sistemlərinə malikdir və bu da onu kənd təsərrüfatı üçün strateji əraziyə çevirir. Yüksək suvarma potensialı pambıqçılıq, tərəvəzçilik və bostançılıq üçün münbit şərait yaradır. Burada aqrar sənayenin inkişafı üçün infrastruktur və suvarma sistemlərinin daha da təkmilləşdirilməsi məqsədəuyğundur.

İşğaldan azad olunmuş Qarabağ(30.5%) regionu kənd təsərrüfatı üçün yeni inkişaf mərhələsindədir. Ərzaq istehsalında artım imkanları genişdir. Torpaqların bərpası və meliorativ tədbirlərlə bərabər burada aqrar sahədə investorlar üçün xüsusi güzəştlər faydalı olacaq.

Şəki-Zaqatala (38.9%) regionu meyvəçilik və fındıqçılıq üzrə ixtisaslaşıb. Qlobal bazarda yüksək tələbat olan fındıq və alma məhsullarının ixrac potensialı böyükdür. Lakin texnologiya və emal sahəsində modernizasiya ehtiyacı mövcuddur. Kooperativ təsərrüfatların yaradılması ilə ixrac imkanları artırıla bilər.

Lənkəran-Astara(42.7%)regionu rütubətli subtropik iqlimi sitrus meyvələri, çayçılıq və tərəvəzçilik üçün əlverişlidir. İstehsal olunan çay və sitrus meyvələri ölkənin daxili bazarında böyük rol oynamaqla yanaşı, ixrac üçün də böyük potensial yaradır. Çayçılıq sektorunun bərpası və müasir texnologiyaların tətbiqi zəruridir.

Quba-Xaçmaz(35.6%) region əsasən bağçılıq və tərəvəzçilik üzrə ixtisaslaşan regiondur. Quba almaları və digər meyvələr ölkə daxilində və xaricdə tanınır. Bu regionda soyuducu anbarların və logistika imkanlarının genişləndirilməsi məhsul itkilərini azalda və ixrac həcmini artıra bilər.

Mil-Muğan(39.8%) regionunda taxılçılıq və pambıqçılıq əsas sahələrdir. Su təminatı və düzəngah əraziləri ilə bu sahələrin inkişafı üçün genes imkanlar vardır. Ənənəvi kənd təsərrüfatı strukturunun yeni texnologiyalarla təchiz olunması vacibdir.

Abşeron-Xızı(14.7%) region paytaxtın yaxınlığında yerləşməsinə baxmayaraq kənd təsərrüfatında payı nisbətən azdır. Lakin istixana təsərrüfatlarının inkişafı, xüsusilə tərəvəzçilik və gülçülük sahəsində böyük potensial var. Burada müasir istixanaların genişləndirilməsi və enerji səmərəliliyi əsas diqqət mərkəzində olmalıdır.

Aparılan təhlillər göstərir ki, kənd təsərrüfatının inkişaf etdirilməsi regionların tarazlı sosial-iqtisadi inkişafının mühüm istiqamətidir. Xüsusilə Aran bölgəsində, Lənkəran-Astara və Şəki-Zaqatala iqtisadi rayonlarında kənd təsərrüfatının potensialı yüksəkdir və bu resursların düzgün istifadəsi regionların iqtisadi sabitliyini və mayhalinin rifah səviyyəsini əhəmiyyətli dərəcədə yaxşılaşdıra bilər. İnnovativ

texnologiyaların tətbiqi, investisiya dəstəyi və ixrac yönümlü istehsalın inkişaf etdirilməsi kənd təsərrüfatının səmərəliliyini daha da artıracaqdır.

Cədvəl 2

Əsas kapitala yönəldilmiş investisiya, mln. manat

İllər	**2015**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
Cami	15957,0	17430,3	17244,9	18539.5	17226.1	16815.5	17878.2	21310.7	21295.8
kənd təsərrüfati, meşə təsərrüfaı və balıqçılıq, mln manatla	355.4	617.8	764.4	769.5	520.6	341.9	408.0	578.3	563.4
Cəmi, faizlə	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100
kənd təsərrüfati, meşə təsərrüfaı və balıqçılıq, faizlə	2.2	3.5	4.4	4.2	3.0	2.0	2.3	2.7	2.0

Mənbə: https://stat.gov.az məlumatlarına əsasən müəllif tərəfindən hazırlanıb

Əsas kapitala yönəldilmiş investisiya kənd təsərrüfati, meşə təsərrüfaı və balıqçılıq təsərrüfatı üzrə 2015-ci ildə 2.2 faizini 355.4mln manat, 2018-ci ildə 4.4faizini 764.4mln manat, 2020-ci ildə 3.0 faizini 520.6 mln. manat, 2023-cü ildə 2.7 faizini 578.3mln. manat təşkil etmişdir. Kənd təsərrüfati, meşə təsərrüfaı və balıqçılıq təsərrüfatı üzrə əsas kapitala yönəldilmiş investisiya 2015-ci ilə nisbətdə 33faiz artaraq 2023-cü ildə 21310.7mln. manat təşkil etmişdir. 2024-cü ildə əsas kapitala 21295.8 milyon manat məbləğində, yaxud 2023-cü illə müqayisədə 0,7 faiz az investisiya yönəldilmişdir.

Qrafik 1

Kənd təsərrüfati, meşə təsərrüfaı və balıqçılıq təsərrüfatlarına yönəldilən investisiya, mln.man

Mənbə: https://stat.gov.az məlumatlarına əsasən müəllif tərəfindən hazırlanıb.

2015–2024-cü illərdə kənd təsərrüfatı, meşə təsərrüfatı və balıqçılığa yönəldilən investisiyaların dinamikası dalğavari olmuşdur. 2015-ci ildə investisiya həcmi **355,4 mln. manat**, 2016-cı ildə isə **325,1 mln. manat** olmuş və əvvəlki ilə nisbətən **8,5% azalmışdır**. 2017-ci ildə kəskin artım müşahidə olunmuş, göstərici **617,8 mln. manata** yüksələrək əvvəlki ilə görə **90% artım** qeydə alınmışdır. Bu artım tendensiyası 2018-ci ildə də davam etmiş, investisiya **764,4 mln. manata** çataraq **23,7% artmışdır**. 2019-cu ildə isə **769,5 mln. manatla** ən yüksək səviyyə qeydə alınmışdır (2018-lə müqayisədə cəmi **0,7% artım).**

2020-ci ildən etibarən eniş başlanmışdır: həmin il göstərici **520,6 mln. manat** təşkil etmiş və əvvəlki ilə nisbətən **32,3% azalma** qeydə alınmışdır. 2021-ci ildə isə ən aşağı səviyyə müşahidə olunmuşdur – **341,9 mln. manat**, yəni 2020-ci ilə görə **34,3% azalma** olmuşdur. 2022-ci ildə bərpa mərhələsi başlamış, investisiyalar **408 mln. manata** çataraq əvvəlki ilə görə **19,3% artmışdır**. 2023-cü ildə artım daha da sürətlənmiş və **578,3 mln. manat** təşkil etmişdir ki, bu da 2022-ci ilə nisbətən **41,8% artım** deməkdir. 2024-cü ildə isə cüzi geriləmə müşahidə olunmuş, investisiyalar **563,4 mln. manata** enərək əvvəlki ilə görə **2,6% azalmışdır**.

Təhlildən aydın olur ki, 2015-ci ildən 2023-cü ilə qədər investisiyalar **3,6 dəfə artmışdır.** Lakin 2024-cü ildəki azalma sektorda sabit maliyyələşmənin tam təmin olunmadığını göstərir. Bu isə gələcəkdə kənd

təsərrüfatı sektorunun inkişafı üçün **davamlı və balanslı dövlət investisiya siyasətinin vacibliyini** ön plana çıxarır.

Cədvəl 3

Kənd təsərrüfatı müəsssisələrində istehsal olunan 1 sentner məhsulların maya dəyəri, manatla

		2003	2019	2020	2021	2022	2023	2024
Dənli bitkilər		7.03	15.25	16.37	16.31	18.69	19.29	16.65
Xam pambıq		21.08	52.78	50.39	61.86	73.10	79.04	62.73
Şəkər çuğunduru (emal üçün)		1.92	2.94	2.69	2.82	3.86	3.70	3.93
Tütün		21.67	55.98	103.99	86.71	100.25	79.16	105.23
Kartof		12.44	24.82	14.06	13.43	21.39	21.58	23.01
Tərəvəz (açıq torpaqlarda)		7.04	13.01	19.45	16.65	20.60	22.69	13.10
Bostan mahsulları		5.33	9.12	10.38	10.71	10.81	16.09	13.54
Meyvə və gilomeyvə		5.23	41.18	49.78	36.31	48.17	62.41	57.54
Üzüm		15.51	41.07	46.29	49.41	52.68	54.57	65.33
Yaşll çay yarpağı		21.86	185.14	183.17	73.61	97.29	95.16	117.23
Çəki artımlı	iri buynuzlu mal-qara	126.28	353.48	348.17	422.41	438.07	442.58	415.72
	qoyun və keçi	81.35	331.79	333.44	301.44	343.42	348.77	357.99
	donuz	168.57	295.24	302.01	301.27	384.12	600.71	271.11
	Quş	134.91	233.70	216.88	279.18	324.05	399.81	495.47
Süd		20.47	45.88	31.87	40.29	47.59	52.07	51.03
Yumurta*(min ədəd)		44.56	131.70	117.76	143.22	99.84	102.79	90.89
Yun		51.10	98.47	101.79	111.57	98.74	114.97	121.71

Mənbə: https://stat.gov.az məlumatlarına əsasən müəllif tərəfindən hazırlanıb

Statistik materiallar göstərir ki, kənd təsərrüfatında məhsul istehsalına çəkilən xərclərin strukturunda material xərclərinin xüsusi çəkisi 2023-cü ildə 2019-cu illə müqayisədə 10-15%, əsas vəsaitlərin amortizasiya xərcləri 5,0% artmışdır. Bu xərclər içərisində toxum və əkmələr 2,0 dəfə, mineral gübrələr 3,0 dəfə, yanacaq 3,0 dəfə, kənar təşkilatlar tərəfindən göstərilən xidmətlər – 3,0 dəfə artmışdır.

Təhlil göstərir ki, kənd təsərrüfatı sahələrində istehsal olunan hər 100kq məhsulun maya dəyərində artımlar olmuşdur. Bu artıma səbəb olaraq iqlim dəyişilməsini, dərman və gübrə pereparatlarının qiymətinin artması, istehsalın daha dərindən aparılması, infilyasiya kimi amilləri göstərmək olar. Qeyd etməliyəm ki, bu artım xam pambıqda 2019-cu ildə 52.78manat olmuşdursa, 2023-cü ildə 79.04 manata

bərabər olmuşdur. Yaşıl çay yarpaqlarında isə əksinə olaraq hər sentnerə maya dəyərinin aşağı düşdüyü müşahidə olunur, belə ki, 2019-cu ildə 185.14manat idisə, 2021-ci ildə 73.61manat, 2023-cü ildə isə 95.16manat təşkil etmişdir. Kartof məhsulunun maya dəyəridə 2019-cu ilə nisbətdə 1 sentnerə 3.24manat azalmışdır. Çəki artımlı iri buynuzlu mal-qara üzrə 100kq məhsul istehsalında 2019-cu ilə nisbətdə maya dəyəri 353.48manat idisə 2024-cü ildə isə 415.72 manata çatmışdır.

Yumurta istehsalında isə hər 1000ədəd yumurtanın maya dəyəri 2019-cu ildə 131.7manat idisə 2024-cü ildə isə 90.89manat təşkil etmişdir. Quşçuluq sahəsinin inkişafına verilən dəstək yumurta istehsalının maya dəyərinin aşağı düşməsinə səbəb olmuşdur. Lakin quş ətində maya dəyərinin azalması müşahidə olunmur əksinə 2019-cu ildə hər sentnerin maya dəyəri 233.7manat idisə 2024-cü ildə 495.47 manat olmuşdur. Təhlildən aydın olur ki, ümumilikdə ət məhsullarının istehsalında maya dəyərinin 2019-cu ilə nisbətdə 30-60faiz artmışdır.

2023-cü ildə ölkədə 123,0 milyard manatlıq və ya əvvəlki illə müqayisədə 1,1 faiz çox ümumi daxili məhsul istehsal olunmuşdur.

İqtisadiyyatın qeyri neft-qaz sektorunda əlavə dəyər 3,7 faiz artmışdır. ÜDM istehsalının 5,5 faizi kənd təsərrüfatı, meşə təsərrüfatı və balıqçılıq sahələrin payına düşmüş, əhalinin hər nəfərinə düşən ÜDM 12114,5 manata bərabər olmuşdur.

Gəncə-Daşkəsən iqtisadi rayonun ümumi məhsulunun 42,6%-ni kənd təsərrüfatı təşkil edir. Ölkə üzrə istehsal edilən taxılın 9,0%-i, tərəvəzin 20,4%-i, kartofun 55,7%-i, meyvənin 15,0%-i, ət istehsalının 14,2%-i, qoyunçuluğun 20,0%-i bu regionun payına düşür. Ümumilikdə ölkə üzrə kənd təsərrüfatı məhsulunun 14,0%-i burada istehsal edilir. Regionun kompleks inkişafı üçün geniş və əlverişli nəqliyyat sistemi vardır.

Şəki-Zaqatala iqtisadi rayonunda istehsal olunan ümumi məhsulun 47,6%-i kənd təsərrüfatına məxsusdur. Ölkədə istehsal edilən tütünün 75,0%-i, baramanın 35,0%-i, taxılın 12,2%-i, ət istehsalının 13,2%-i, tərəvəzin 27,1%-i bu regionun payına düşür. Yerli kənd təsərrüfatının emalı əsasında inkişaf etmiş sənaye məhsulları istehsalı rayonun ümumi sənaye məhsulunun 95,0%-ni verir. Geniş nəqliyyat əlaqələrinə malikdir.

Lənkəran-Astara iqtisadi rayonunda istehsal edilən ümumi məhsulun 50,1%-ni kənd təsərrüfatının payına düşür. Hazırda respublikada istehsal edilən çay yarpağının 99,0%-i, tərəvəzin 23,2%-i, taxılın 12,2%-i, kartofun 13,0%-i, üzümün 13,0%-i, meyvənin 10,1%-i bu rayonda cəmlənmişdir. Geniş su və quru nəqliyyat imkanlarına malikdir.

Quba-Xaçmaz iqtisadi rayonunda istehsal edilən ümumi məhsulun 35,0%-ni kənd təsərrüfatı təşkil edir. Respublikada istehsal edilən tərəvəzin 20,0%-i, kartofun 6,9%-i, meyvənin 28,5%-i bu regionun payına düşür. Rayonun əlverişli geniş nəqliyyat əlaqələri vardır. Onun ərazisindən keçən dəmir yolu, telekommunikasiya xətləri, magistral neft, qaz və su kəmərləri regionun kompleks inkişafı üçün böyük mənbədir.

Mərkəzi-Aran iqtisadi rayonunda istehsal edilən ümumi məhsulun 35,8%-ni kənd təsərrüfatı təşkil edir. Respublikada istehsal edilən taxılın 42,1%-i, pambığın 89,7%-i, tərəvəzin 20,8%-i, bostançılıq məhsullarının 62,1%-i, meyvənin 27,1%-i, üzümün 21,1%-i, süd istehsalının 37,6%-i, bu regionun payına düşür. Geniş nəqliyyat əlaqələri vardır.

Naxçıvan iqtisadi rayonunda istehsal olunan ümumi məhsulunun 17,0%-i kənd təsərrüfatının payına düşür. Əsas təsərrüfat sahəsi taxılçılıqdır. Respublikada istehsal edilən üzümün 16,5%-i, meyvənin 6,0%-i, heyvandarlıq məhsullarının 5,0%-i, qoyunçuluğun 7,0%-i bu regionun payına düşür.

Göründüyü kimi regionlar kifayət qədər istehsal potensialına malikdirlər və onların tarazlı inkişafının təmin olunması üçün bütün imkanlar mövcuddur və regionların bir neçəsini birləşdirən güclü istehsal sahəsinə və rəqabətqabiliyyətli məhsul istehsal etməyə qadir olan iri klasterlərin yaradılması imkanları

vardır. Lakin bu prosesin aparılmasını çətinləşdirən ən mühüm amil respublikada kənd təsərrüfatı istehsalında xırda kəndli-ailə sahibkarlığının yüksək xüsusi çəkiyə malik olmasıdır. Belə ki, hazırda respublikada kənd təsərrüfatının bütün kateqoriyaları üzrə ümumi məhsulunda fərdi ailə-kəndli və ev təsərrüfatlarının payı 95%-i təşkil edir.

Cədvəl 4

Fərdi sahibkar təsərrüfatlarında məhsul satışının rentabelliyi, faizlə

	2015	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
Dənli bitkilər	46.6	83.4	76.8	80.2	49,4	45.5	47.5	35.4	37,6
Çəltik	-	181.8	360,0	-	-	-	23.6	-	-
Xam pambıq	5.6	31,0	52,3	55.0	47,0	66.8	67.8	73.0	66,3
Şəkər çuğunduru (emal üçün)	184.3	31,7	-	19.6	-	-	-	-	-
Tütün	6.1	150,0	97,2	91.7	59,4	64.2	20.8	58.6	59,6
Yaşıl çay yarpağı	-	-	-	-	-	-	-	-	-
Kartof	61.0	32,8	58,2	31.9	53,0	37.2	52.8	20.1	42,4
Tərəvəz (açıq torpaqda)	109.1	116,2	109,6	124.1	99,8	102.5	92.6	48.7	93,4
Bostan məhsulları	56.5	44,7	54.7	49.9	48,7	60.7	66.7	76.4	66,5
Meyvə və giləmeyvə	108.5	185,8	116,9	213.7	182,8	92.6	97.3	120.2	104,7
Üzüm	-	42,3	26,4	25.5	18,9	-	-	-	-
Bitkiçilik məhsulları üzrə	39.3	49,9	36,6	38.0	30,7	37.8	41.0	42.8	38,3
İri-buynuzlu mal-qara	33.9	54,5	61,1	57.9	68,2	55.0	56.4	21.6	17,7
Qoyun və keçi	44.0	48,6	67,5	53.0	50,8	46.7	50.8	55.3	45,5
Donuz	-	-	-	-	-	-	-	-	-
Quş	42.6	47,0	43,5	31.1	27,3	85.3	14.6	-	11,5
Süd və süd məhsulları	52.3	53,4	57,6	55.1	69,4	52.2	48.0	44.5	38,0
Yun	43.2	38,4	40,0	29.1	29,2	39.0	31.7	30.5	26,8
Yumurta, min ədəd	71.9	59,6	57,8	55.2	19,8	2.3	15.6	20.8	20,9
Heyvandarlıq məhsulları üzrə	42.4	51,9	61,6	50.8	59,6	42.7	35.3	23.6	22,5

Mənbə: https://stat.gov.az məlumatlarına əsasən

İllər üzrə Fərdi sahibkar təsərrüfatlarında Bitkiçilik məhsullarının satışı üzrə rentabellik 2015-ci ildə 39.3 faiz təşkil etmişdirsə, 2020-ci ildə 9.4vahid azalaraq 30.7faiz, 2024-cü ildə isə 2015-ci ilə nisbətdə rentabellik artaraq 38.3 faiz təşkil etmişdir. Birkiçilik məhsulları üzrə ən çox rentabellik meyvə və

giləmeyvə məhsulları üzrə (120.2faiz) formalaşmışdır. Buna səbəb mülayim iqlim və məhsuldar torpaq fonunun olmasını göstərə bilərik.

Heyvandarlıq məhsullarının satışı üzrə rentabellik isə 2015-ci ildə 42.4faiz təçkil edirdisə 2018-ci ildə 19.2 vahid artaraq 61.6faizə çatmişdir, lakin bu rəqəm 2024-cü ildə 2015-ci ilə nisbətdə 19.9vahid azalaraq 22.5faiz təşkil etmişdir. Buna səbəb kimi otlaq sahələrinin azalmasını, yem məhsullarının dəyərinin qalxmasını göstərmək olar.

Son illərdə dövlət tərəfindən fərdi sahibkarlığın və kənd təsərrüfatının inkişafı üçün mühüm addımlar atılmışdır. İnzibati maneələrin aradan qaldırılması, qeydiyyat proseslərinin "tək pəncərə" prinsipi əsasında sadələşdirilməsi, maliyyə resurslarına çıxış imkanlarının genişləndirilməsi və sahibkarların hüquqlarının müdafiəsi bu sahədə atılan əsas tədbirlərdəndir. Bununla yanaşı, kənd təsərrüfatı üçün enerji daşıyıcıları, gübrə, texnika və nəqliyyat xərclərinin dövlət tərəfindən tənzimlənməsi xüsusi əhəmiyyət daşıyır. Sahibkarlığın inkişafı və rəqabət mühitinin gücləndirilməsi məqsədilə respublika səviyyəsində maliyyə fondlarının, kooperativlərin, zəmanət mexanizmlərinin və ixtisaslı kadr hazırlığı mərkəzlərinin yaradılması vacib hesab olunur. Aqrar siyasətdə həyata keçirilən dəyişikliklər regionların sosial-iqtisadi inkişafına da təsir göstərmişdir. Lakin qeyri-neft sektorunun zəif inkişafı, infrastruktur çatışmazlıqları, istehsalın rəqabət qabiliyyətinin aşağı səviyyədə qalması, regionlarda balanslı inkişafın təmin olunmaması hələ də ciddi problemlər kimi qalmaqdadır.

Aparılan təhlil göstərir ki, respublika regionlarında kənd təsərrüfatının inkişafı və prioritet sahələrin üstün inkişafı üçün kifayət qədər geniş imkanlar və zəngin potensial mövcuddur. Lakin məlumdur ki, regionların istehsal potensialı bir-birindən fərqlənir və onlarda mövcud olan bir sıra çətinliklər tarazlı inkişafı təmin etməkdə maneələr yaradır

Kənd təsərrüfatı sahəsində əldə olunan uğurlara baxmayaraq, bir sıra sistemli problemlər və çağırışlar mövcuddur:
1. İqlim dəyişiklikləri – Su resurslarının azalması, torpaq eroziyası və təbii fəlakətlər məhsuldarlığa mənfi təsir göstərir.
2. Texniki infrastrukturun çatışmazlığı – Suvarma sistemləri, yollar, anbarlar və emal müəssisələrinin yetərsizliyi məhsulun itkilərlə bazara çatmasına səbəb olur.
3. Fermer təhsili və maarifləndirmə çatışmazlığı – Müasir texnologiyaların tətbiqi üçün zəruri olan bilik və bacarıqların əksikliyi.
4. Kredit və maliyyə resurslarına çıxışın məhdudluğu – Xüsusilə kiçik və orta fermer təsərrüfatları üçün bu sahə ciddi maneədir.
5. Torpaq sahələrinin kiçik və pərakəndə olması– Səmərəli əkin aparılmasına və texnologiyanın tətbiqinə mane olur.
Bu problemlərin aradan qaldırılması üçün dövlət, özəl sektor və akademik qurumlar arasında əməkdaşlıq vacibdir.

Nəticə/Conclusion

Azərbaycan regionlarında kənd təsərrüfatının əhəmiyyətini artırmaq və tarazlı inkişafı təmin etmək üçün aşağıdakı təkliflər irəli sürülə bilər:

Kooperativlərin yaradılması– Kiçik təsərrüfatlar arasında əməkdaşlıq yaradılaraq resursların birgə istifadəsi təmin olunmalıdır.

Kənd yerlərində yaşayan əhalinin böyük hissəsi kiçik təsərrüfatlar vasitəsilə həm özünü təmin edir, həm də bazar üçün məhsul istehsal edir. Lakin müasir dövrdə bazar tələblərinin sərtləşməsi kiçik təsərrüfatların təkbaşına səmərəli işləməsini getdikcə məhdudlaşdırır. Bu vəziyyət ölkənin məşğulluq statistikasında da açıq görünür: ümumi məşğulluq 2015-ci ildə 4671,6 min nəfər olduğu halda 2024-cü ildə 5029,8 min nəfərə yüksələrək 358,2 min nəfər və ya təxminən 7,7% artmışdır; kənd təsərrüfatı, meşə təsərrüfatı və balıqçılıqda çalışanların sayı isə 2015-ci ildə 1698,4 min nəfərdən 2024-cü ildə

1782,3 min nəfərə qalxmış, artım cəmi 83,9 min nəfər və ya təxminən 4,9% olmuşdur. Yəni kənd təsərrüfatında məşğulluq artsa da, artım tempi ümumi iqtisadi artımdan geri qalır və bu, sektorun, xüsusən də kiçik təsərrüfat modelinin rəqabət gücünün zəiflədiyini göstərir. Pay göstəricisi də bunu təsdiqləyir: kənd təsərrüfatının ümumi məşğulluqdakı çəkisi 2015-ci ildə 36,4% ikən 2024-cü ildə 35,4%-ə düşmüş, yəni 1,0 faiz-bəndi azalmışdır; bu isə ölkədə sənaye, xidmətlər, ticarət, tikinti və İKT kimi sahələrin daha sürətlə inkişaf etdiyini və kənd təsərrüfatının iqtisadi strukturda nisbi rol itirdiyini bildirir. Məhz bu fonda kooperativlərin yaradılması kiçik təsərrüfatların inkişafı üçün ən əsaslı və real mexanizm kimi çıxış edir: kooperativlər fermerlər arasında əməkdaşlıq yaradaraq bahalı texnika, suvarma sistemləri, gübrə və toxum alışını, soyuducu-anbar və logistika xidmətlərini birgə təşkil etməyə imkan verir, nəticədə vahid məhsulun maya dəyəri azalır və gəlirlilik yüksəlir; istehsal həcmləri birləşdiyi üçün bazara toplu çıxış yaranır, vasitəçi asılılığı azalır və daha yüksək satış qiyməti əldə edilir; risklər bir neçə təsərrüfat arasında bölüşdürüldüyü üçün 2019–2020 kimi böhranların sektor üzrə məşğulluğa vurduğu zərbə yumşalır və dayanıqlılıq artır.

İnnovativ texnologiyaların tətbiqi – Dronlar, sensorlar, GPS əsaslı idarəetmə sistemləri və aqrotexniki proqramlar kənd təsərrüfatının effektivliyini artıracaq.

İnnovativ texnologiyaların kənd təsərrüfatında tətbiqi dəqiq bir rəqəm kimi yox, şəraitdən asılı dəyişən diapazon kimi göstərir və texnologiyanın düzgün tətbiqindən birbaşa asılıdır. Praktik və elmi icmalların ümumi nəticəsinə görə bu alətlər paket halında, yəni birlikdə tətbiq olunanda ən real və sabit məhsul artımı adətən 10–20% aralığında olur, zəif idarə olunan, suvarması qeyri-optimal və məhsuldarlığı aşağı olan təsərrüfatlarda isə düzgün qurulmuş "dəqiq kənd təsərrüfatı" sistemi ilə artım 20%-ə qədər yüksələ bilir. GPS əsaslı dəqiq səpin, dərmanlama və biçin sistemləri sahədə üst-üstə düşmə və boş zolaq itkisini azaltdığı üçün məhsuldarlığa təxminən 5–10% əlavə verir; sensor və proqramlarla suvarma-gübrələmə real vaxt göstəricilərinə əsaslandıqda rütubət və qida balansı optimallaşır, bu isə ən çox təsir edən amil kimi 10–20% məhsul artımı yarada bilir; dron monitorinqi bitki stressi, xəstəlik və alaq problemini erkən aşkarlayıb müdaxiləni yalnız problemli zonalara yönəltdiyi üçün sahədən asılı olaraq 5–15% aralığında artım təmin edir; dəyişən norma ilə toxum, gübrə və pestisid tətbiqi torpağın fərqli hissələrinə uyğun doza verdiyinə görə həm israfı azaldır, həm də zəif zonaları bərpa edir və nəticədə təxminən 10–15% əlavə məhsul qazanmaq mümkün olur. Beləliklə, bu texnologiyalar birlikdə işlədikdə kənd təsərrüfatında məhsul istehsalının real artım potensialı orta hesabla 10–20%, zəif başlanğıc şəraitində isə 20%-ə qədər qiymətləndirilə bilər.

Su ehtiyatlarının dayanıqlı idarə olunması– Suvarma texnologiyalarının modernləşdirilməsi və su itkilərinin qarşısının alınması əhəmiyyətlidir.

Su ehtiyatlarının dayanıqlı idarə olunması və suvarma texnologiyalarının modernləşdirilməsi təklifi Azərbaycanın son illərdə üzləşdiyi konkret su statistikası ilə birbaşa əsaslanır. Rəsmi və beynəlxalq mənbələr göstərir ki, ölkənin şirin su resursları uzunmüddətli azalma trendindədir: 1980–2023 dövründə ümumi su ehtiyatları təxminən **26,4% azalaraq 26,2 milyard kubmetrə** enib, transsərhəd çaylarla gələn sular isə daha kəskin – **35,9% azalıb və 13,2 milyard kubmetrə** düşüb. Bu azalma xüsusilə 2022-ci ildə kəskin görünür: yerüstü su ehtiyatlarının həcmi əvvəlki onilliklərdəki təxminən **30 milyard kubmetrdən 2022-ci ildə 17 milyard kubmetrə** düşməsi barədə rəsmi çıxışlar və analitik mənbələr məlumat verir. Eyni zamanda Azərbaycan su baxımından yüksək dərəcədə asılı ölkədir: su ehtiyatlarının təqribən **70%-i transsərhəd mənbələrdən** formalaşır, yəni qonşu ölkələrdəki götürmələr və iqlim dəyişməsi daxildə su təminatını birbaşa risk altına salır. Proqnozlar da bu riskin artacağını göstərir: 2020–2050-ci illərdə ölkə üzrə su ehtiyatlarının əlavə olaraq **20–25% azalması** gözlənilir. Belə bir şəraitdə suyun idarə olunmasında əsas hədəf "daha çox su tapmaq"dan çox "mövcud suyu itkisiz və səmərəli istifadə etmək" olmalıdır.

Bu zərurəti gücləndirən ikinci rəqəm bloku suyun sektorlar üzrə bölgüsüdür: ölkədə suyun ən böyük istehlakçısı kənd təsərrüfatıdır və ümumi su istifadəsinin təxminən **68%-i** məhz bu sahənin payına düşür. Problemin ən kritik hissəsi isə suvarma infrastrukturu ilə bağlı itkilərin miqyasıdır: 2023–2024-cü

illərdə rəsmi qurum rəhbərliyi parlament dinləmələrində suvarma sistemlərində su itkilərinin **50%-dən çox** olduğunu açıq şəkildə bildirib. Dövlətin su strategiyalarında da məhz buna görə konkret hədəflər qoyulub: suvarma sistemlərində itkilərin mərhələli şəkildə azaldılaraq **2027-ci ilə qədər 42%-ə endirilməsi** planlaşdırılır və bu, itki səviyyəsində ən azı **8–10 faiz-bəndi** yaxşılaşma deməkdir; paralel olaraq suvarma suyuna çıxışın **90%-ə çatdırılması** hədəflənir. FAO-nun ölkə üzrə proqram sənədlərində də 2030-a qədər su itkilərinin **20% azaldılması** və "Ağıllı Suvarma" pilotları ilə Kür-Araz ovalığında itkilərin **20% aşağı salınması** kimi konkret rəqəmli məqsədlər yer alır.

V.Z.Ramazanov

İnnovative Agriculture: Balanced Regional Development and Food Security

Leading research fellow, PhD in economics

A.R. Ministry of Science and Education

Institute of Economics

e mail: vilayet1980@yahooşcom

https://orcid.org/0000-0002-0615-2166

Abstract: The article examines issues related to agriculture and agricultural production across regions. Agriculture plays a decisive role in ensuring the country's food security, promoting regional development, improving the population's welfare, and significantly reducing unemployment. In addition, it contributes to solving social problems, preserving historical traditions in the regions, restoring ecological balance, protecting soils from erosion, and forming a healthy environment. The study considers how innovative machinery and the achievements of agricultural science can help address problems concerning land and water resources, agricultural output, reduction of production costs, environmental protection, and the elimination of factors that cause disruptions in natural processes. Eliminating such negative phenomena that have emerged in recent years, increasing farmers' material interest in land, and implementing these measures—being an integral part of the state's economic policy—should be carried out with the participation and support of relevant institutions.

Keywords: agriculture, innovation, balanced development, food security, efficient use, production volume.

Yenilikçi Tarım: Dengeli Bölgesel Kalkınma ve Gıda Güvenliği

Azerbaycan Cumhuriyeti Bilim ve Eğitim Bakanlığı İktisat Enstitüsü
"Bölgesel kalkınma ve doğal kaynakların kullanımı sorunları" şubesi

a.e.i., i.ü.f.d., V. Z. Ramazanov
E-posta: **vilayet1980@yahoo.com**
ORCID: **0000-0002-0615-2166**

Özet: Makalede bölgeler bazında tarım ve tarımsal üretim meseleleri incelenmektedir. Tarım, ülkenin gıda güvenliğinin sağlanmasında, bölgesel kalkınmanın hızlandırılmasında, halkın refah düzeyinin yükseltilmesinde ve işsizliğin önemli ölçüde azaltılmasında belirleyici bir rol oynamakla birlikte; sosyal sorunların çözümüne, bölgelerin tarihî gelenek ve göreneklerinin korunmasına, ekolojik dengenin

yeniden tesis edilmesine, toprakların erozyondan korunmasına ve sağlıklı bir çevrenin oluşmasına da hizmet etmektedir. Çalışmada, yenilikçi teknolojiler ve tarım biliminin kazanımları aracılığıyla toprak ve su kaynaklarının yönetimi, ürün üretimi, üretim maliyetlerinin azaltılması, çevrenin korunması ve doğal süreçlerin bozulmasına yol açan etkenlerin ortadan kaldırılması gibi konular ele alınmıştır. Son yıllarda ortaya çıkan bu tür olumsuzlukların giderilmesi, çiftçinin toprağa olan maddi ilgisinin artırılması ve bunun devletin ekonomik politikasının bir parçası olması nedeniyle, söz konusu hedeflerin ilgili kurumların katılımı ve desteğiyle gerçekleştirilmesi gerektiği vurgulanmaktadır.

Anahtar kelimeler: tarım, yenilik, dengeli kalkınma, gıda güvenliği, etkin kullanım, üretim hacmi.

AZƏRBAYCANIN DÜNYA ENERJİ TRİLEMMA İNDEKSİNDƏ ENERJİ TƏHLÜKƏSİZLİYİ ÜZRƏ MÖVQEYİNƏ NEFT-QAZ RESURSLARININ TƏSİRİNİN QİYMƏTLƏNDİRİLMƏSİ

Nəsimi Əhmədov
Dosent, İqtisad üzrə fəlsəfə doktoru
Elm və Təhsil Nazirliyinin İqtisadiyyat İnstitutu,
H. Cavid pr., 115, AZ1073, Azərbaycan
nasimi_akhmedov@yahoo.com
ORCID ID: 0000-0001-8657-3544

Tədqiqatın məqsədi Dünya Enerji Trilemma İndeksinin Enerji təhlükəsizliyi göstəriciləri üzrə Azərbaycanın mövqeyinin yaxşılaşdırılması istiqamətlərinin müəyyən edilməsindən ibarətdir. Dünya Enerji Trilemma İndeksinin hesablanmasının metodoloji əsasları, indeksin ümumi inkişaf meylləri, Azərbaycanın reytinq sıralanmasındakı yeri, enerji təhlükəsizliyi subindeksinin "İdxaldan asılılıq", "Elektrik enerjisi istehsalının diversifikasiyası", "Enerjinin saxlanılması" göstəriciləri təhlil olunur, enerji təhlükəsizliyi göstəriciləri üzrə Azərbaycanın keçdiyi yollar bir sıra ölkələrlə müqayisəli şəkildə nəzərdən keçirilir və Azərbaycanın üstün və zəif cəhətləri qiymətləndirilir.
Açar sözlər: Azərbaycan, Dünya Enerji Trilemma İndeksi, enerji təhlükəsizliyi, idxaldan asılılıq, elektrik enerjisi istehsalının diversifikasiyası, enerjinin saxlanılması.

ASSESSMENT OF THE IMPACT OF OIL AND GAS RESOURCES ON AZERBAIJAN'S POSITION ON ENERGY SECURITY IN THE WORLD ENERGY TRILEMMA INDEX

Nasimi Ahmadov
Associate Professor, Ph.D. in Economics
Institute of Economics of the Ministry of Science and Education,
H. Javid Ave., 115, AZ1073, Azerbaijan
nasimi_akhmedov@yahoo.com
ORCID ID: 0000-0001-8657-3544

The purpose of the study is to identify directions for improving Azerbaijan's position on the Energy Security indicators of the World Energy Trilemma Index. The methodological bases of calculating the World Energy Trilemma Index, the general development trends of the index, Azerbaijan's place in the ranking, the indicators of the Energy Security subindex "Import dependence", "Diversification of electricity generation", "Energy storage" are analyzed; the path taken by Azerbaijan on energy security indicators is reviewed in comparison with several countries and the strengths and weaknesses of Azerbaijan are assessed.
Keywords: Azerbaijan, World Energy Trilemma Index, energy security, import dependence, diversification of electricity generation, energy storage.

Giriş

Dünyada karbon tutumlu mineral yanacaqlarına əsaslanan sistemdən aşağı karbon tutumlu, bərpa olunan enerjiyə əsaslanan, iqlim dəyişikliyinin azaldılması və iqtisadi rifah yaradılması imperativləri tərəfindən idarə olunan sistemə keçid istiqamətində enerji dəyişikliyi baş verir. Dəyişikliyin sürəti və enerji dayanıqlığını təmin etmək məqsədilə siyasi tədbirlərin hazırlanması və həyata keçirilməsində ayrı-ayrı hökumətlərin effektivliyi ölkələr və regionlar üzrə dəyişir. Dünya Enerji Şurası hər kəsin davamlı

enerjidən faydalanmasını təmin etmək üçün bütöv bir enerji sistemi yanaşmasının vacibliyini qəbul edir. Bu enerji keçidi mürəkkəb siyasi problemdir və onun müvəffəqiyyətlə həll olunması üç əsas ölçünün (göstəricinin) idarə edilməsini nəzərdə tutur. Bu dəyişiklik dövründə enerji təhlükəsizliyi, enerji bərabərliyi və enerji sistemlərinin ekoloji dayanıqlılığı birlikdə "Trilemma" təşkil edir və hər üç ölçüdə yüksək qiymətin əldə edilməsi dövlət və özəl qurumlar, hökumətlər və tənzimləyici orqanlar, iqtisadi və sosial amillər, təbii sərvətlər, ətraf mühit məsələləri, istehlakçıların fərdi davranışları arasında mürəkkəb qarşılıqlı əlaqələrin olmasını tələb edir. Dünya Enerji Trilemma İndeksi bu üç Trilemma göstəricisi üzrə milli enerji siyasətinin və fəaliyyətinin obyektiv reytinqini təmin edir (35, s.11).

Dünya Enerji Trilemma indeksi Enerji Trilemmasının kəmiyyətcə qiymətləndirilməsidir və Dünya Enerji Şurası tərəfindən üç hissədən – təhlükəsiz, bərabər və qiymət baxımından əlverişli, ekoloji cəhətdən davamlı enerjinin təmin edilməsindən ibarət problem kimi müəyyən olunur. Bu prioritetləri balanslaşdırmaq çətin məsələ olsa da, ayrı-ayrı ölkələrin rifahının və rəqabətqabiliyyətliliyinin əsasını təşkil edir.

İndeksin hesablanma metodologiyası və Azərbaycanın indeksdə yeri

Qiymətləndirmə göstəriciləri enerji səmərəliliyi göstəriciləri üzrə 0-10 intervalında normallaşdırılmış nəticəni dörd qrupa bölməklə hesablanır. Daha sonra ölkələrə üçhərfli bal verilir. Qeyd edək ki, qiymətləndirmə balındakı hərflərin ardıcıllığı müəyyən bir enerji ölçüsünə uyğun gəlmir, lakin hərf ballarını azalan əlifba sırası ilə göstərir.

Ən yaxşı A qiymət balı 8-dən yüksək nəticə üçün verilir. Normallaşdırılmış nəticələri 5-dən yüksək olan ölkələrə B qiymət balı verilir. 2.51 ilə 5 arasındakı orta nəticələrə C verilir. Son olaraq, D balı qeyri-qənaətbəxş göstəricilərə verilir.

Ölkələrin ballarının yalnız sistemli bir tendensiya vəziyyətində (qısamüddətli dalğalanmanın əksinə olaraq) yüksəldilməsini və ya aşağı salınmasını təmin etmək üçün 10% "qiymətləndirmə marjası (həddi)"ndan istifadə olunur. Bir ölkənin ölçülərdən hər hansı birinə görə yeni bir bal ala bilməsi üçün yaxşılaşma (irəliləyiş) halında müəyyən edilmiş marjı aşması və ya pisləşmə halında aşağı düşməsi lazımdır. Əks təqdirdə, əvvəlki ilin balans qiyməti olduğu kimi qalır (40, s.142,143).

Azərbaycan Enerji Trilemma İndeksində 2011-ci ildə 75-ci yerdə olduğu halda, 2021-ci ildə 127 ölkə arasında 39-cu yeri tutmuşdur (cədvəl 1). Bu dövrdə ölkənin reytinq sıralanmasında ən yüksək göstəricisi 2016-cı ildə 26-cı yer olmuş, İndeks üzrə ABA balans qiyməti əldə edilmişdir. Bu isə Azərbaycanın həmin ildə Enerji təhlükəsizliyi subindeksində A, Enerji bərabərliyi subindeksində B, Ekoloji davamlılıq subindeksində isə A balans qiyməti əldə etdiyini göstərir. Azərbaycanın Enerji təhlükəsizliyi subindeksində balans qiyməti 2013-cü ildə B-dən, 2014-2016-cı illərdə A-ya yüksəlmiş, 2017-2019-cu illərdə B-ə düşmüş, lakin 2020-2021-ci illərdə A-ya yüksəlmişdir. Enerji bərabərliyi subindeksində 2013-cü ildə balans qiyməti C olmuş, lakin 2014-cü ildən 2021-ci ilədək B qiyməti əldə edilmişdir. Ekoloji davamlılıq subindeksində ölkənin balans qiyməti 2013-2014-cü illərdə D ilə çox aşağı səviyyədə olmuş, 2015-ci ildə C-yə, 2016-2018-cı illərdə A-ya yüksəlmiş, lakin 2019-2020-ci illərdə B-yə, 2021-ci ildə isə C-yə düşmüşdür. Ölkə konteksti subindeksində Azərbaycan 2019-2021-ci illərdə C balans qiyməti əldə etmişdir.

Tarixən enerji təhlükəsizliyi yalnız neftlə əlaqədar olmuşdur, lakin bu anlayışın mahiyyəti inkişaf etməkdədir və enerji keçidi irəlilədikcə dəyişməyə davam edəcəkdir. Bəzi ölkələrin enerji balansında neft üstünlük təşkil edir və onlar ənənəvi neft təhlükəsizliyi yanaşması ilə neft ehtiyatlarını kommersiya səviyyələrindən yüksək səviyyədə formalaşdırmaqla təhlükəsizliyi yüksəldə bilmişlər. Məsələn, AB-yə daxil olmağın bir cəhəti, yəni AB-nin yeni üzvlərindən kommersiya ehtiyatlarından daha çox neft ehtiyatları yaratmasını tələb edən, 2012-ci ilin sonunda qüvvəyə minmiş AB-nin Neft Ehtiyatları Direktivi Trilemmanın təhlükəsizlik göstəricisinə mühüm təsir göstərir.

Enerji Təhlükəsizliyinin yeni olmayan bu cəhəti Çexiya, Rumıniya, Latviya, Sloveniya, Malta və Kiprin Təhlükəsizlik göstəricisinin yüksəlməsinə mühüm təsir göstərmişdir. Ancaq Enerji Təhlükəsizliyi

göstəricisi daxilində neftin nisbi əhəmiyyəti enerji keçidi inkişaf etdikcə elektrikləşmənin artması ilə azalacaqdır. Ehtiyatların yaradılması üçün tələb olunan avadanlıq və infrastrukturun baha başa gəlməsi və karbonsuzlaşdırılmış enerji strukturunda neftin əhəmiyyətinin azalması gələcəkdə ölkələrin Enerji Təhlükəsizliyinə neft amilinin təsirini azaladacaqdır. Son illərdə bir çox maraqlı tərəflər enerji sistemlərinin qeyri-mərkəzləşdirilməsi, rəqəmsallaşması və karbonsuzlaşması istiqamətində inkişaf etməkdə olan elektrikləşdirməni əks etdirən daha dəqiq anlayış qəbul etmişlər.

Bir çox ölkələrin enerji strukturunu diversifikasiya etmək üçün müxtəlif bərpa olunan enerji mənbələrindən istifadəyə başlaması onların idxaldan asılılığını azaltmışdır. Lakin bu, şəbəkələrdə hava şəraitindən asılılıq yaratmaqla, onların dəyişkənliyinin yaxın elektrik şəbəkələrilə sıx qarşılıqlı əlaqə qurmaqla və ya yeni enerjisaxlama texnologiyaları ilə tənzimlənməsini tələb edir. Bərpa olunan enerji mənbələri və rəqəmsallaşdırma daha çox qeyri-mərkəzləşməyə imkan yaratmışdır. Eyni zamanda kiber təhlükəsizlik, elektik şəbəkəsinin etibarlılığı və sistemlərin inteqrasiyası kimi yeni enerji təhlükəsizliyi problemləri meydana çıxmışdır.

Cədvəl 1. Azərbaycanın Dünya Enerji Trilemma İndeksində reytinq sıralanması (2011-2023-cü illər)

	İndeksin reytinq sıralanması (ranqlaşdırma)	**İndeks üzrə balans dərəcəsi (qiyməti)**	**Enerji Təhlükəsizliyi subindeksi üzrə reytinq sıralanması**	**Enerji Bərabərliyi subindeksi üzrə reytinq sıralanması**	**Ekoloji Davamlılıq subindeksi üzrə reytinq sıralanması**
2011	75	-	17	83	100
2012	79	-	27	78	97
2013	81	BCD	32	74	98
2014	71	ABD	27	78	97
2015	55	ABC	11	67	74
2016	26	ABA	-	-	-
2017	31	BBA	-	-	-
2018	27	BBA	-	-	-
2019	57	BBBc	44	58	59
2020	36	ABBc	17	44	54
2021	39	ABCc	21	42	56
2022	39	BBCc	-	-	-
2023	42	BBCc	-	-	-

Mənbə: World Energy Council.World Energy Trilemma Index 2012-2021 hesabatları əsasında müəllif tərəfindən tərtib edilmişdir.

Cədvəl 2. Azərbaycanın Trilemma İndeksi üzrə qiymətləndirmə balları (2019-2023-cü illər)

	İndeks üzrə balans dərəcəsi (qiyməti)	**Trilemma balı**	**Enerji Təhlükəsizliyi subindeksi balı**	**Enerji Bərabərliyi subindeksi balı**	**Ekoloji Davamlılıq subindeksi balı**
2019	BBBc	67,7	62	83	63
2020	ABBc	72,1	68,4	85,8	69,2
2021	ABCc	68.2	68.2	78.6	63.3

2022	BBCc	-	-	-	-
2023	BBCc	65.6	62.7	81.2	59.2

Mənbə: World Energy Council.World Energy Trilemma Index 2019-2021 hesabatları əsasında müəllif tərəfindən tərtib edilmişdir.

"İdxaldan asılılıq" göstəricisi

Enerji təhlükəsizliyi subindeksinin əsas göstəricilərindən biri olan **"**İdxaldan asılılıq" göstəricisi ümumi enerji istehlakında ölkənin xalis idxaldan və təchizatçıların diversifikasiyasından asılılığını əks etdirir. Azərbaycanda zəngin neft-qaz resurslarından irəli gələn enerji bolluğu şəraiti ölkənin bu göstərici üzrə ən yüksək nəticə əldə etməsinə imkan vermişdir.

Mənbə: https://trilemma.worldenergy.org əsasında müəllif tərəfindən tərtib edilmişdir.

Eyni zamanda onu da qeyd edək ki, Azərbaycanın ümumi enerji istehlakının xalis enerji idxalından asılılığı son illərdə artmaqdadır (Qrafik 3). Ümumi enerji istehlakının xalis enerji idxalından asılılığı 2007-2020-ci illərdə -4,1-dən -2,6-dək dəyişmiş, nəzərdən keçirilən dövrdə bu göstərici orta illik 0,16 vahid artım meylinə malik olmuşdur. Mənfi işarəsi ixracın idxalı üstələdiyini göstərir. Əgər 2011-2012-ci illərdə göstəricinin kəskin artması əsasən ölkənin ixracının azalması ilə bağlı olmuşdursa, sonrakı illərdə ölkənin enerji idxalı da yüksək sürətlə artmağa başlamış, xüsusən də 2017-ci ildə təhlil dövrünün ən yüksək səviyyəsinə yüksəlmişdir ki, bu da enerjinin xalis idxaldan asılılığı göstəricisinin ən yüksək səviyyəyə çatmasına səbəb olmuşdur.

Mənbə: https://trilemma.worldenergy.org əsasında müəllif tərəfindən tərtib edilmişdir.

Mənbə: https://www.stat.gov.az/ əsasında müəllif tərəfindən tərtib edilmişdir.

Təchizatçıların diversifikasiyasından asılılığı göstərmək üçün beynəlxalq enerji təchizatçılarının diversifikasiyası hesablanmalıdır. Beynəlxalq enerji təchizatçılarının diversifikasiyası ölkənin enerji ticarət tərəfdaşlarından nə dərəcədə asılı olduğunu göstərir və Herfindal-Hirşman İndeksi (HHİ) ilə hesablanır (36, s.60).

WEC hesablamalarda faizlərin kvadratı ilə hesablanan HHİ-dən istifadə edir. Bu üsulla hesablama aparsaq, Azərbaycan üzrə HHİ 2018-ci ildə 4925, 2020-ci ildə 3348 təşkil etmişdir. Bu göstəricilər 2500-dən çox olduğuna görə Azərbaycanda beynəlxalq enerji təchizatçılarının diversifikasiyasının aşağı və ya təmərküzləşməsinin yüksək olduğunu göstərir.

Mənbə: World Energy Council. World Energy Trilemma Index 2018 və müəllifin hesablaması əsasında tərtib edilmişdir.

Beləliklə, Enerji təhlükəsizliyi subindeksinin "İdxaldan asılılıq" göstəricisində ümumi enerji istehlakında ölkənin xalis idxaldan asılılığı yüksək qiymət əldə etməyə imkan versə də, beynəlxalq enerji təchizatçılarının diversifikasiyası asılılığın yüksək olduğunu göstərir və bu da gələcəkdə ölkənin idxaldan asılılıq göstəricisinə mənfi təsir edə bilər.

Bununla yanaşı, müəlifin fikrincə, HHİ ixracın təmərküzləşməsini hesablamaq üçün də istifadə olunur. Onun düsturu aşağıdakı kimidir:

$$HHI = \frac{\sqrt{\sum_{i=1}^{n}\left(\frac{X_{ij}}{X_j}\right)^2} - \sqrt{\frac{1}{n}}}{1-\sqrt{\frac{1}{n}}} \qquad (1)$$

Burada $X_j = \sum_{i=1}^{n} X_{ij}$ – enerji məhsullarının idxalının ümumi həcmi;
X_{ij} – idxal olunan ayrı-ayrı enerji məhsullarının həcmidir.

Dünya Enerji Trilemma İndeksində idxalın təmərküzləşməsi indeksini yuxarıdakı düsturun əsasında ölkələr üzrə hesablamaq olar. Bu göstərici idxalda enerji mənbələrinin diversifikasiyasından asılılığın müəyyən edilməsi, bərpa olunan enerjinin təşviq edilməsi, ekoloji davamlılığın yüksəldilməsi baxımından mühüm sayıla bilər.
Müəllifin apardığı hesablamalar nəticəsində Azərbaycan üzrə idxalın təmərküzləşməsi indeksi (HHİ) 2018-ci ildə 0.76 təşkil etmişdir ki, bu da 1-ə yaxın olduğuna görə təmərküzləşmənin yüksək olduğunu ifadə edir. HHİ 2019-cu ildə 0,48, 2020-ci ildə isə 0,32 olmuşdur ki, bu da təmərküzləşmənin azaldığını göstərir.
Eyni zamanda idxal olunan bir sıra enerji məhsulları üzrə təchizatçı ölkələrin diversifikasiyasından asılılıq da HHİ ilə hesablanmışdır.
Daş kömür idxalında 2018-ci ildə Türkiyə və Qazaxıstandan asılılıq daha yüksək olduğundan, HHİ 5120 olmaqla nisbətən yüksək olmuşdur. 2020-ci ildə Rusiyadan asılılıq olduqca yüksək olduğuna görə (idxalın 97,7%-i) HHİ 9545-ə yüksəlmişdir.
Sürtkü yağları idxalında Rusiya, Türkiyə, Almaniya daha yüksək paya malik olsa da (bu üç ölkə birlikdə idxalın 70 faizdən çoxunu təşkil etmişdir), təchizatçı ölkələrin sayının çox olması HHİ-nin 2018-ci ildə 2108, 2020-ci ildə isə 2623 olmaqla nisbətən aşağı qiymət almasına səbəb olmuşdur.
Elektrik enerjisi idxalında HHİ 2018-ci ildə 4422, 2020-ci ildə 4885 təşkil etmişdir. Rusiya burada ən yüksək xüsusi çəkiyə malik olmuşdur.
Təbii qaz idxalında HHİ 2018-ci ildə 5062 təşkil etmiş, 2019-2020-ci illərdə təbii qaz idxal edilməmişdir.
Avtomobil benzini – AI-92 idxalında 2018-ci ildə HHİ = 5050 təşkil etmişdir.
Avtomobil benzini – AI-95 idxalında HHİ 2018-ci ildə 4628, 2020-ci ildə 4652 olmuşdur.
Avtomobil benzini – AI-98 idxalında HHİ 2020-ci ildə 4393 olmuşdur.

“Elektrik enerjisi istehsalının diversifikasiyası” göstəricisi
Enerji təhlükəsizliyi subindeksinin əsas göstəricilərindən biri də “Elektrik enerjisi istehsalının diversifikasiyası”dır və ölkədaxili elektrik enerjisi istehsalı mənbələrinin müxtəlifliyini ifadə edir. Bu göstərici üzrə Azərbaycan 2019-cu ildə 14,3 balla tədqiq olunan ölkələr arasında ancaq Tacikistan və Moldovadan irəlidə olmuş, 2021-ci ildə isə 12,0 balla tədqiq olunan ölkələr arasında sonuncu yeri tutmuşdur.
Azərbaycanda 2020-ci ildə 25,8 mlrd kVt saat elektrik enerjisi istehsal edilmişdir ki, bu da 2007-ci ilə nisbətən 18,3% yüksəkdir. 2020-ci ildə istehsal edilən elektrik enerjisinin 87,0%-i mineral yanacaq əsasında fəaliyyət göstərən ES və İES-lərin, 4,1%-i SES-lərin, 7,6%-i müəssisələrin daxili ehtiyaclarının ödənilməsinə xidmət edən və yanacaqla işləyən stansiyaların, 0,4%-i Külək elektrik stansiyalarının, 0,2%-i Günəş elektrik stansiyalarının, 0,8%-i tullantıların yandırılmasından alınan elektrik enerjisinin və 0,003%-i bokütlənin yandırılmasından alınan elektrik enerjisinin payına düşmüşdür. Ölkədə elektrik enerjisi istehsalının əhəmiyyətli hissəsi mineral yanacaq əsasında işləyən ES və İES-lərin üzərinə düşür.

Mənbə: https://trilemma.worldenergy.org əsasında müəllif tərəfindən tərtib edilmişdir.

Mənbə: https://trilemma.worldenergy.org əsasında müəllif tərəfindən tərtib edilmişdir.

Mənbə: https://www.stat.gov.az/ əsasında müəllif tərəfindən tərtib edilmişdir.

Müəssisələrin daxili ehtiyaclarının ödənilməsinə xidmət edən və yanacaqla işləyən stansiyalarda elektrik enerjisi istehsalı artmışdır. 2012-ci ildə bu stansiyalarda istehsalın həcmi əvvəlki ilə nisbətən 5,4 dəfə yüksəlmiş və onların istehsaldakı payı yüksəlmişdir. Ölkədə 2000-2006-cı illərdə generatorlar vasitəsilə elektrik enerjisi istehsal edilmiş, lakin 2007-ci ildən bu fəaliyyət baş verməmişdir. Beləliklə, Azərbaycanda elektrik enerjisi istehsalı mənbələrinin müxtəlifliyi olduqca aşağıdır və bu sahədə diversifikasiyanın yüksəldilməsində bərpa olunan enerji potensialımızın yaratdığı imkanlardan geniş istifadə zəruridir.
Son illərdə SES-lərin istehsal etdiyi elektrik enerjisi azalmışdır. SES-lərin istehsal etdiyi elektrik enerjisinin həcmi 2007-2011-ci illərdə orta illik 2,6 mlrd kVt saat, 2012-2020-ci illərdə isə orta illik 1,6 mlrd kVt saat təşkil etmişdir. Müəssisələrin daxili ehtiyaclarının ödənilməsinə xidmət edən və yanacaqla işləyən stansiyalarda elektrik enerjisi istehsalı artmışdır. 2012-ci ildə bu stansiyalarda istehsalın həcmi əvvəlki ilə nisbətən 5,4 dəfə yüksəlmiş və onların istehsaldakı payı yüksəlmişdir. Ölkədə 2000-2006-cı illərdə generatorlar vasitəsilə elektrik enerjisi istehsal edilmiş, lakin 2007-ci ildən bu fəaliyyət baş verməmişdir. Külək elektrik stansiyaları 2009-cu ildən elektrik enerjisi istehsalına başlamış, 2011-2012-ci illərdə istehsalat dayanmış, 2013-cü ildən yenidən istehsala başlanılmışdır. 2019-cu ildə bu stansiyalarda enerji istehsalı əvvəlki ilə nisbətən 27,4 dəfə artaraq 105,4 milyon kVt saat təşkil etsə də, 2020-ci ildə 8,8% azalaraq 96,1 milyon kVt saat olmuşdur. Günəş fotoelektrik stansiyaları 2013-cü ildən fəaliyyətə başlamış, elektrik enerjisi istehsalı 2016-cı ildə əvvəlki ilə nisbətən 7,7 dəfə artmış və 2020-ci ildə 47,0 milyon kVt saata çatmışdır. Tullantıların yandırılmasından elektrik enerjisinin əldə olunmasına da 2013-cü ildə başlanılmış, 2013-2020-ci illərdə istehsal olunan elektrik enerjisinin həcmi 49,6% artaraq 200,6 milyon kVt saat təşkil etmişdir. Biokütlənin yandırılmasından elektrik enerjisinin əldə edilməsinə 2015-ci ildən başlansa da, istehsal olunan enerjinin həcmi çox kiçikdir. Bu həm də Bioqaz elektrik stansiyalarının gücünün aşağı (1 MVt) olaraq qalması ilə əlaqədardır.

"Enerjinin saxlanılması (akkumulyasiyası)" göstəricisi
Enerji təhlükəsizliyi subindeksinin digər bir əsas göstəricisi "Enerjinin saxlanılması (akkumulyasiyası)"dır. Bu göstərici saxlanılma və emalı da əhatə edən infrastrukturu nəzərə almaqla, ölkədə neft və qaza olan tələbin ödənilməsi imkanlarını əks etdirir. Burada Azərbaycan 2019-cu ildə 45,7 balla, 2021-ci ildə isə 53,7 balla nəzərdən keçirilən ölkələr arasında ancaq Latviyadan geri qalır.

Mənbə: https://trilemma.worldenergy.org əsasında müəllif tərəfindən tərtib edilmişdir.

Mənbə: https://trilemma.worldenergy.org əsasında müəllif tərəfindən tərtib edilmişdir.

Azərbaycanda neftin ümumi təsdiqlənmiş ehtiyatları 1999-cu ilin sonuna 1,2 milyard barel olduğu halda, 2009-cu ilin sonuna 7 milyard barelə çatmış və 2019-cu ilin sonuna bu ehtiyatlar yenə də 7 milyard barel təşkil etmişdir. MDB ölkələri üzrə bu göstəricidə Azərbaycan Rusiya və Qazaxıstandan

sonra üçüncüdür. Dünya üzrə neftin ümumi təsdiqlənmiş ehtiyatlarında Azərbaycanın payı 0,4% təşkil edir. Burada mühüm göstəricilərdən biri "Ehtiyatların hasilata nisbəti"dir (E/İ). Ehtiyatların hasilata nisbəti hər hansı bir ilin sonunda qalan ehtiyatların həmin ildəki məhsul istehsalına bölünməsi ilə hesablanır və istehsalın həmin tempdə davam etməsi vəziyyətində qalan ehtiyatların kifayət edəcəyi müddəti göstərir. Neft üzrə Azərbaycanda Ehtiyatların hasilata nisbəti 2019-cu ildə 24,6 il olmuşdur. MDB-də ən yüksək göstərici Qazaxıstandadır (42,6 il). Azərbaycan MDB-də Qazaxıstan, Özbəkistan və Rusiyadan sonra dördüncü yerdədir (21, s.14).
Ölkə öz istehlakından nə qədər çox neft hasil edərsə, ehtiyatlarını bir o qədər sürətlə tükəndirir. Bununla yanaşı, hasilatın istehlaka nisbətinin müəyyən sabit bir həddə olması da əhəmiyyətlidir. Buna görə də Hasilatın İstehlaka nisbəti göstəricisinin ölkələr üzrə təhlili vacibdir. Azərbaycan üzrə bu göstərici 2009-cu ildə 14,1 olduğu halda, 2019-cu ildə 7,2-dək azalmışdır. 2009-2019-cu illərdə Azərbaycanda Hasilatın İstehlaka nisbəti orta illik 6,1% azalmaqla, MDB-də ən yüksək azalma tempinə malik olsa da, ölkəmiz bütün bu dövrdə həmin göstərici üzrə MDB-də birinci olmuşdur. 2009-2019-cu illərdə Hasilatın İstehlaka nisbətində orta illik azalma Qazaxıstanda 3,6%, Rusiyada 0,4%, Türkmənistanda 2,4%, digər MDB ölkələrində 2,7% təşkil etmiş, yalnız Özbəkistanda 2,9% artım olmuşdur.
Azərbaycanda neft emalı gücləri 2009-2018-ci illərdə 205 min barel /gün təşkil etmiş, lakin 2019-cu ildə 120 min barel /günədək, yəni 41,5% azalmışdır. Neft emalı gücləri üzrə 2008-2018-ci illərdə orta illik artım tempində 5,2% azalma baş vermişdir. Neft emalı güclərinin orta illik artım tempi 2008-2018-ci illərdə MDB ölkələrindən Belarusda 1,2%, Qazaxıstanda 1,7%, Rusiyada 2,0%, Türkmənistanda 0,8% təşkil etmiş, Özbəkistanda sabit qalmışdır. 2019-cu ildə artım tempi Belarus və Özbəkistanda sabit qalmış, Qazaxıstanda 2,6% və Rusiyada 1,9% olmuşdur. Beləliklə, MDB ölkələri üzrə neft emalı güclərində ən çox azalma Azərbaycanda baş vermişdir. 2019-cu ildə dünya üzrə neft emalı güclərinin 0,1%-i Azərbaycanın payına düşmüş, ölkəmiz neftin emal güclərinə görə MDB-də Rusiya, Belarus, Qazaxıstan, Türkmənistan və Özbəkistandan sonra altıncı yerdədir.

Qrafik 4
Mənbə: bp Statistical Review of World Energy 2020, s.16, 21 əsasında müəllif tərəfindən hazırlanmışdır.

Azərbaycanda təbii qazın ümumi təsdiqlənmiş ehtiyatları 1999-cu ilin sonuna 1 trilyon kubmetr, 2009-cu ilin sonuna yenə 1 trilyon kubmetr, 2018-ci ilin sonuna 2,1 trilyon kubmetr, 2019-cu ildə isə 2,8 trilyon kubmetr təşkil etmişdir. Bu ehtiyatların həcminə görə Azərbaycan MDB ölkələri içərisində Rusiya və Türkmənistandan sonra üçüncü yerdədir. 2019-cu ilin sonuna dünya üzrə təbii qaz ehtiyatlarının 1,4%-i Azərbaycanın payına düşmüşdür. Ümumiyyətlə, 2019-cu ildə dünyanın təsdiqlənmiş təbii qaz ehtiyatlarının artımında ən böyük pay Çinə (2 tkm) və Azərbaycana (0,7 tkm) məxsus olmuşdur. Azərbaycanda təbii qaz üzrə Ehtiyatların istehsala (hasilata) nisbəti göstəricisi 2019-cu ildə 117 il təşkil etmişdir. Bu göstərici ilə ölkəmiz MDB-də yalnız Türkmənistandan (308,5 il) geri qalır (21,s.32).
Təbii qaz üzrə Hasilatın İstehlaka nisbəti göstəricisi Azərbaycanda 2009-2019-cu illərdə 1,8-2,1 aralığında dəyişmiş, orta illik artım sürəti 1,4% olmuşdur. Ölkəmizdə təbii qaz istehlakı artsa da, onun hasilatı daha çox artdığından, Hasilatın İstehlaka nisbəti göstəricisi də yüksəlmişdir. 2009-2019-cu illərdə təbii qaz üzrə Hasilatın İstehlaka nisbətində Rusiyada 3,1%, Özbəkistanda 5,7% orta illik azalma olmuş, orta illik artım sürəti Qazaxıstanda 0,9%, Türkmənistanda 5,6%, digər MDB ölkələrində 0,2% təşkil etmişdir. Bütün bu dövrdə MDB-də təbii qaz üzrə Hasilatın İstehlaka nisbətində ən yüksək göstərici Rusiyanındır. Azərbaycan bu göstərici üzrə MDB-də 2009-2018-ci illərdə Rusiya və Özbəkistandan sonra üçüncü olsa da, 2019-cu ildə ikinci olmuşdur.

Mənbə: bp Statistical Review of World Energy 2020, s.34, 36 əsasında müəllif tərəfindən hazırlanmışdır.

Azərbaycan "Enerjinin saxlanılması"göstəricisində 100 mümkün baldan 2019-cu ildə 45,7 bal, 2021-ci ildə isə 53,7 bal toplamışdır ki, bu da neft-qazla zəngin bir ölkə kimi Azərbaycanın təbii sərvət potensialı ilə uzlaşmır və bu resurslardan səmərəli istifadə edilməsinin zəruriliyini göstərir.

Nəticə

Azərbaycan Enerji Trilemma İndeksində 2000-2021-ci illərdə Enerji Bərabərliyi və Ekoloji Davamlılıq göstəricilərini 2000-ci baza ilinə nisbətən yuxarı səviyyədə qoruyub saxlamış olsa da, artan elektrik enerjisi istehlakının əsasən mineral yanacaqla təmin edilməsi hesabına enerji əldə etmə imkanlarının genişləndirilməsi enerji sisteminin diversifikasiyasını azaltmış və ölkənin Enerji Təhlükəsizliyi göstəricisinin aşağı olması ilə nəticələnmişdir.

Azərbaycanda elektrik enerjisi istehsalı mənbələrinin müxtəlifliyi olduqca aşağıdır və bu sahədə diversifikasiyanın yüksəldilməsində bərpa olunan enerji potensialının yaratdığı imkanlardan geniş istifadə zəruridir.

Azərbaycanda Enerji Bərabərliyi göstəricisində keyfiyyətin və enerji bolluğunun ilkin şərti kimi əsas enerji əldə etmə imkanları təmin edilsə də, həqiqi enerj bərabərliyinin əldə edilməsi təmin edilməlidir.

Karbonsuzlaşdırma və çirklənməyə nəzarəti əks etdirən Ekoloji Davamlılıq göstəricisindəki dəyişikliklər ümumi Trilemma göstəricisinə daha çox təsir etdiyindən, bu göstəricinin yüksəldilməsi probleminin həlli mühüm əhəmiyyət kəsb edir. Ölkədə daxili enerji tələbatının karbohidrogen resursları hesabına ödənilməsi, iqtisadi artımın ətraf mühiti çirkləndirən yanacaqlara əsaslanması Ekoloji Davamlılıq göstəricilərini zəiflədir.

Ölkənin neft-qaz resurslarının Enerji Təhlükəsizliyi göstəricisinə zəiflədici təsirindən uzaqlaşmaq üçün enerji strukturunun, təchizatçıların və mənbələrin diversifikasiyası və onun qorunub saxlanılması mühüm əhəmiyyət kəsb edir.

Gələcəkdə ölkəmizdə qaz hasilatının artacağı gözlənildiyindən, neft emalını daha da dərinləşdirmək və çıxım faizini yüksəltmək mümkündür. Beləliklə, enerji təhlükəsizliyinin və ekoloji davamlılığın əsaslarının mineral yanacaqdan bərpa olunan enerji mənbələrinin üzərinə keçirilməsi neft-qaz resurslarından daha səmərəli və kompleks istifadə etməyə əlverişli şərait yaradacaqdır.

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D-8 ÜLKELERİNDE YURT İÇİ KREDİ HACMİ VE İSTİHDAM ORANI ARASINDAKİ NEDENSELLİĞİN ANALİZİ: KONYA PANEL NEDENSELLİK TESTLERİNDEN KANITLAR

Ömer KESKİN

Öğr. Gör. Dr., Van Yüzüncü Yıl Üniversitesi
E-mail: omerkeskin@yyu.edu.tr
ORCID ID: 0000-0002-1939-2791

Özet

Finansal sektörle işgücü piyasalarının etkileşimini konu olarak ele alan çalışmaların sayısı giderek artmaktadır. Ancak bu çalışmaların çoğu, öncelikle finans sektörünün işgücü piyasalarını nasıl etkilediği üzerine odaklanmaktadır. Dolayısıyla finans sektörüyle işgücü piyasaları arasındaki nedensellik ilişkisinin yönünü dikkate alan çalışmaların sayısı sınırlı kalmaktadır. Bu çalışma, 1991-2023 döneminde D-8 ülkelerinde bankalar tarafından özel sektöre sağlanan yurt içi krediler ile istihdam oranı arasındaki nedensellik ilişkisini panel nedensellik testleri uygulayarak incelemektedir. Konya (2006) panel nedensellik testine ait bulgular, sadece Bangladeş'te bankalar tarafından özel sektöre kullandırılan yurt içi kredilerden istihdam oranına doğru tek yönlü bir nedensellik olduğunu, Nijerya ve Türkiye için ise çift yönlü bir nedensellik bulunduğunu göstermektedir. Ancak değişkenler arasındaki olası gizli nedensellik bağlantılarını ortaya çıkarmak için bu çalışmada uygulanan asimetrik Konya panel nedensellik testi, asimetrik nedensellik durumunda simetrik panel nedensellik testinin yetersiz kaldığını göstermekte olup değişkenler arasında daha fazla nedensellik bağlantısı olduğunu ortaya çıkarmaktadır. Bu bağlamda, çalışma, asimetrik test yöntemi uygulamasının önemine vurgu yapmaktadır.

Anahtar Kelimeler: D-8 Ülkeleri, Yurt İçi Kredi Hacmi, İstihdam Oranı, Asimetrik Nedensellik

ANALYSIS OF CAUSALITY BETWEEN DOMESTIC CREDIT VOLUME AND EMPLOYMENT RATE IN D-8 NATIONS: EVIDENCE FROM KONYA PANEL CAUSALITY TESTS

Abstract

Recent studies have increasingly focused on the interaction between the financial sector and labor markets. However, most of these studies primarily explore how the financial sector impacts labor markets. Consequently, studies analyzing the causality between these variables remain relatively limited. This study examines the causality between domestic credit to the private sector by banks and employment rate in the D-8 nations over the period 1991 to 2023 by using panel causality tests. The findings of the panel causality test of Konya (2006) show that there exists unidirectional causality from domestic credit to the private sector by banks to employment rate only in Bangladesh, and bidirectional causality for Nigeria and Turkiye. However, the asymmetric Konya panel causality test which employed in this study to reveal the hidden causality linkages between variables shows the inadequacy of the symmetric panel causality test in the case of asymmetric causality and reveals more causality linkages between the variables. In this context, the study emphasizes the importance of employing the asymmetric testing method.

Keywords: D-8 Nations, Domestic Credit Volume, Employment Rate, Asymmetric Causality

GİRİŞ

Ticari bankalar, ülkelerin ekonomik yapısı ne olursa olsun, kalkınmada oynadıkları rol nedeniyle finansal sistemlerin en önemli bileşenleridir. Bu bağlamda, etkili ve verimli bir bankacılık sistemi, bir ülkenin ekonomik kalkınma süreci için vazgeçilmez bir araç olarak kabul edilmektedir. Finansal liberalleşme, finans sektöründe rekabeti artırmanın bir yolu olarak görülmekte olup işletmelerin ve hanehalklarının ucuz krediye erişimlerini kolaylaştırabilmek için hayati öneme sahiptir. İstikrarlı bankacılık sistemleri, ülkelerin gelişim düzeylerini ölçmede alternatif bir yöntem olarak kullanılabilir.

Nitekim gelişmiş ülkelerin genel itibarıyla güçlü ve verimli finansal sistemlere sahip olmaları şaşırtıcı değildir. Bu, ekonomik refah ve sağlıklı finansal kurumlar arasındaki sıkı bağlantılarla açıklanabilir (Çavuşoğlu vd., 2019: 1).

Ekonomik büyüme, genellikle bir ülkenin refahı ve kalkınmasıyla ilişkilendirildiği için kurumlar ve ekonomi politikası yapıcıları nezdinde her zaman en yüksek önceliklerden biri olmuştur. Dolayısıyla finansal gelişimle ekonomik büyüme açıkça ilişkili olup ikisi de genel piyasa ekonomisinin parçasını oluşturmaktadır. Bir ülkenin finansal sisteminin gelişmişlik düzeyiyle ekonomik büyümesi arasındaki ilişki ekonomi literatüründe büyük ilgi görmüştür. Öyle ki, daha fazla finansal gelişimin ekonomik büyümeyi sadece desteklemekle kalmayıp aynı zamanda artırdığına dair güçlü bir akademik uzlaşı bulunmaktadır. Gerçekten de ampirik kanıtlar, finansal sistemdeki gelişimin ekonomik büyümenin önemli bir kaynağı olduğunu ve kaynak tahsisinin daha verimli hale gelmesine, rekabetin artmasına ve işletmelere ve hanehalklarına daha iyi şartlar altında kredi sunulmasına katkıda bulunduğunu ortaya koymaktadır (Afonso & Carmen Blanco-Arana, 2021; Raifu vd., 2024; Wen vd., 2022).

Bu kapsamda finansal gelişimin ekonomik büyüme üzerindeki olumlu etkisi, daha geniş yatırım fırsatlarını, tasarrufların daha etkin mobilizasyonunu ve kurumsal yönetimin iyileştirilmesini desteklemesi olarak yorumlanabilir. Yine finansal gelişim, bireylerin kendi işlerini kurma olasılığını artırırken yeni firmaların piyasaya girişini kolaylaştırmakta, rekabeti artırmakta ve istihdam oluşumuna katkı sağlamaktadır (Dutta & Meierrieks, 2021: 114). Diğer taraftan özel sektöre aşırı kredi kullandırılması, işgücü piyasası nispeten daha katı ülkelerde işsizliği artırıcı yönde bir etki de yaratabilmektedir (Chen vd., 2021: 1). Yani kredi genişlemesinin istihdam üzerindeki etkisi her zaman olumlu yönde olmayabilir. Finansal dalgalanmalar, kredi tahsis süreçlerinde yaşanan aksaklıklar ve bankacılık sistemindeki kırılganlıklar, yani kredi piyasası kusurları, işgücü piyasasında dalgalanmaları beraberinde getirebilir (Dromel vd., 2010: 823).

İstihdam oranında yaşanan yükseliş, işletmelerin ve hanehalklarının gelir seviyelerini iyileştirebilir. Daha fazla hanehalkı istihdamı, tüketici harcamalarını ve yatırımları artırmak suretiyle kredi talebinde yükselişe neden olabilir. İşletmeler, bu tüketim artışını karşılayabilmek için genişleme yatırımlarına yönelerek bankalardan daha fazla kredi kullanabilirler. Ayrıca kredi kullanımından kaynaklanan borcu geri ödemek için hanehalkının işgücüne katılım oranı da artabilir (Feng vd., 2023: 7). Başka bir deyişle, kredi genişlemesi finansal gelişimin ana belirleyicileri arasında yer edinirken işgücü piyasası derinleşebilir.

Ekonomi literatüründe finansal gelişim ve istihdam arasındaki ilişki üzerine farklı teorik yaklaşımlar bulunmaktadır. Arz yönlü hipoteze göre gelişmiş bir finansal sistem, ekonomik büyümeyi teşvik ederek istihdama katkı sağlamaktadır (King & Levine, 1993; Levine, 1997). Buna karşın talep yönlü hipotezde ise ekonomik büyümenin finansal gelişimi yönlendirdiği ve özel sektör kredilerinin genişlemesine bağlı olarak işgücüne talebin yükseldiği savunulmaktadır (Robinson, 1979; Patrick, 1980).

Politik ekonomi literatürü işgücü ve finansal piyasalar arasındaki karşılıklı bağımlılığı vurgularken teorik literatür işgücü ve finansal piyasa kurumlarının etkileşiminin toplam istihdam üzerinde önemli sonuçlar doğurabileceğini ortaya koymaktadır. Finansal sektörle işgücü piyasalarının etkileşimini konu olarak ele alan çalışmaların sayısı artmaktadır. Ancak bu çalışmaların çoğu yalnızca ilkinden ikincisine yönelik olan etkinin üzerine odaklanmış olup karşılıklı etkileşimi dikkate alan çalışmaların sayısı ise sınırlı kalmıştır (Çavuşoğlu vd., 2019; İspiroğlu vd., 2023).

Bu çalışma, bankalar tarafından özel sektöre sağlanan kredilerle istihdam arasındaki etkileşimi nedensellik perspektifinden D-8 ülkeleri için analiz etmeyi amaçlamaktadır. Analiz için D-8 ülkelerinin seçilmesi, toplam nüfuslarının yaklaşık 1.2 milyar olması, toplam dış ticaret hacimlerinin 2.1 trilyon dolarla küresel ticaret hacminden yaklaşık %7 pay alması ve genel itibarıyla İslam coğrafyasının her bir köşesindeki öne çıkan ekonomiler sayılmaları nedeniyledir (D-8 Organization for Economic Cooperation, 2024).

Standart Konya panel nedensellik testini ve buna bağlı olarak geliştirilmiş olan asimetrik Konya panel nedensellik testini 1991-2023 dönemi için uygulayan bu çalışma kapsamında D-8 ülkelerinde bankalar tarafından özel sektöre sağlanan kredilerle istihdam oranı arasında karşılıklı bir nedensellik ilişkisinin bulunması beklenmektedir. Çalışmada D-8 ülkelerinden İran, veri yetersizliği nedeniyle analize dahil edilmemiştir. Bu durum, çalışmanın bir sınırlılığı sayılabilir.

LİTERATÜR ÖZETİ

Sezal ve Taşkın (2024) tarafından Türkiye'de Ocak 2015-Mart 2023 döneminde Granger nedensellik ve Toda-Yamamoto nedensellik testleri uygulanarak yürütülmüş olan çalışmada bankaların sağladıkları ticari kredilerle istihdam arasında nedensellik ilişkisinin olmadığı tespit edilmiştir.

Yixin vd. (2024) tarafından Çin'de 2007-2021 dönem aralığında kantil regresyon modeli kullanılarak yapılmış olan çalışmada finansal gelişme/kredi genişlemesinin ekonomik açıdan gelişmiş bölgelerde işsizliği azalttığı sonucuna ulaşılmıştır.

Raifu vd. (2024) tarafından MENA ülkelerinde 1991-2019 döneminde panel Granger nedensellik testi uygulanarak yürütülmüş olan çalışmada finansal gelişmenin işsizliği ciddi ölçüde azalttığı saptanmıştır.

Naimoğlu (2023) tarafından Türkiye'de 1990-2021 dönemi için fourier Engle-Granger ve standart Engle-Granger eşbütünleşme testleri uygulanarak yapılmış olan çalışmada finansal gelişimin istihdam fırsatları yarattığı hususunda çeşitli bulgular elde edilmiştir.

İspiroğlu vd. (2023) tarafından Türkiye'de Ocak 2014-Ekim 2022 döneminde Granger nedensellik testi uygulanarak yürütülmüş olan çalışmada işsizlik oranından bankaların özel sektöre sağladıkları kredilerin hacmine doğru tek yönlü bir nedensellik olduğu belirlenmiştir.

Wen vd. (2022) tarafından 120 ülkede 1997-2017 dönemi için sistem genelleştirilmiş momentler tahmin yöntemi uygulanarak yapılmış olan çalışmada finansal gelişmenin ülke ekonomilerinde istihdam artışı sağladığı tespit edilmiştir.

Chen vd. (2021) tarafından OECD üyesi olan ve olmayan toplam 97 ülkede 1991-2015 dönem aralığında dinamik eşzamanlı modelleme ve sistem genelleştirilmiş momentler yöntemleri uygulanarak yürütülmüş olan çalışmada fazla finansal gelişmenin nispeten katı işgücü piyasalarına sahip ülkelerde işsizliği artırdığı sonucuna ulaşılmıştır.

Afonso ve Carmen Blanco-Arana (2021) tarafından OECD üyesi ülkelerde 1990-2020 döneminde rastgele etkiler modeli kullanılarak yapılmış olan çalışmada finansal gelişimin (piyasa kapitalizasyonu ve hisse senedi işlem hacmi) işsizlik oranını azalttığına dair bulgu elde edilmiştir.

Ajide (2020) tarafından Nijerya'da 1980-2017 döneminde doğrusal olmayan otoregresif dağıtılmış gecikme testi uygulanarak yürütülmüş olan çalışmada finansal gelişmenin işsizlik üzerindeki etkisinin asimetrik olduğu saptanmıştır.

Çavuşoğlu vd. (2019) tarafından KKTC'de 1977-2013 döneminde vektör hata düzeltme modeli (VAR) kullanılarak yapılmış olan çalışmada finansal sektör çıktısıyla istihdam arasında çift yönlü nedensellik ilişkisi olduğu belirlenmiştir.

Ünsal (2019) tarafından Türkiye'de 1988-2017 dönemi için VAR modeline dayalı Granger nedensellik testi uygulanarak yürütülmüş olan çalışmada kısa vadede finansal gelişmişlikten istihdama doğru tek yönlü pozitif nedensellik ilişkisi olduğu tespit edilmiştir.

Çiftçioğlu ve Bein (2017) tarafından seçili 10 AB ülkesinde 1991-2012 dönem aralığında Granger nedensellik testi uygulanarak yapılmış olan çalışmada finansal gelişmeden işsizliğe doğru tek yönlü bir nedensellik olduğu sonucuna ulaşılmıştır.

Karaçayır ve Karaçayır (2016) tarafından Türkiye'de 2006-2015 döneminde otoregresif dağıtılmış gecikme testi uygulanarak yürütülmüş olan çalışmada finansal gelişmişliğin kısa vadede işsizliği azalttığı bulgusu elde edilmiştir.

Literatürdeki çalışmalar, finansal gelişimle istihdam arasındaki etkileşimi genel itibarıyla benzer yöntemleri uygulayarak (Granger nedensellik testi ve regresyon modeli gibi) ele almıştır. Konuyu nedensellik perspektifinden inceleyen çalışmalarda sadece incelenen dönem içerisinde genel bir nedensellik olup olmadığına bakılmış, ancak olası bir nedenselliğin asimetrik olup olmadığı üzerinde durulmamıştır. Bu çalışmada ise bankalar tarafından özel sektöre sağlanan kredilerle istihdam oranı değişkenleri kullanılmakta olup bunların pozitif ve negatif birikimli şoklarına nedensellik testi uygulanmaktadır. Böylelikle nedenselliğin asimetrik yönü de dikkate alınmaktadır. Dolayısıyla bu çalışma, uyguladığı yöntem itibarıyla mevcut çalışmalardan farklılaşmakta ve literatüre metodolojik açıdan önemli bir katkı sağlama potansiyeli taşımaktadır.

VERİ VE YÖNTEM

Bu çalışma D-8 ülkelerinde bankalar tarafından özel sektöre sağlanan kredilerle istihdam arasındaki etkileşimi nedensellik perspektifinden incelediği için bu değişkenlerin göstergesi sayılan iki veri toplanmıştır. Veri seti, ulaşılabilen verilerden hareketle 1991-2023 yıl aralığını kapsamaktadır (bkz. Tablo 1). Çalışmada kullanılan veriler yıllık olduğu için mevsimsellik etkisi bulunmamakta olup mevsimsel ayrıştırma yapılması gerekmemiştir. Analiz kısmında Konya (2006) tarafından geliştirilmiş olan Konya bootstrap panel nedensellik testi ve bu teste dayandırılarak Yılancı ve Aydın (2017) tarafından önerilmiş olan asimetrik Konya bootstrap panel nedensellik testi uygulanmış ve böylelikle değişkenler arasındaki olası nedensellik hem incelenen dönem içerisinde genel açıdan hem asimetrik açıdan kapsamlı şekilde ele alınmıştır.

Tablo 1: Çalışmanın Veri Seti

Veri Adı	Kaynağı	Açıklaması
Bankalar tarafından özel sektöre sağlanan kredilerin hacmi	(WDI, 2025)	Ülkeler için ticari bankalar tarafından özel sektöre sağlanan iç kredilerin hacmini Gayrisafi Yurt İçi Hasılatın yüzdesi cinsinden temsil etmektedir.
İstihdam oranı	(ILOSTAT, 2025)	Ülkeler için genel istihdamı oran cinsinden temsil etmektedir.

Konya (2006) tarafından geliştirilmiş olan bootstrap panel nedensellik testini uygulamadan önce birim kök ve eşbütünleşme ön testlerinin uygulanması gerekmemektedir. Öte yandan heterojenlik ve yatay kesitsel bağımlılık (CD) durumları dikkate alındığı için bu testi uygulamadan önce söz konusu durumların varlığı tespit edilmelidir.

Yüksek düzeyde küreselleşme, uluslararası ticaret ve finansal entegrasyon bir ülkeyi diğer tüm ülkelerden gelen ekonomik şoklara karşı hassas hale getirdiği için panel nedensellik analizi yürütülürken ülkeler arası olası kesitsel bağımlılığın dikkate alınması önemlidir (Pan vd., 2015: 447).

Bir çalışmada kullanılan seriler arasında CD olup olmadığını belirlemek için literatüre kazandırılmış birçok test bulunmaktadır. Bu testlere öncülük eden test, Breusch ve Pagan (1980) tarafından literatüre kazandırılmış olan Lagrange Çarpanı (LM) testidir. LM testi, yatay kesitsel boyutun zaman boyutundan daha küçük olduğu durumlarda kullanılmaktadır. Denklem şöyledir;

$$y_{it} = \alpha_i + \beta_i' x_{it} + \mu_{it} \quad i = 1, \ldots, N;\ t = 1, \ldots, T \tag{1}$$

$$LM = T \sum_{i=1}^{N-1} \sum_{j=i+1}^{N} \hat{\rho}_{ij}^2\ ,\ \chi^2_{N(N-1)/2} \tag{2}$$

$\hat{\rho}_{ij}^2$, denklem 1'de bireysel en küçük kareler tahminiyle ulaşılan kalıntılar arasındaki korelasyon katsayısını temsil etmektedir.

Ancak Pesaran (2004), zaman ve yatay kesit boyutunun artması durumunda LM testinin geçerliliğini yitireceğini vurgulamış ve CD_{LM} testini geliştirip literatüre kazandırmışlardır. Yani CD_{LM} testi, hem N hem T'nin büyük olduğu durumlarda kullanılabilmektedir. Denklem şöyledir;

$$CD_{LM} = \left(\frac{1}{N(N-1)}\right)^{\frac{1}{2}} \sum_{i=1}^{N-1} \sum_{j=i+1}^{N} (T\,\hat{\rho}_{ij}^2 - 1), N(0,1) \quad (3)$$

Son olarak, Pesaran vd. (2008) tarafından yanlılığa göre düzeltilmiş test istatistiğini göstermek için önceki yatay kesit testlerinin uyarlaması şeklinde literatüre kazandırılmış olan LM_{adj} testinin denklemi şöyledir;

$$LM_{adj} = \sqrt{\frac{2}{N(N-1)}} \sum_{i=1}^{N-1} \sum_{j=i+1}^{N} \frac{(T-k)\hat{\rho}_{ij}^2 - \mu_{Tij}}{v_{Tij}^2}, N(0,1) \quad (4)$$

Serilerin heterojen bir yapıda olup olmadığını belirleyebilmek için Pesaran ve Yamagata (2008) tarafından literatüre kazandırılmış olan düzeltilmiş delta ($\tilde{\Delta}_{adj}$) testi bulunmaktadır. Denklemi şöyledir;

$$\tilde{\Delta}_{adj} = \sqrt{N}\left(\frac{N^{-1}\tilde{S} - E(\tilde{z}_{iT})}{\sqrt{var(\tilde{z}_{iT})}}\right) \quad (5)$$

Konya bootstrap panel nedensellik testi uygulanırken Zellner (1962) tarafından önerilmiş olan aşağıdaki denklemin görünürde ilişkisiz tahmin yöntemiyle (SUR) tahmin edilmesi gerekmektedir. Denklemde SUR yöntemiyle geliştirilen VAR sistemi ifade edilmektedir;

$$y_{1,t} = \alpha_{1,1} + \sum_{l=1}^{l_{y1}} \beta_{1,1,l} y_{1,t-1} + \sum_{l=1}^{l_{x1}} \delta_{1,1,l} x_{1,t-1} + \varepsilon_{1,1,t}$$

$$y_{2,t} = \alpha_{1,2} + \sum_{l=1}^{l_{y1}} \beta_{1,2,l} y_{2,t-1} + \sum_{l=1}^{l_{x1}} \delta_{1,2,l} x_{2,t-1} + \varepsilon_{1,2,t}$$

.
.
.

$$y_{N,t} = \alpha_{1,N} + \sum_{l=1}^{l_{y1}} \beta_{1,N,l} y_{N,t-1} + \sum_{l=1}^{l_{x1}} \delta_{1,N,l} x_{N,t-1} + \varepsilon_{1,N,t}$$

Benzer şekilde;

(6)

.
.
.

$$x_{N,t} = \alpha_{2,N} + \sum_{l=1}^{l_{y1}} \beta_{2,N,l} y_{N,t-1} + \sum_{l=1}^{l_{x1}} \delta_{2,N,l} x_{N,t-1} + \varepsilon_{2,N,t}$$

Panelin ilk kesiti için X'ten Y'ye nedensellik, $\delta_{1,1,l}$ katsayısının istatistiksel açıdan anlamlılığının Wald testiyle sınanmasıyla araştırılmaktadır. Benzer uygulama Y'den X'ye nedensellik için de aynı şekilde yapılmakta olup uygun kritik değerlere bootstrap ile ulaşılmaktadır.

Yılancı ve Aydın (2017), çalışmalarında panel veri değişkenlerini pozitif ve negatif bileşenlerine ayırıp bu bileşenlere Konya bootstrap panel nedensellik testini uygulamayı önermişlerdir. Böylelikle Konya bootstrap panel nedensellik testinin asimetrik versiyonunu literatüre kazandırmışlardır. Her değişkenin pozitif ve negatif şokları şöyle tanımlanabilir;

$$x_{it}^{+} = \sum_{i=1,j=1}^{t,n} \varepsilon_{ij}^{+}, \quad x_{it}^{-} = \sum_{i=1,j=1}^{t,n} \varepsilon_{ij}^{-}$$

(7)

$$y_{it}^{+} = \sum_{i=1,j=1}^{t,n} \varepsilon_{ij}^{+}, \quad y_{it}^{-} = \sum_{i=1,j=1}^{t,n} \varepsilon_{ij}^{-}$$

Konya bootstrap nedensellik testi, sadece değişkenlerin düzey değerleri arasındaki nedenselliği test etmeye yöneliktir. Ancak değişkenler, belli bir tip şoka birlikte, farklı bir tip şoka ise farklı tepkiler verebilir. Bu türden gizli ilişkileri ortaya çıkarmak için panel değişkenleri pozitif ve negatif birikimli şoklara ayırıp bu değerlere standart Konya bootstrap nedensellik testi uygulanmaktadır. Böylelikle asimetrik bootstrap panel nedensellik ilişkisinin analizi yürütülmüş olunmaktadır. Süreç ve kritik değerlerin elde edilişi, Konya bootstrap panel nedensellik testiyle aynıdır.

BULGULAR

Tablo 2'de yatay kesitsel bağımlılık ve homojenlik ile ilgili test sonuçları gösterilmektedir. Buna göre çalışmadaki seriler arasında yatay kesitsel bağımlılık durumu bulunmakta olup seriler heterojen yapıya sahiptir.

Tablo 2: Yatay Kesitsel Bağımlılık ve Homojenlik Testlerine Ait Sonuçlar

Yatay Kesitsel Bağımlılık	**Test İstatistikleri**
LM	124,5*
LM_{adj}	51,13*
LM CD	-1,847***
Homojenlik	**Test İstatistikleri**
$\tilde{\Delta}$	2,485*
$\tilde{\Delta}_{adj}$	2,607**

*, ** ve *** sırasıyla %1, %5 ve %10 anlamlılık düzeylerinde anlamlılığı ifade etmektedir.

Dolayısıyla standart Konya ve asimetrik Konya bootstrap panel nedensellik testlerini uygulama şartı sağlanmıştır.

Konya bootstrap panel nedensellik testinin sonuçları Tablo 3'te yer almaktadır. Test bulguları, Bangladeş için özel sektöre sağlanan kredilerden istihdama doğru tek yönlü, Nijerya ve Türkiye için ise çift yönlü nedensellik ilişkisi bulunduğunu göstermektedir.

Tablo 3: Konya Bootstrap Panel Nedensellik Test Sonuçları

	H_0: Bankalar tarafından özel sektöre sağlanan krediler istihdamın nedeni değildir.				**H_0: İstihdam, bankalar tarafından özel sektöre sağlanan kredilerin nedeni değildir.**			
	Bootstrap Kritik Değerleri				**Bootstrap Kritik Değerleri**			
Ülkeler	**Wald Test İstatistiği**	**%1**	**%5**	**%10**	**Wald Test İstatistiği**	**%1**	**%5**	**%10**
Bangladeş	23,229*	0,810	0,785	0,771	1,454	4,940	3,583	3,088
Mısır	1,410	2,705	2,658	2,632	1,412	10,124	9,131	8,682

Endonezya	3,892	18,041	17,862	17,771	0,839	9,563	6,309	5,031
Malezya	0,564	0,971	0,959	0,953	5,784	11,408	8,682	7,427
Nijerya	6,014*	2,979	2,955	2,941	7,311*	2,899	1,957	1,556
Pakistan	1,027	5,426	5,382	5,360	0,515	5,369	4,074	3,462
Türkiye	2,280*	0,056	0,053	0,051	14,741*	6,039	5,003	4,513

* %1 anlamlılık düzeyinde sıfır hipotezinin reddedildiğini göstermektedir.

Tablo 4'te sunulan sonuçlar, pozitif şoklar temelinde herhangi bir ülke için özel sektöre sağlanan kredilerden istihdama doğru nedensellik ilişkisi olmadığını ortaya koymaktadır. Bu sonuç, Tablo 3'teki sonucu desteklememektedir.

Bununla birlikte Bangladeş, Malezya, Nijerya ve Türkiye için istihdamdan özel sektöre sağlanan kredilere doğru nedensellik ilişkisi olduğu tespit edilmiştir. Standart Konya bootstrap panel nedensellik testinin sonucuna göre ise bu ilişki sadece Nijerya ve Türkiye için vardır (bkz. Tablo 3). Dolayısıyla bu sonuç, Tablo 3'teki sonucu kısmen desteklemektedir.

Tablo 4: Asimetrik Konya Bootstrap Panel Nedensellik Test Sonuçları (Pozitif Şoklar +,+)

	H_0: Bankalar tarafından özel sektöre sağlanan krediler istihdamın nedeni değildir.				**H_0: İstihdam, bankalar tarafından özel sektöre sağlanan kredilerin nedeni değildir.**			
	Bootstrap Kritik Değerleri				**Bootstrap Kritik Değerleri**			
Ülkeler	**Wald Test İstatistiği**	**%1**	**%5**	**%10**	**Wald Test İstatistiği**	**%1**	**%5**	**%10**
Bangladeş	4,404	10,042	7,929	6,977	4,590*	2,816	1,613	1,128
Mısır	1,718	6,582	4,814	3,978	0,001	3,899	2,787	2,246
Endonezya	6,093	10,380	8,262	7,289	1,996	6,013	4,364	3,663
Malezya	0,551	4,541	3,493	2,991	8,799***	11,163	9,056	7,957
Nijerya	0,360	5,105	3,534	2,929	9,224**	10,376	5,447	2,823
Pakistan	1,043	9,080	6,522	5,404	0,294	7,445	5,160	4,177
Türkiye	4,771	37,665	29,186	25,537	5,154**	5,196	3,768	2,708

*, ** ve *** sırasıyla %1, %5 ve %10 anlamlılık düzeylerinde sıfır hipotezinin reddedildiğini göstermektedir.

Negatif şoklar açısından ise Nijerya ve Malezya için özel sektöre sağlanan kredilerden istihdama doğru nedensellik ilişkisi olduğu Tablo 5'te görülmektedir. Standart Konya bootstrap panel nedensellik testinin sonucuna göre ise bu iki ülkeye ek olarak Türkiye için de bir nedensellik vardır. Dolayısıyla testlere ait sonuçlar, Türkiye ile ilgili olan dışında benzerlik göstermektedir.

Bununla birlikte sadece Malezya için istihdamdan özel sektöre sağlanan kredilere doğru nedensellik ilişkisi olduğu saptanmıştır. Standart Konya bootstrap panel nedensellik testinin sonucuna göre ise bu

nedensellik herhangi bir ülke için bulunmamaktadır. Dolayısıyla bu sonuç da Tablo 3'teki sonuçtan farklıdır.

Tablo 5: Asimetrik Konya Bootstrap Panel Nedensellik Test Sonuçları (Negatif Şoklar -,-)

	H_0: Bankalar tarafından özel sektöre sağlanan krediler istihdamın nedeni değildir.				**H_0: İstihdam, bankalar tarafından özel sektöre sağlanan kredilerin nedeni değildir.**			
	Bootstrap Kritik Değerleri				**Bootstrap Kritik Değerleri**			
Ülkeler	**Wald Test İstatistiği**	**%1**	**%5**	**%10**	**Wald Test İstatistiği**	**%1**	**%5**	**%10**
Bangladeş	27,470*	18,042	10,704	8,002	11,719	24,020	18,594	15,622
Mısır	2,197	6,762	4,792	3,961	3,502	7,193	5,633	4,937
Endonezya	2,018	8,271	5,690	4,618	0,658	10,996	7,565	5,968
Malezya	2,554	33,651	23,703	19,106	24,361**	30,443	22,964	19,401
Nijerya	2,866**	3,492	2,045	1,509	6,323	27,228	20,589	17,594
Pakistan	3,960	12,090	9,120	7,725	7,062	16,203	11,754	9,778
Türkiye	2,906	14,982	9,379	6,896	0,228	25,818	18,747	15,598

* ve ** sırasıyla %1 ve %5 anlamlılık düzeylerinden sıfır hipotezinin reddedildiğini göstermektedir.

Yapılan analizle Bangladeş, Nijerya ve Türkiye özelinde özel sektöre sağlanan kredilerle istihdam arasında çift yönlü bir nedensellik olduğu anlaşılmıştır. Bunun yanı sıra, Malezya özelinde istihdamdan özel sektöre sağlanan kredilere doğru tek yönlü bir nedensellik olduğu da elde edilen bulgular arasındadır. Uygulanan testlerin bulguları, hem birbirini desteklemekte hem birbirinden farklılaşmaktadır.

SONUÇ VE ÖNERİLER

Ekonomik zaman serilerinin pozitif ve negatif birikimli şok(lar)a verdiği tepki farklılaşabilir. Bu durum, değişkenler arasındaki nedenselliğin pozitif ve negatif bileşenlere ayırma işleminin yapılarak incelenmesi gerektiğini göstermektedir. Asimetrik nedensellik testleri, bu tür durumlarda daha güvenilir sonuçlar verebilmektedir. Literatürde panel veri modelleri için asimetrik nedensellik test(ler)i uygulanarak yapılmış çalışmaların sayısı sınırlıdır. Bu çalışma, panel veriler için kullanılabilecek asimetrik bir panel nedensellik testine dikkat çektiği için literatüre özellikle metodolojik açıdan katkı sağlama potansiyeli taşımaktadır.

Çalışmada ilk önce D-8 ülkelerinde özel sektöre sağlanan kredilerle istihdam arasındaki simetrik nedensellik ilişkisi Konya (2006) panel nedensellik testiyle incelenmiştir. Sonuçlar, Bangladeş için özel sektöre sağlanan kredilerden istihdama doğru tek yönlü ilişki, Nijerya ve Türkiye için ise çift yönlü ilişki bulunduğunu göstermiştir. Ancak, değişkenlerin pozitif ve negatif bileşenleri kullanılarak ortaya çıkarılabilecek gizli bir nedensellik ilişkisi olabilir. Dolayısıyla Yılancı ve Aydın'ın (2017) geliştirmiş oldukları asimetrik Konya panel nedensellik testi uygulanmıştır. Bu test, birim kök ve eşbütünleşme gibi ön testlerin uygulanmasını gerektirmemesi ve değişkenler arasındaki nedenselliği her birim için ayrı ayrı incelemeye olanak vermesi nedeniyle avantajlıdır.

Asimetrik Konya panel nedensellik testi, Konya panel nedensellik testinden farkı olarak;

- Pozitif şoklar açısından D-8 ülkelerinin herhangi birinde özel sektöre sağlanan kredilerden istihdama doğru nedensellik ilişkisi olmadığını,

- Bangladeş ve Malezya için istihdamdan özel sektöre sağlanan kredilere doğru nedensellik ilişkisi olduğunu,

- Negatif şoklar açısından ise Türkiye'de özel sektöre sağlanan kredilerden istihdama doğru nedensellik olmadığını ve

- Malezya için istihdamdan özel sektöre sağlanan kredilere doğru nedensellik olduğunu ortaya koymuştur.

Bu bağlamda, D-8 ülkelerinde politika yapımı kapsamında;

- Kredi teşvikleri ve faiz sübvansiyonları, istihdam yaratma potansiyeli yüksek sektörlere yönlendirilmelidir.

- Mesleki eğitim ve istihdam teşvikleri artırılarak istihdamdan krediye doğru olan pozitif ilişki güçlendirilmelidir.

- Küçük ölçekli işletmelerin ve özellikle genç girişimcilerin krediye erişimlerini kolaylaştırabilmek için mikro finans, düşük faizli ve faizsiz kredi mekanizmalarının hayata geçirilmesi önemlidir.

Bu öneriler, D-8 ülkelerinde ekonomik büyümeyi sürdürülebilir şekilde desteklemek için uygulanabilir niteliktedir. Gelecek çalışmalarda, farklı gelişmişlik düzeyine sahip ülkeler ve ülke grupları üzerinden benzer analizler yürütülerek bulgular karşılaştırılabilir ve ülke bazında spesifik öneriler geliştirilebilir. D-8 ülkelerinden biri olan İran'ın veri yetersizliği nedeniyle analize dahil edilmemesi bu çalışmanın sınırlılığıdır. Dolayısıyla gelecek çalışmalar, veri yetersizliği olmayan ülke grupları üzerinde çalışarak gruptaki ülkelerin tamamı açısından değerlendirmeler yapabilir.

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HİSSE SENEDİ FİYATINI ETKİLEYEN İŞLETME DÜZEYİNDEKİ FAKTÖRLER: BRICS-T ÖRNEĞİ

BUSINESS-LEVEL FACTORS AFFECTING STOCK PRICE: THE BRICS-T EXAMPLE

Mehmet AKARÇAY

Dr. Öğr. Üyesi
E-mail: ahievran.akarcay@gmail.com
ORCID ID: 0000-0003-1933-3510

Öz

Bu çalışmanın amacı hisse senedi fiyatını etkileyen işletme düzeyindeki faktörleri tespit etmektir. Bu kapsamda BRICS-T (Brezilya, Rusya, Hindistan, Çin, Güney Afrika ve Türkiye) ülke borsalarında faaliyet gösteren ve piyasa değeri en yüksek her ülke için ilk 5 işletmenin 2016Q1-2025Q2 dönemleri arası finansal tablo verilerinden yararlanılmıştır. Panel veri regresyon analizi ve Granger nedensellik testinin yapıldığı analizin ampirik bulgularına bakıldığında; bağımlı değişken, hisse senedi fiyatı ile fiyat kazanç oranı, özkaynak karlılığı ve özsermaye artış hızı arasında pozitif, aktif karlılığı ve kaldıraç oranı arasında ise negatif bir ilişki söz konusudur. Genel olarak değerlendirildiğinde, modeldeki hiçbir bağımsız değişkenin hisse senedi fiyatı üzerindeki etkisi istatistiksel olarak anlamlı bulunmamıştır. Granger nedensellik testi istatistiki bulgularına bakıldığında, bağımlı değişken ile aktif karlılığı değişkeni ve aktif karlılığı ile fiyat kazanç oranı arasında %1 anlamlılık düzeyinde çift yönlü nedensellik ilişkisi tespit edilmiştir.

Anahtar Kelimeler: Hisse Senedi Fiyatı, Kaldıraç Oranı, Aktif Karlılığı

Abstract

The aim of this study is to identify firm-level factors affecting stock prices. For this purpose, financial statement data for the 2016Q1-2025Q2 period was used for the top five companies operating in the BRICS-T (Brazil, Russia, India, China, South Africa, and Turkey) stock exchanges for each country with the highest market capitalization. The empirical findings of the panel data regression analysis and Granger causality test indicate a positive relationship between the dependent variable, stock price, and the price-earnings ratio, return on equity, and the growth rate of equity, while a negative relationship exists between return on assets and the leverage ratio. Overall, no independent variable in the model had a statistically significant effect on stock prices. The statistical findings of the Granger causality test revealed a bidirectional causal relationship at a 1% significance level between the dependent variable and return on assets, and between return on assets and the price-earnings ratio.

Keywords: Stock Price, Leverage Ratio, Return on Assets

GİRİŞ

Borsa, bir ekonominin en önemli göstergelerinden biri olarak kabul edilmektedir. Birikimi olan yatırımcıları teşvik eden ve ülke ekonomisinin gelişmesine ve büyümesine katkı sunan sermaye piyasalarının başında gelmektedir. Küresel anlamda borsalar, menkul kıymetlerin alınıp satıldığı bir platformdan ziyade, tasarruf sahipleri ile sermaye kullanıcılarını bir araya getiren, riskleri paylaştıran bir rol üstlenmektedir. (Al Tamimi vd., 2011). Hisse senetlerine yatırım, işletmelerin genişleme ve çeşitlendirme gibi fon ihtiyaçlarını karşılamak için kullanmış oldukları finansman kaynaklarından bir tanesidir. Yatırımcıların riskten kaçındığı ve yatırımlarının oynaklığının, taşıdıkları riskin yoğunluğunun bir ölçüsü olması nedeniyle onlar için büyük endişe kaynağı olduğu genel kabul görmüş bir olgu olarak karşımıza çıkmaktadır. Ancak, bir yatırımcının bakış açısından, optimum yatırım kararı verebilmek için hisse senedi fiyatını belirleyen faktörler hakkında bilgi ve farkındalığa sahip olmak tavsiye edilmektedir. Bilim insanları, hisse senedi fiyatını etkileyen faktörler olarak çeşitli iç ve dış faktörleri belirlemiştir. Şirkete özgü veya iç faktörler; şirket performansı, yönetim kurulu yapısındaki değişiklik, varlık pozisyonu, temettüler ve kazançlardır (Sharif vd., 2015).

İşletmelerin finansal yapıları genellikle işletmeye özgü temel faktörlerden etkilenmektedir. Bu faktörler, hisse senedi fiyatlarında önemli bir rol oynamaktadır. Faaliyet dönemi içerisinde yatırımcıların beklediği düzeyde kar elde eden ya da geçmiş yıllara bakıldığında sürekli artan bir kar grafiğine sahip işletmelerin hisse senetlerine olan talep artmakta ve buna bağlı olarak da hisse senedi fiyatları artmaktadır (Zhao, 2014). Buna karşın, işletmelerin yeterince kar etmemeleri veya zarar etmeleri durumunda ise yatırımcılar arasında panik meydana gelecek ve yatırımcılar ellerindeki hisse senetlerini zarar etmemek adına bir an önce satacaklardır. Bu durumda ise işletme hisse senedi fiyatlarında düşüş yaşanması kaçınılmaz olacaktır. Bu nedenlerden dolayı hisse senetleri fiyatları işletmeye özgü temel faktörler ziyadesiyle etkilenmektedir (Sukesti vd., 2021).

Bu araştırma, hisse senedi fiyatlarını etkileyen işletmeye özgü faktörlerin farklı finansal oranlarla açıklamaya çalışmaktadır. Bu kapsamda, BRICS-T ülkelerinde işlem gören ve piyasa değeri en yüksek her ülke için finansal verilerine eksiksiz ulaşılabilen ilk 5 işletmenin mali tablo verileri yardımıyla 2016Q1-2025Q2 dönemleri arası hisse senedi fiyatını etkileyen işletmeye özgü faktörlerin neler olduğunu belirlemektir. Araştırmada bir dizi finansal tablo verilerini bağımsız değişken olarak inceleyerek, panel veri regresyon analizi yöntemiyle açıklamaya çalışılmıştır. Metodoloji ve analiz dönemleri dikkate alındığında, bu çalışma nihayetinde ayrıntılı sonuçlar üretecek kadar kapsamlı bir çalışma olmuştur. Analizde kullanılan değişkenler, literatür ile kıyaslandığında genel kabul görmüş değişkenler olarak karşımıza çıkmaktadır. Bu değişkenlerin, hisse senedi fiyatları üzerinde beklenen etkilerinin açıklanması, yatırımcıların yatırım kararları üzerinde etkili ve yol gösterici olacağı düşünülmektedir. Ayrıca, hisse senedi fiyatı ile işletmeye özgü faktörler arasında bir bağlantı kurularak tespit edilmeye çalışılması araştırmanın önemini ortaya koyması bakımından değerli görülmektedir.

YÖNTEM

Çalışmada, hisse senedi fiyatı etkileyen işletme düzeyindeki faktörlerin neler olduğu panel veri regresyon analizi ile tespit edilecektir. Panel veri, her örnekleme biriminde birden fazla gözlemden oluşan veri kümelerini ifade etmektedir. Bu veri kümeleri, ülkeler, eyaletler, bölgeler, firmalar veya tesadüfi örneklenen bireyler veya haneler dahil olmak üzere çeşitli kesitsel birimlerdeki zaman serisi gözlemlerinin bir araya getirilmesiyle oluşturulmaktadır (Baltagi, 1998). Panel veri etlerinin kullanılmasının temel nedeni, panel veri setlerinde kesit veya zaman serisi verilerine kıyasla değişkenler arasında daha fazla değişkenlik ve daha az doğrusal bağlantıya sahip çok daha büyük bir veri kümesinden oluşmasıdır. Ayrıca, daha bilgilendirici verilerle, güvenilir tahminler sağlamakta ve daha az kısıtlayıcı varsayımlarla daha gelişmiş davranış modellerini test edilebilmekte ve bireysel heterojenliği kontrol altında tutabilmektedir. Bununla birlikte, özellikle panel veri kümeleri dinamik davranışın karmaşık konularını incelemede daha başarılı olarak görülmektedir (Hsiao, 1986).

Panel verilerin regresyon analizi, aynı birim kesitin farklı zamanlarda ölçüldüğü kesit verileri ve zaman serilerinin birleşimi olarak tanımlanmaktadır. Başka bir deyişle, panel veri, belirli bir zaman diliminde gözlemlenen aynı bireylerden bazılarının verileridir. T zaman periyodunu. (t = 1,2, ..., T) ve N ise birey sayısını (i = 1,2, ..., N) ifade etmektedir. Sonuç olarak panel verilerle toplam gözlem birimi N x T olmaktadır (Zulfikar, 2018).

Araştırma Modeli

Çalışmada, BRICS-T ülke borsalarında işlem gören ve piyasa değeri en yüksek ilk 5 işletmenin hisse senedi fiyatını etkileyen işletme düzeyindeki faktörleri belirlemek amacıyla panel veri regresyon analizi ve Granger nedensellik testi yapılmıştır. Panel veri regresyon modeline ilişkin model Eşitlik (1)'de yer almaktadır.

$$HSF_{i,t} = \alpha + \beta_1 FKO_{i,t} + \beta_2 TÜDO_{i,t} + \beta_3 ROA_{i,t} + \beta_4 ROE_{i,t} + \beta_5 KO_{i,t} + \varepsilon_{i,t} \quad (1)$$

Araştırmanın çalışma grubunu 2016Q1-2025Q2 yılları arası BRICS-T ülke borsalarında işlem gören her ülke için piyasa değeri en yüksek ve finansal verilerine eksiksiz ulaşılabilen 5 firma, toplamda ise 30 işletmenin finansal verilerinden oluşmaktadır. Bu kapsamda; hisse senedi fiyatı bağımlı değişken olarak analizde kullanılmıştır. Fiyat kazanç oranı, aktif karlılığı, özkaynak karlılığı ve kaldıraç oranı ise bağımsız değişken olarak analize dahil edilmiştir.

Veri Seti

Araştırmada, hisse senedi fiyatını etkileyen işletme düzeyindeki faktörleri belirlemek amacıyla oluşturulan çalışmanın veri seti, https://stockanalysis.com/list/exchanges/ web sayfasından elde edilmiştir. Elde edilen mali tablo verileri Eviews analiz programı ile analiz edilmiştir. Bu kapsamda, hisse senedi fiyatı bağımlı, fiyat kazanç oranı, özsermaye artış hızı, aktif karlılığı, özkaynak karlılığı ve kaldıraç oranı ise bağımsız değişken olarak analizde kullanılmıştır. Analizde kullanılan değişkenler ve bu değişkenlere ait açıklamalar Tablo 1'de gösterilmektedir.

Tablo 1. Analizde Kullanılan Değişkenler

Değişkenler	Kısaltma	Açıklama
Bağımlı Değişken		
Hisse Senedi Fiyatı	HSF	Hisse senetlerinin 3 aylık dönem sonu itibariyle kapanış fiyatları esas alınmıştır.
Bağımsız Değişkenler		
Fiyat Kazanç Oranı	FKO	Hisse Senedinin Piyasa Fiyatı / Hisse Başına Kar
Özsermaye Artış Hızı	ÖAH	(Cari Dönem Özsermaye Tutarı-Önceki Dönem Özsermaye Tutarı) / Önceki Dönem Özsermaye Tutarı * %100
Aktif Karlılığı (ROA)	ROA	Net Kar/Toplam Aktifler
Özkaynak Karlılığı (ROE)	ROE	Net Kar / Özkaynaklar
Kaldıraç Oranı	KO	Kısa Vadeli Yabancı Kaynaklar /Toplam Aktifler

BULGULAR

Çalışmada öncelikli olarak analize dahil edilen değişkenlere ait tanımlatıcı istatistikler Tablo 2'de gösterilmektedir.

Tablo 2. Değişkenlere İlişkin Betimsel İstatistikler

						Jarque-Bera Testi	
Değişkenler	**A. Ort**	**Medyan**	**Std. Sapma**	**Çarpıklık**	**Basıklık**	**Test İstatistiği**	**p-değeri**
HSF	805.03	64.67	2224.36	5.51	39.98	57133.29	**0.0001***
FKO	26.02	15.97	38.27	0.05	36.37	42731.85	**0.0001***
KO	0.56	0.58	0.21	0.05	2.19	25.91	**0.0001***
ROA	0.09	0.07	0.08	2.18	14.36	5683.49	**0.0001***
ROE	0.35	0.22	0.68	10.97	175.12	1155356.00	**0.0001***
ÖAH	0.04	0.03	0.32	-1.14	70.86	176936.20	**0.0001***

*, *p<0.01.*

Tablo 2'deki betimsel istatistikler incelendiğinde, panel veri setindeki değişkenlerin dağılımlarının normalden önemli ölçüde saptığı görülmektedir. Hisse senedi fiyatı değişkeninin ortalaması 805.03, medyanı 64.67 olup oldukça büyük bir fark mevcuttur; bu durum 5.51'lik pozitif çarpıklık değeriyle uyumlu şekilde serinin sağa çarpık olduğunu göstermektedir. Ayrıca 39.98'lik yüksek basıklık değeri, uç değerlerin yoğunluğunu ortaya koymaktadır. Tüm değişkenlerde Jarque-Bera test istatistikleri oldukça yüksek ve p-değerleri 0.0001 düzeyinde anlamlı bulunmuştur; dolayısıyla tüm serilerin normal dağılım varsayımını reddettiği anlaşılmaktadır. Ayrıca, bu bulgular Şekil 1'de verilen zaman içerisindeki değişikliklerin gözlemlendiği grafiklerinde de anlaşılmaktadır.

Şekil 1. Değişkenlere Ilişkin Zaman Içerisindeki Değişiklikler

Şekil 1'e göre, grafiklerde panel veri setindeki değişkenlerin zaman içindeki hareketleri görülmekte olup, bu eğilimler Tablo 2'deki betimsel istatistiklerle paralellik göstermektedir. Hisse senedi fiyatı değişkeni, dönemler itibarıyla belirgin dalgalanmalar sergilemiş ve ortalama ile medyan arasındaki fark, serinin genel olarak sağa çarpık bir yapıda olduğunu göstermektedir. Tablo 3'te değişkenlerdeki birimler arasında ilişkinin olup olmamasına ilişkin yatay kesit bağımlılık testlerine ilişkin bulgulara yer verilmiştir. Yatay kesit bağımlılığına ilişkin hipotezler aşağıdaki gibidir.

H_0: Yatay kesit bağımlılık yoktur.

H_1: Yatay kesit bağımlılık vardır.

Tablo 3. Değişkenlere İlişkin Yatay Kesit Bağımlılık Bulguları

	Breusch-Pagan LM		**Pesaran scaled LM**		**Bias-corrected scaled LM**		**Pesaran CD**	
	İstatistik	**p-değeri**	**İstatistik**	**p-değeri**	**İstatistik**	**p-değeri**	**İstatistik**	**p-değeri**
HSF	6809.19	**0.0001***	243.75	**0.0001***	243.38	**0.0001***	68.02	**0.0001***
FKO	1158.55	**0.0001***	30.48	**0.0001***	30.11	**0.0001***	5.76	**0.0001***
KO	2295.96	**0.0001***	73.41	**0.0001***	73.04	**0.0001***	10.47	**0.0001***
ROA	905.84	**0.0001***	20.94	**0.0001***	20.58	**0.0001***	8.02	**0.0001***
ROE	1104.38	**0.0001***	28.43	**0.0001***	28.07	**0.0001***	5.84	**0.0001***
ÖAH	673.94	**0.0001***	12.19	**0.0001***	11.82	**0.0001***	5.07	**0.0001***

*, *p<0.01.*

Tablo 3'te yer alan yatay kesit bağımlılık test sonuçları, panel veri setindeki değişkenlerin birimler arasında ilişki gösterip göstermediğini değerlendirmektedir. Breusch-Pagan LM, Pesaran scaled LM, Bias-corrected scaled LM ve Pesaran CD testlerinin tamamında p-değerlerinin 0.01 anlamlılık düzeyinin altında olması, tüm değişkenler için sıfır hipotezinin reddedilmesi gerektiğini göstermektedir. Dolayısıyla panel veri setinde yer alan firmalar arasında istatistiksel olarak anlamlı bir etkileşim ve ortak şokların varlığı söz konusudur. Bu bulgulara göre, analiz sürecinde birimler arası bağımlılığı dikkate alan ikinci nesil panel veri yöntemlerinin tercih edilmesinin gerekliliğini ortaya koymaktadır. Dolayısıyla, durağanlığın sınanması amacıyla Tablo 4'te ikinci kuşak birim kök testleri kullanılmıştır.

H_0: Seri birim kök içerir.

H_1: Seri birim kök içermez.

Tablo 4. 2. Kuşak Birim Kök Testi Bulguları (PANIC)

Değişkenler	Bai and NG - PANIC		Ahn and Horenstein - PANIC	
	İstatistik	p-değeri	İstatistik	p-değeri
HSF	1.843	**0.065*****	-3.070	**0.002***
KO	2.851	**0.004**^{*a}	+/- Inf	**0.00001**^{*a}
ROA	5.944	**0.00001***	11.710	**0.00001***
ROE	+/- Inf	**0.00001***	+/- Inf	**0.00001***
ÖAH	2.622	**0.009***	+/- Inf	**0.00001***

**, p<0.01,* ****, p<0.05,* ^{a}*, sabitli ve trendli model, +/- inf, yüksek bir değer.*

Tablo 4'te sunulan 2. kuşak panel birim kök testi (PANIC) sonuçlarına göre, serilerin durağanlık özellikleri yatay kesit bağımlılığını dikkate alan yöntemlerle değerlendirilmiştir. Bai ve Ng (2004) ve Ahn ve Horenstein (2013) tarafından geliştirilen PANIC testleri sonuçları incelendiğinde, p-değerleri 0.05'in altında olan değişkenlerde sıfır hipotezi reddedilmiştir. Buna göre, hisse senedi fiyatı değişkeni Bai ve Ng testinde %5 düzeyinde anlamlı (p=0.065) ve Ahn–Horenstein testinde %1 düzeyinde anlamlı (p=0.002) bulunmuş, dolayısıyla serinin durağan olduğu sonucuna ulaşılmıştır. Kaldıraç oranı değişkeni hem sabitli ve trendli model altında hem de Ahn–Horenstein testinde durağanlık göstermektedir. ROA değişkeni için her iki testte de oldukça düşük p-değerleri elde edilmiş, bu da serinin durağan olduğunu ortaya koymuştur. ROE ve özkaynak artış hızı değişkenleri için test istatistikleri çok yüksek (+/-∞) ve p-değerleri 0.00001 düzeyinde anlamlı bulunmuştur; bu durum bu değişkenlerin de durağan olduklarını göstermektedir. Sonuç olarak, tüm değişkenlerde H_0 hipotezi reddedilmiştir; yani seriler birim kök içermemekte ve durağan yapı sergilemektedir.

Tablo 5. 2. Kuşak Birim Kök Testi Bulguları (Pesaran CIPS)

Değişkenler	Pesaran CIPS				
	t-istatistiği	Kritik Değerler			p- değeri
		1%	5%	10%	
HSF	-2.121	-2.32	-2.17	-2.08	**<0.10**
KO^{a}	-1.825	-1.78	-1.59	-1.48	**<0.01**
ROA	-3.556	-2.32	-2.17	-2.08	**<0.01**
ROE	-3.735	-2.32	-2.18	-2.08	**<0.01**
ÖAH	-3.927	-2.34	-2.17	-2.08	**<0.01**

^{a}*, sabitsiz ve trendsiz model,*

Tablo 5'te yer alan Pesaran (2007) CIPS ikinci kuşak panel birim kök testi sonuçlarına göre, tüm değişkenlerin durağanlık özellikleri yatay kesit bağımlılığı dikkate alınarak değerlendirilmiştir. Testin

sıfır hipotezi ve alternatif hipotezi çerçevesinde elde edilen bulgular incelendiğinde, bağımlı değişken için t-istatistiği −2.121 olup, bu değer %10 anlamlılık düzeyindeki kritik değer (−2.08)'e yakın olduğundan seri %10 düzeyinde durağan kabul edilmektedir. Araştırma kapsamında, hisse senedi fiyatının bağımlı değişken olarak ele alındığı bir panel regresyon modeli geliştirilmiştir. Modelin temel varsayımlarından biri olan bağımsız değişkenler arasında yüksek korelasyon bulunmaması durumu, Varyans Şişirme Faktörü (VIF) analizi ile test edilmiştir. Bu analiz, bağımsız değişkenler arası ilişkinin model tahminlerinin tutarlılığı üzerindeki etkisini değerlendirmek için kritik bir olarak uygulanmıştır. Analiz sonucunda elde edilen VIF katsayıları Tablo 6'da sunulmuştur.

Tablo 6. VIF Değerlerine İlişkin Bulgular

Bağımsız Değişkenler	**Model**
FKO	1.014
KO	1.159
ROA	1.212
ROE	1.298
ÖAH	1.075

Tablo 6'da yer alan bulgulara göre, tüm bağımsız değişkenlerin VIF değerleri 1.014 ile 1.298 aralığında değişmektedir. Literatürde yaygın olarak kabul gören eşik değer (VIF < 10) dikkate alındığında, söz konusu değerlerin oldukça düşük olduğu görülmektedir. Bu bulgu, modelde yer alan bağımsız değişkenler arasında güçlü bir doğrusal ilişkinin bulunmadığını ve değişkenlerin birbirinden bağımsız bilgi taşıdığını göstermektedir. Dolayısıyla, çoklu doğrusal bağlantı probleminin model tahminlerinin güvenilirliğini olumsuz etkileyecek düzeyde olmadığı, bu nedenle regresyon analizine devam edilmesinin istatistiksel açıdan uygun olduğu sonucuna ulaşılmaktadır.

Hausman Testi, panel veri analizlerinde sabit etkiler modeli ile rastgele etkiler modelinin karşılaştırılmasında kullanılan bir testtir. Bu testin amacı, hangi modelin veri setine daha uygun olduğunu belirlemektir (Hausman, 1978). Tablo 7'de Hausman Testi bulguları verilmiştir.

H_0: Rasgele etkiler modeli uygundur.

H_1: Sabit etkiler modeli uygundur.

Tablo 7. Hausman Testine İlişkin Bulgular

	Hausman Test	
	Test İstatistiği	**p-değeri**
Model	5.34	0.376

*, $p<0.01$

Hausman testi sonuçlarına göre elde edilen test istatistiği 5.34 ve p-değeri 0.376 olarak hesaplanmıştır. P-değerinin 0.05 anlamlılık düzeyinden büyük olması, sıfır hipotezinin reddedilemeyeceğini

göstermektedir. Dolayısıyla, modelde bireysel etkilerin rastgele olduğu ve hata terimiyle korelasyon taşımadığı varsayımı geçerlidir. Bu sonuç, panel veri seti için rastgele etkiler modelinin sabit etkiler modeline kıyasla daha uygun olduğunu ve tahminlerde etkinlik açısından tercih edilmesi gerektiğini ortaya koymaktadır. Uygun modeller belirlendikten sonra modelin varsayımlarından olan otokorelasyon olup olmamasına yönelik uygulanan Durbin Watson otokorelasyon testi bulguları Tablo 8'de verilmiştir.

Tablo 8. Durbin Watson Otokorelasyon Testi Bulguları

	Test İstatistiği	**Kritik Değer aralığı (α=0.01)**	
		dL	**dU**
Model	0.348	1.886	1.906

Durbin-Watson otokorelasyon testi sonuçlarına göre test istatistiği 0.348 olarak hesaplanmıştır. Kritik değerler aralığına bakıldığında, alt sınır (dL) 1.886 ve üst sınır (dU) 1.906 olarak belirlenmiştir. Test istatistiği değeri dL'nin altında kaldığından, modelde pozitif otokorelasyonun var olduğu sonucuna ulaşılmaktadır. Bu durum, hata terimlerinin birbirinden bağımsız olmadığı ve ardışık gözlemler arasında pozitif yönde bir ilişki bulunduğunu göstermektedir. Panel zaman serisinde otokorelasyon probleminin olması durumu regresyon modelinin doğru sonuçlar üretmemesi anlamına geldiğinden, otokorelasyonun giderilmesi için serilerin 1. dereceden farkları alınmıştır. Farkları alınan bulgular Tablo 9'da verilmiştir.

Tablo 9. Düzeltilmiş Durbin Watson Otokorelasyon Testi Bulguları

	Test İstatistiği	**Kritik Değer aralığı (α=0.01)**	
		dL	**dU**
Model	1.833	1.886	1.906

Durbin-Watson otokorelasyon testi sonuçlarına göre test istatistiği 0.348 olarak hesaplanmıştır. Kritik değerler aralığına bakıldığında, alt sınır (dL) 1.886 ve üst sınır (dU) 1.906 olarak belirlenmiştir. Test istatistiği değeri dL'nin altında kaldığından, modelde pozitif otokorelasyonun var olduğu sonucuna ulaşılmaktadır. Bu durum, önceki Durbin-Watson testine kıyasla otokorelasyonun büyük ölçüde giderildiğini göstermektedir. Öte yandan literatürde, Durbin-Watson test istatistiğinin 1.5 ile 2,5 arasında bir değer alması durumunda otokorelasyonun olmadığı kabul edilmektedir (Gujarati ve Porter, 2009). Bu bilgiler ışığında otokorelasyonun olmadığı söylenebilir.

H_0: Modelde değişen varyans problemi yoktur.

H_1: Modelde değişen varyans problemi vardır.

Tablo 10. Sabit Varyans Probleminin Tespitine Yönelik Wald Testi Bulguları

	Test İstatistiği	**Serbestlik Derecesi**	**p-değeri**
Model	37638959.07	27	**0.0001***

*, *p<0.01.*

Tablo 10'da sunulan Wald testi sonuçları, modelde değişen varyans (heteroskedastisite) probleminin varlığını incelemek amacıyla gerçekleştirilmiştir. Testin sıfır hipotezi ve alternatif hipotezi kapsamında elde edilen bulgulara göre, test istatistiği 37,638,959.07 olup p-değeri 0.0001 düzeyinde anlamlı bulunmuştur ($p<0.01$). Bu sonuç, sıfır hipotezinin reddedilmesi gerektiğini ve modelde sabit varyans varsayımının geçerli olmadığını göstermektedir. Dolayısıyla, panel veri modelinde değişen varyans probleminin mevcut olduğu söylenebilir. Bu durumda, standart hata tahminlerinin tutarlı ve güvenilir olabilmesi için heteroskedastisiteye dirençli (robust) tahmin yöntemlerinin kullanılması istatistiksel açıdan uygun olacağı göz önünde bulundurularak, analiz sürecinde değişen varyansın etkisini giderebilmek için Driscoll-Kraay robust standart hataları kullanılmıştır.

Tablo 11. Modele İlişkin Katsayı ve Model Bulguları

	Katsayılar (β)	**Robust Std. Hata**	**z**	**p-değeri**	**Güven Aralığı (%95)**	
FKO_{d1}	0.31	0.28	1.11	0.28	-0.27	0.88
ROA_{d1}	-120.79	197.27	-0.61	0.55	-526.28	284.71
ROE_{d1}	1.82	2.40	0.76	0.46	-3.12	6.76
KO_{d1}	-60.32	86.82	-0.69	0.49	-238.78	118.14
$ÖAH_{d1}$	2.46	9.15	0.27	0.79	-16.35	21.26
Sabit	23.48	0.44	52.88	**0.0001***	22.57	24.39

*, *$p<0.01$,*

Tablo 11'de yer alan regresyon analizine ilişkin katsayı tahminleri, logaritmik olarak dönüştürülmüş değişkenler üzerinden elde edilmiştir. Bu nedenle katsayılar, bağımsız değişkenlerdeki yüzde birimlik değişimlerin bağımlı değişken olan hisse senedi fiyatı üzerindeki oransal etkisini göstermektedir. Analiz sonuçlarına göre, fiyat kazanç oranı değişkeninin katsayısı 0.31 olup, bu değer istatistiksel olarak anlamlı değildir ($p=0.28$). Ancak katsayı pozitif olduğundan, fiyat kazanç oranındaki %1'lik bir artışın hisse senedi fiyatında yaklaşık %0.31'lik bir artış yönünde etkide bulunduğu söylenebilir. ROA değişkeninin katsayısı −120.79 ($p=0.55$) olup negatif işaret taşımaktadır; bu da ROA'daki %1'lik bir artışın hisse senedi fiyatında yaklaşık %120,79'luk bir azalış yönünde etkili olduğunu, ancak bu ilişkinin istatistiksel olarak anlamlı olmadığını göstermektedir. ROE katsayısı 1.82 ($p=0.46$) olup, ROE'deki %1'lik bir artışın hisse senedi fiyatında %1,82'lik bir artışla ilişkili olduğunu, fakat anlamlılık düzeyine ulaşmadığını ortaya koymaktadır. Kaldıraç oranı değişkeninin katsayısı −60.32 ($p=0.49$) olarak bulunmuş, bu da kaldıraç oranındaki %1'lik bir artışın hisse senedi fiyatında yaklaşık %60,32'lik bir azalış yönünde etkide bulunduğunu, ancak ilişkinin anlamlı olmadığını göstermektedir. Özkaynak değişim hızı değişkeninin katsayısı ise 2.46 ($p=0.79$) olup, Özkaynak değişim hızındaki %1'lik artışın hisse senedi fiyatında %2,46 oranında artış yönlü bir etki yarattığını, fakat bu etkinin istatistiksel olarak anlamlı olmadığını göstermektedir. Modelin sabit terimi 23.48 olup ($p<0.01$), istatistiksel olarak yüksek düzeyde anlamlıdır. Genel olarak, logaritmik formda kurulan modelde bağımsız değişkenlerin hisse senedi fiyatı üzerindeki etkileri pozitif veya negatif yönlü olsa da bu etkilerin tamamı istatistiksel olarak anlamlı bulunmamıştır. Dolayısıyla model, bağımlı değişkendeki değişimleri açıklama gücü açısından sınırlı bir yapıya sahiptir.

Çalışmanın mevcut adımında, BRICS ülkeleri ile Türkiye arasındaki hisse senedi fiyatı değişkeni ortalamalarının istatistiksel olarak farklılaşıp farklılaşmadığını sınamak amacıyla modele bir kukla değişken (TR_{dummy}) entegre edilmiştir. Bu yapısal değişikliğin ardından, modelin temel varsayımlarından olan çoklu doğrusallık durumu, Varyans Büyütme Faktörü (VIF) katsayıları ile yeniden değerlendirilmiştir. İlgili test sonuçları Tablo 12'de verilmiştir.

Tablo 12. VIF Değerlerine İlişkin Bulgular

Bağımsız Değişkenler	Model
FKO	1.054
KO	1.161
ROA	1.219
ROE	1.301
ÖAH	1.112
TR_{dummy}	1.075

Tablo 12'de yer alan Varyans Büyütme Faktörü (VIF) değerleri incelendiğinde, tüm bağımsız değişkenlere ait katsayıların 10'un oldukça altında olduğu görülmektedir. VIF değerlerinin 1.054 ile 1.301 arasında değişmesi, modelde ciddi bir çoklu doğrusal ilişki sorununun bulunmadığını göstermektedir. Dolayısıyla, yapısal değişiklik sonrasında modelin geçerliliği ve istatistiksel güvenilirliği korunmuştur.

Araştırmada panel veri analizi için, zamanla değişmeyen (time-invariant) değişkenlerin etkisini ölçme hedefine olanak tanıyan rastgele etkiler modeli kullanılmıştır. Sabit Etkiler modeli, bu tür değişkenlerin katsayılarını tahmin edemediği için (Baltagi, 2008) araştırmanın temel sorunsalına yanıt verememektedir. Dolayısıyla, model tercihi teorik bir zorunluluğa dayandığından, rastgele etkiler modeli ile sabit etkiler modeli arasında bir seçim yapmak için kullanılan geleneksel Hausman testine başvurulmamıştır. Uygun modeller belirlendikten sonra modelin varsayımlarından olan otokorelasyon olup olmamasına yönelik uygulanan Durbin Watson otokorelasyon testi bulguları Tablo 13'te verilmiştir.

Tablo 13. Durbin Watson Otokorelasyon Testi Bulguları

	Test İstatistiği	**Kritik Değer aralığı (α=0.01)**	
		dL	**dU**
Model	1.833	1.886	1.906

Tablo 13'te yer alan Durbin-Watson otokorelasyon testi sonuçlarına göre test istatistiği 1.833 olarak hesaplanmıştır. Kritik değerler aralığı incelendiğinde, alt sınır (dL = 1.886) ve üst sınır (dU = 1.906) değerlerinin test istatistiğinden yüksek olduğu görülmektedir. Bu durumda test istatistiği dL'nin altında kaldığı için, pozitif otokorelasyonun varlığı yönünde güçlü kanıt elde edilmiştir. Ancak, Gujarati ve Porter (2009)'a göre Durbin-Watson test istatistiğinin 1.5 ile 2,5 arasında bir değer alması durumunda otokorelasyonun olmadığı kabul edilmektedir. Bu bilgi doğrultusunda modelin otokorelasyon içermediği göz önünde bulundurularak panel regresyon modeli varsayımının sağlandığı söylenebilir. Öte yandan modele eklenene dummy değişkenin model varsayımlarının sınanması aşamasında bir değişiklik oluşturmadığı görülmüş olup, değişen varyans sınaması için Tablo 10'daki bulgular elde edilmiştir. Sonuçlar aynı çıktığından tekrar Tablo olarak eklenmemiştir. Bu bağlamda, Driscoll-Kraay

robust standart hata yöntemi ile hem otokorelasyon problemi hem de değişen varyans problemi giderildiğinden, model Driscoll-Kraay robust standart hatalar kullanılarak oluşturulmuştur. BRICS-T ülkelerine ait oluşturulan regresyon modeli test istatistik sonuçları Tablo 14'te sunulmaktadır.

Tablo 14. Modele İlişkin Katsayı ve Model Bulguları

	Katsayılar (β)	Robust Std. Hata	z	p-değeri	Güven Aralığı (%95)	
FKO_{d1}	0.313	0.208	1.510	0.132	-0.094	0.720
ROA_{d1}	-111.109	98.661	-1.130	0.260	-304.480	82.263
ROE_{d1}	1.944	8.082	0.240	0.810	-13.896	17.784
KO_{d1}	-62.675	167.280	-0.370	0.708	-390.537	265.188
$ÖAH_{d1}$	2.739	16.789	0.160	0.870	-30.167	35.644
TR_{dummy}	-24.756	18.729	-1.320	0.186	-61.465	11.953
Sabit	28.295	8.085	3.500	0.000	12.450	44.141

*, *p<0.01.*

Tablo 14'te sunulan regresyon analizi sonuçları, logaritmik biçimde modellenen değişkenler üzerinden tahmin edilen katsayıları ve bu katsayıların istatistiksel anlamlılık düzeylerini göstermektedir. Modelde bağımlı değişken hisse senedi fiyatı olup, bağımsız değişkenler olarak fiyat kazanç oranı, ROA, ROE, kaldıraç oranı, özsermaye artış hızı ve ülke grubunu temsil eden TRdummy değişkeni kullanılmıştır. Elde edilen bulgulara göre, fiyat kazanç oranı değişkeninin katsayısı 0.313 (p=0.132) olup pozitif işarete sahiptir; bu, fiyat-kazanç oranındaki %1'lik bir artışın hisse senedi fiyatında yaklaşık %0.31'lik bir artışla ilişkili olduğunu göstermektedir. Ancak bu etki istatistiksel olarak anlamlı değildir. ROA değişkeni için katsayı −111.109 (p=0.260) olarak tahmin edilmiş olup, aktif kârlılığındaki %1'lik bir artışın hisse senedi fiyatında yaklaşık %111,11'lik bir azalışla ilişkili olduğu görülmektedir; ancak bu ilişki de anlamlılık düzeyine ulaşmamıştır. ROE değişkeninin katsayısı 1.944 (p=0.810) olup, özkaynak kârlılığındaki %1'lik artışın hisse senedi fiyatında yaklaşık %1,94'lük bir artışa yol açtığı yönünde bir eğilim göstermekle birlikte, istatistiksel olarak anlam taşımamaktadır. Kaldıraç oranı değişkeni −62.675 katsayısı (p=0.708) ile negatif bir ilişki göstermektedir; bu da kaldıraç oranındaki %1'lik bir artışın hisse senedi fiyatında yaklaşık %62,68'lik bir düşüşe karşılık geldiğini, ancak bu etkinin de istatistiksel olarak anlamlı olmadığını göstermektedir. Özkaynak artış hızı değişkeni 2.739 katsayısı (p=0.870) ile pozitif yönde etki göstermekte, fakat anlamlılık düzeyine ulaşmamaktadır. Modelde yer alan TR_{dummy} değişkeninin katsayısı −24.756 (p=0.186) olup, Türk şirketi olmanın (1) BRICS ülkesi şirketlerine (0) kıyasla hisse senedi fiyatlarını yaklaşık %24,76 oranında daha düşük etkilediğini göstermektedir. Ancak bu fark istatistiksel olarak anlamlı değildir. Sabit terim (β_0) 28.295 (p<0.01) olarak tahmin edilmiştir ve %1 düzeyinde anlamlıdır; bu durum, bağımsız değişkenler sabitken log-HSF'nin ortalama düzeyinin istatistiksel olarak anlamlı biçimde sıfırdan farklı olduğunu göstermektedir. Genel olarak değerlendirildiğinde, modeldeki hiçbir bağımsız değişkenin hisse senedi fiyatı üzerindeki etkisi istatistiksel olarak anlamlı bulunmamıştır. Bu sonuç, logaritmik model yapısında değişkenlerin yönsel etkileri gözlense de hisse senedi fiyatlarındaki değişimlerin büyük ölçüde modelde yer almayan diğer faktörler tarafından açıklanabileceğini ve finansal göstergelerin bu model kapsamında anlamlı bir açıklayıcılığa ulaşmadığını göstermektedir. Tablo 15're Granger nedensellik test bulgularına yer verilmiştir.

Tablo 15. Granger Nedensellik Analizi Bulguları

Nedensellik Hipotezi	F-İstatistiği	p-değeri
ROA → HSF	2.986	**0.051*****
HSF → ROA	4.610	**0.010***
ROA → FKO	5.560	**0.004***
ROA → KO	2.904	**0.055*****
KO → ROE	18.078	**0.0001***
KO → ÖAH	4.472	**0.012****
ROA → ROE	11.551	**0.0001***
ÖAH → ROA	13.039	**0.0001***
ROA → ÖAH	3.975	**0.019****
ÖAH → ROE	21.676	**0.0001***
ROE → ÖAH	31.518	**0.0001***

*, *p<0.01* **, *p<0.05* ***, *p<0.10*.

Tablo 15'te sunulan Granger nedensellik analizi sonuçları, değişkenler arasındaki dinamik ilişkileri ve bir değişkendeki geçmiş değerlerin diğer değişkeni istatistiksel olarak anlamlı biçimde öngörüp öngörmediğini göstermektedir. Analiz sonuçlarına göre, p-değerleri 0.10, 0.05 ve 0.01 düzeylerinde anlamlılık kriterleriyle değerlendirilmiştir. Elde edilen bulgulara göre, ROA → HSF yönünde %10 anlamlılık düzeyinde (p=0.051) ve HSF → ROA yönünde %1 anlamlılık düzeyinde (p=0.010) çift yönlü nedensellik ilişkisi tespit edilmiştir. Bu durum, aktif kârlılığın hisse senedi fiyatlarını etkilediği gibi, hisse senedi fiyatlarındaki değişimlerin de aktif kârlılığa geri besleme etkisi yarattığını göstermektedir. ROA → FKO ilişkisi (p=0.004) istatistiksel olarak %1 düzeyinde anlamlıdır; dolayısıyla aktif kârlılığın fiyat/kazanç oranının anlamlı bir belirleyicisi olduğu söylenebilir. Benzer şekilde, ROA → KO yönündeki ilişki %10 düzeyinde anlamlı bulunmuştur (p=0.055), bu da aktif kârlılıktaki değişimlerin kaldıraç oranı üzerinde zayıf düzeyde de olsa etkili olduğunu göstermektedir. Finansal yapı açısından değerlendirildiğinde, KO → ROE (p=0.0001) ve KO → ÖAH (p=0.012) ilişkilerinin anlamlı bulunması, kaldıraç oranındaki değişimlerin hem özkaynak kârlılığını hem de toplam özkaynak düzeyini etkilediğini ortaya koymaktadır. Ayrıca, ROA → ROE (p=0.0001) ve ÖAH → ROA (p=0.0001) yönündeki güçlü ilişkiler, kârlılık göstergeleri ve özkaynak yapısı arasındaki içsel etkileşimi vurgulamaktadır. ROA → ÖAH ilişkisi (p=0.019) de %5 düzeyinde anlamlı bulunmuş, aktif kârlılığın toplam özkaynaklar üzerinde etkili olduğunu göstermiştir. Modelde dikkat çeken bir diğer sonuç, ÖAH → ROE (p=0.0001) ve ROE → ÖAH (p=0.0001) arasında tespit edilen çift yönlü güçlü nedensellik ilişkisidir. Bu bulgu, özkaynak kârlılığı ile toplam özkaynak büyüklüğü arasında karşılıklı bir dinamik ilişki bulunduğunu göstermektedir. Genel olarak, analiz sonuçları değişkenler arasında hem doğrudan hem de karşılıklı nedensellik ilişkilerinin mevcut olduğunu ortaya koymaktadır. Özellikle ROA, ROE ve ÖAH değişkenleri modelin nedensellik yapısında merkezî bir rol üstlenmekte; bu da firmaların finansal performansının hem kârlılık hem de sermaye yapısı dinamikleri açısından birbirini istatistiksel olarak anlamlı düzeyde etkilediğini göstermektedir.

SONUÇ

Yatırımcılar hisse senetlerine yatırım yapacakları zaman yatırım yapacakları işletmelerle ilgili birçok bilgi ve finansal verilere sahip olmak istemektedirler. İşletmenin finansal performansı, karlılığı, düzenli temettü ödeyip ödememeleri veya gelecekte yapmayı planladıkları yatırımlar; yatırımcılar açısından yatırımcılar açısından yapmayı planladıkları yatırımlar için önemli bilgiler arasında yer almaktadır.

İşletmeye özgü faktörlerden hangisinin etkilediğini bilmek yatırımlarının şekillenmesine yardımcı olmaktadır. Hisse senedi fiyatlarını hangi faktörlerin etkilediğini tespit etmek, yatırımcıların hangi hisse senedine yatırım yapacaklarına karar vermede anahtar rol oynamaktadır. Çalışmada hisse senedi fiyatlarını etkileyen işletme düzeyindeki faktörleri araştırmak amacıyla BRICS-T ülkelerinin 2016-2025 yılları arası finansal tablo verilerinden yararlanılmıştır.

Çalışmanın ampirik bulgularına bakıldığında, fiyat-kazanç oranındaki %1'lik bir artışın hisse senedi fiyatında yaklaşık %0.31'lik bir artışla ilişkili olduğunu göstermektedir. Ancak bu etki istatistiksel olarak anlamlı bulunmamıştır. Aktif kârlılığındaki %1'lik bir artışın hisse senedi fiyatında yaklaşık %111,11'lik bir azalışla ilişkili olduğu görülmektedir; ancak bu ilişki de anlamlılık düzeyine ulaşmamıştır. ROE değişkeninin katsayısı 1.944 (p=0.810) olup, özkaynak kârlılığındaki %1'lik artışın hisse senedi fiyatında yaklaşık %1,94'lük bir artışa yol açtığı yönünde bir eğilim göstermektedir. İşletmelerin özkaynak karlılığı arttıkça hisse senedi fiyatlarına olumlu yansımakta ve yatırımcılar tarafında o hisse senedine olan talep artışı ile birlikte hisse senedi fiyatını artırmaktadır. Kaldıraç oranı değişkeni ile bağımlı değişken arasında da istatistiksel olarak ters yönlü bir ilişki söz konusudur. İşletmelerin borçlanma düzeyleri arttıkça hisse senetleri fiyatları düşmektedir. Yatırımcılar açısından bakıldığında, yatırımcılar yüksek borçlanmaya sahip işletmelere yatırım yapmaktan kaçınmaktadırlar.

Granger nedensellik testi istatistiki bulgularına bakıldığında, bağımlı değişken ile aktif karlılığı değişkeni arasında çift yönlü nedensellik ilişkisi tespit edilmiştir. Bu durum, aktif kârlılığın hisse senedi fiyatlarını etkilediği gibi, hisse senedi fiyatlarındaki değişimlerin de aktif kârlılığa geri besleme etkisi yarattığını göstermektedir. Aktif karlılığı ile fiyat kazanç oranı arasında da %1 anlamlılık düzeyinde çift yönlü bir nedensellik ilişkisi söz konusudur. Dolayısıyla aktif kârlılığın fiyat/kazanç oranının anlamlı bir belirleyicisi olduğu söylenebilir. Benzer şekilde, aktif karlılığı ile kaldıraç oranı arasında %10 düzeyinde anlamlı bir ilişki tespit edilmiştir. Bu da aktif kârlılıktaki değişimlerin kaldıraç oranı üzerinde zayıf düzeyde de olsa etkili olduğunu göstermektedir.

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SON KİLOMETRE LOJİSTİĞİNİN DIŞSALLIK ETKİLERİNE YÖNELİK DEĞERLENDİRME

Hakan KİRACI

Doç. Dr., Muğla Sıtkı Koçman Üniversitesi, Fethiye İşletme Fakültesi
E-mail: hakankiraci@mu.edu.tr
ORCID ID: 0000-0001-9230-3102

Aydın KAYABAŞI

Prof. Dr., Kütahya Dumlupınar Üniversitesi, İİBF
E-mail: aydin.kayabasi@dpu.edu.tr
ORCID ID: 0000-0001-6955-7948

Hakan ÇELİKKOL

Prof. Dr., Kütahya Dumlupınar Üniversitesi, İİBF
E-mail: hakan.celikkol@dpu.edu.tr
ORCID ID: 0000-0001-9345-1596

Özet

Son kilometre lojistiği, tedarik zincirinin son evresi olma özelliğiyle ürünlerin nihai tüketicilere ulaştırılmasını sağlayan kritik bir operasyonel süreçtir. Son kilometre lojistiği işletmelerin rekabetçiliklerinin yanında müşteri memnuniyeti üzerinde önemli etkilere sahiptir. Son on yılda e-ticaret sektöründeki hızlı büyümeyle söz konusu süreç işletmeler açısından rekabet avantajının kaynağı olarak müşteri deneyimini doğrudan etkileyen stratejik bir unsur haline gelmiştir. Bunun bir sonucu olarak müşteriler, gerçek zamanlı takip, teslimatta hız ve esneklik gibi çözümler sağlayan markalara karşı daha yüksek düzeyde bağlılık ve memnuniyet geliştirmektedir. Ancak, müşteri çözümlerine yönelik avantajlarının yanında özellikle kentsel alanlarda yoğunlaşan çevresel ve sosyal maliyetler önemli boyutlara ulaşmaktadır. İlgili çevresel dışsallıklar; teslimat araçlarının sayısındaki artış, kent içi trafik sıkışıklığını derinleştirirken; karbon salınımı, hava ve gürültü kirliliği gibi kent yaşamının sürdürülebilirliğini etkilemektedir. Ayrıca, teslimat çalışanlarının yoğun iş temposu ve çalışma koşulları ve artan kaza riski gibi sosyal dışsallıkları beraberinde getirmektedir. Bu çalışma, son kilometre lojistiğinin rekabetçilik ve müşteri memnuniyetini artıran olumlu etkileri ile çevresel ve sosyal maliyetler doğuran olumsuz dışsallıklarını bütüncül bir yaklaşımla incelemeyi amaçlamaktadır. Bu doğrultuda, son yıllarda gerçekleştirilen akademik ve sektörel çalışmalar literatür taraması yöntemiyle incelenerek, söz konusu dışsallıkların kaynakları ve etkileri sistematik biçimde ortaya koyulmaya çalışılacaktır. Ayrıca, yeşil lojistik uygulamaları, akıllı şehir entegrasyonları, mikro-tedarik merkezleri ve alternatif teslimat yöntemleri gibi çözüm önerileri kapsamlı biçimde değerlendirilecektir. Çalışmanın nihai hedefi, sürdürülebilir ve etkin bir son kilometre lojistiği ekosisteminin inşasına katkı sunabilecek değerlendirmelerle sektör ve karar vericiler açısından bazı bilgiler ortaya koyabilmektir.

Anahtar Kelimeler: Son Kilometre Lojistiği, Olumlu Dışsallıklar, Olumsuz Dışsallıklar

EVALUATION OF THE EXTERNALITIES OF LAST-MILE LOGISTICS

Abstract

Last-mile logistics, as the final stage of the supply chain, is a critical operational process that ensures products reach the end consumer. Last-mile logistics has a significant impact on both the competitiveness of businesses and customer satisfaction. With the rapid growth of e-commerce over the last decade, this process has become a strategic element that directly impacts customer experience, providing a source of competitive advantage for businesses. As a result, customers develop higher levels of loyalty and satisfaction with brands that offer solutions such as real-time tracking, speed, and

flexibility in delivery. Furthermore, despite the advantages created for customer solutions, the environmental and social costs, particularly concentrated in urban areas, are significant. Related environmental externalities include: the increase in the number of delivery vehicles exacerbates urban traffic congestion, impacting the sustainability of urban life through carbon emissions, air pollution, and noise pollution. Furthermore, it brings with it social externalities such as the intense workload and working conditions of delivery workers and increased accident risk. This study aims to examine the positive impacts of last-mile logistics, which increase competitiveness and customer satisfaction, while simultaneously incorporating negative externalities that generate environmental and social costs, using a holistic approach. To this end, a literature review of recent academic and sectoral studies will be conducted to systematically identify the sources and impacts of these externalities. Furthermore, proposed solutions, such as green logistics practices, smart city integrations, micro-supply centers, and alternative delivery methods, will be comprehensively evaluated. The study's ultimate goal is to provide insights for the sector and decision-makers through assessments that can contribute to the construction of a sustainable and effective last-mile logistics ecosystem.

Keywords: Last Mile Logistics, Positive Externalities, Negative Externalities

GİRİŞ

Son kilometre lojistiği, tedarik zincirlerinin nihai tüketiciyle buluştuğu kritik temas noktasını temsil etmektedir. Son kilometre lojistiği, özellikle son beş yılda akademisyenler ve uygulayıcılar arasında giderek artan oranda ilgi gören, gelişmekte olan bir araştırma alanıdır. Bu hızlı büyümenin temel nedenleri arasında artan kentleşme ve nüfus artışı, e-ticaretin gelişimi, değişen tüketici davranışları, yenileşme ve sürdürülebilirliğe artan ilgi yer almaktadır (Olsson, Hellström ve Palsson, 2019). Özellikle tüketicilerin konforlu, hızlı ve güvenilir teslimat taleplerindeki artış, işletmelerin rekabet stratejilerini yeniden şekillendirmekte ve son kilometre lojistiğini stratejik bir avantaj alanı haline getirmektedir (Demir, Syntetos ve Van Woensel, 2022). Bu dinamik bağlamda, işletmeler müşterilerine daha hızlı ve daha ucuz teslimat seçenekleri sunarak, rakiplerine karşı rekabet fırsatları oluşturmayı amaçlamaktadır (Silva, Amaral ve Fontes, 2023). Kentsel alanlarda artan yük trafiği, şehirlerin sürdürülebilirliğini ve yaşanabilirliğini tehdit eden çeşitli olumsuz dışsallıklara yol açmaktadır. Teslimat araçlarının çakışan rotaları, şehir içi trafik sıkışıklığını ve çevresel emisyonları (yaklaşık %25 CO_2, %30–50 PM ve NOx) artırmakta, aynı zamanda ağır araçların varlığı yol güvenliğini olumsuz etkilemektedir (Giuffrida vd., 2022).

Dışsallık, bir ekonomik birim tarafından gerçekleştirilen üretim veya tüketim faaliyetlerinin, piyasa mekanizması dışında kalan üçüncü taraflar üzerinde doğrudan fiyatlandırılmayan etkiler yaratmasıdır. Olumsuz dışsallık durumunda, üretici kararlarını yalnızca özel maliyet ve faydalara göre verirken, faaliyetlerin toplumsal düzeyde doğurduğu ek maliyetlerin (örneğin; çevresel zararlar, sağlık giderleri ve üretim kayıpları gibi) göz ardı edilmesine ve dolayısıyla bu da sosyal maliyetlerin özel maliyetlerden daha yüksek olmasına yol açmaktadır. Olumlu dışsallıklarda (örneğin; Ar-Ge faaliyetlerinde) ise özel getiriler sosyal getirilerin altında kalmakta, elde edilen bilgi birikimi toplumun geneline yayılarak dolaylı faydalar yaratabilmektedir (Helbling, 2010). Günümüzde çevresel sürdürülebilirlik ve iklim sorumluluğuna yönelik artan toplumsal farkındalık doğrultusunda, Avrupa Birliği 2050 yılına kadar iklim nötrlüğüne ulaşmayı hedefleyen kapsamlı ve iddialı bir strateji benimsemiştir (Juruss, Smite-Roke ve Nesterenko, 2024). Bu strateji, Paris Anlaşması (2005), Kyoto Protokolü (1997), Birleşmiş Milletler İklim Değişikliği Çerçeve Sözleşmesi (1992), Avrupa İklim Yasası (2021) ve Avrupa Yeşil Mutabakatı kapsamında dünya genelinde birçok ülkenin benzer şekilde karbon emisyonlarını azaltma, yenilenebilir enerji kaynaklarını artırma ve yeşil dönüşümü hızlandırma yönündeki politikalarıyla örtüşmektedir. Küresel ölçekte iklim değişikliğiyle mücadele, uluslararası iş birliği ve bütüncül çevre politikaları gerektiren ortak bir sorumluluk haline gelmiştir (Engesser vd., 2023).

Lojistik ve ulaştırma faaliyetlerinin tüm dünyada küresel ısınma, hava kirliliği, trafik sıkışıklığı, gürültü ve diğer emisyon türleri ile kaynak tükenmesi gibi çeşitli çevresel hasarları önemli ölçüde arttırdığı iyi

bilinmektedir. Bu çevresel emisyonlar son on yılda azalmış olsa da, ulaştırma ve lojistik sektörlerinden kaynaklanan emisyonlar çevresel ve iklim etkilerini sınırlamaya yetecek kadar azalmamaktadır; bu sektörler, küresel emisyonların %23'ünden fazlasından sorumludur ve Avrupa'daki çevresel gürültünün ana kaynağı olarak önemli bir hava kirliliği kaynağı olmaya devam etmektedir. Buna karşılık, ulaştırma ve nakliye şirketleri, araçlardan kaynaklanan yüksek çevresel maliyetleri azaltma ihtiyacıyla karşı karşıyadır ve küresel olarak, uygulayıcılar arasında çevreye duyarlı lojistik uygulamalarının benimsenmesi giderek daha fazla talep görmektedir (Ambrosino ve Sciomachen, 2021). Çevresel sürdürülebilirliğin çok disiplinli yönü konuya farklı açılardan yaklaşılmasını mümkün kılmakla birlikte, farklı taraflarca ortak çözüm önerileri geliştirmek önemli zorlukları beraberinde getirmektedir. Son kilometre lojistiği üzerine yapılan araştırmalar giderek artsa da, farklı disiplinlerden gelen bakış açıları nedeniyle bu alandaki çalışmalar arasında tam bir bütünlük sağlanamamaktadır (Olsson, Hellström ve Palsson, 2019). Çevresel sürdürülebilirlik, yalnızca çevre bilimleriyle sınırlı olmayan; ekonomi, sosyoloji, şehir planlaması, mühendislik, hukuk, lojistik ve siyaset bilimi gibi birçok disiplinin etkileşim içinde olduğu karmaşık bir çalışma alanıdır. Örneğin, bir kentsel bölgede karbon emisyonlarını azaltmaya yönelik stratejiler geliştirilirken, mühendislik temelli teknolojik çözümler, hukuki düzenlemeler ve kamu politikaları, ekonomik teşvik mekanizmaları ve toplumsal davranış kalıpları gibi çok boyutlu unsurların eşgüdüm içinde değerlendirilmesi gerekmektedir. Mühendislik, teknoloji geliştirme, programlama ve araç ve kontrol sistemlerinin optimizasyonunda uygulamalara sahip en gelişmiş alandır; örneğin, elektrikli araçlar hizmet amaçlı kullanıldığında, batarya optimizasyonu ve yenilenebilir şarj yöntemleri de araştırılmaktadır. Öte yandan, kentsel mobilite üzerine araştırmalar, operasyon yönetiminin yanı sıra ulaşım ve çevre ekonomisine odaklanan ekonomi ve yönetim araştırmalarında giderek daha popüler hale gelmektedir. Hukuk alanı, veri uyumluluğunu ve politika ve stratejileri uygulamak için oluşturulan farklı sözleşme türlerini ele almaktadır (Bertolini, De Matteis ve Nava, 2024). Bu çok disiplinli yaklaşım, farklı uzmanlık alanlarından gelen aktörlerin katkısıyla daha bütüncül ve etkili çözümler üretilmesini sağlarken; aynı zamanda terminolojik farklılıklar, öncelik çatışmaları ve koordinasyon zorlukları gibi çeşitli akademik ve uygulamalı engelleri de beraberinde getirebilmektedir. Bu kapsamda bu çalışmanın amacı son kilometre lojistiğinin oluşturabileceği olumlu ve olumsuz dışsallıkların incelenmesi ve olası çözüm önerilerinin ortaya koyulmasını sağlamaktır. Çalışma, temel kavramlar ve literatür taraması, son kilometre lojistiğinin olası dışsallık etkilerinin sınıflandırılması ve muhtemel çözüm önerilerinin değerlendirilmesi şeklinde yapılandırılmıştır.

SON KİLOMETRE LOJİSTİĞİ KAVRAMI

Son on yıldır e-ticaret pazarı, dayanıklı tüketim ürünlerinden gıda ürünlerine kadar çeşitli ürün gruplarında dikkate değer bir büyüme ve değişimle karşı karşıya kalmıştır. E-ticaretin başlangıcından bu yana, müşteriler geleneksel fiziksel mağazalar yerine çevrimiçi olarak ürün satın almaya yönelmiştir. Gelinen nokta itibariyle, e-ticaret küresel boyutta güçlü ve istikrarlı bir büyüme yaşamaktadır. Bu büyüme, tedarik zincirlerini pazarda rekabet edebilmek için iş modellerini ve lojistik süreçlerini değiştirmeye zorlamaktadır (Ha, Akbari ve Au, 2023). Çünkü doğrudan tüketiciye teslimatlarda önemli bir artışa neden olmuştur. Seksenli ve doksanlı yıllardaki posta şirketleri benzer teslimatlar yapmış olsa da e-ticaret hacmindeki artış pazarı ve doğrudan tüketiciye teslimat sayısını önemli ölçüde büyütmüştür. Ancak bu durum, bir tedarik zincirinin müşteriye temas ettiği son aşamayı ifade eden "son kilometre teslimatı"nda bazı büyük sorunların ortaya çıkmasına neden olmuştur (Alverhed vd., 2024). Oysaki son kilometre teslimatı, e-ticaret ve perakende lojistiği bağlamında müşteri memnuniyeti, teslimat hızı ve maliyet etkinliği açısından kritik bir öneme sahiptir (Gevaers, Van de Voorde ve Vanelslander, 2011).

Son kilometre teslimatının tanım ve kapsamının literatürdeki farklı bakış açıları nedeniyle belirsiz olduğu ifade edilmektedir (Olsson, Hellström ve Palsson, 2019). Son kilometre kavramının kökeninin, kablo TV ve internetin başlangıç aşamalarına uzanan bir geçmişe sahip olduğu anlaşılmaktadır. Temelde telekomünikasyon endüstrisine yönelik son kullanıcılara verimli bir şekilde ulaşmanın son aşamasını ifade ederken, iş dünyasının gelişmesi ve tedarik zincirlerinin küreselleşmesiyle günümüzdeki anlamında kullanılır hale gelmiştir. LSCM bağlamında, son kilometre teslimatı, genellikle siparişlerin

doğru müşterilere iletilmesinin son adımı olarak anlaşılabilir (Ha, Akbari ve Au, 2023). Son kilometre lojistiğinin birçok tanımı vardır, ancak yaygın görüş bunun tedarik zincirinin son dağıtım merkezinden alıcının tercih ettiği varış noktasına kadar olan son kısmını ele almaktadır (Olsson, Hellström ve Palsson, 2019). Başka bir tanımlamaya göre, son kilometre kavramı, işletmeden nihai tüketiciye (B2C) yönelik teslimat sürecinin, ürünün alıcıya ulaştırıldığı son aşaması olarak ifade edilmektedir. Bu aşama, genellikle bir dağıtım merkezinden tüketicinin konutuna ya da belirli bir toplama noktasına kadar olan lojistik faaliyetleri kapsamaktadır (Gevaers, Van de Voorde ve Vanelslander, 2011). Son kilometre teslimatı, yalnızca işletmeden tüketiciye (B2C) değil, işletmeden işletmeye (B2B) ve tüketiciden tüketiciye (C2C) modelleri kapsamında da ele alınabilir. Her bir model, teslimat süreci açısından farklı lojistik gereksinimler, maliyet yapıları ve operasyonel zorluklar barındırmaktadır (Ha, Akbari ve Au, 2023).

Son yıllarda lojistik alanında önemli bilimsel gelişmeler yaşanmış ve akıllı tedarik zinciri yönetimi (TZY) uygulamalarını destekleyen yenilikçi stratejiler geliştirilmiştir. Bu bağlamda son kilometre lojistiği, geleneksel tedarik zinciri yapısını yeniden şekillendirme potansiyeline sahip olup, tüm lojistik süreçlere hizmet ve destek sunabilmektedir. Lojistik faaliyetler; iç ve dış faktörler, performans, sistem yapısı, teknoloji entegrasyonu ve diğer maliyetler gibi çeşitli kategorilerde ele alınmaktadır (Juhász ve Bányai, 2018). Son kilometre teslimat sorunu, Bilgi ve İletişim Teknolojileri (BİT), Bilgi Taşıma Sistemleri (ATS), Endüstri 4.0 ve yeni ulaşım araçlarının gelişmesi sayesinde yenilikçi yöntemlerle ele alınmaktadır. Teslimat sürecinin hassas şekilde izlenebilmesi, yerelleştirme teknolojilerinin (örneğin, GPS ve mobil ağlar) kullanımıyla mümkün hâle gelmiştir. Bu teknolojiler sayesinde kullanıcı hareketlerinin kılcal düzeyde takibi gerçekleştirilebilmekte, lojistik ve taşımacılık süreçlerinde yüksek doğrulukla konum bilgisi elde edilebilmektedir. Öte yandan, uydu sistemleri ve diğer veri iletim teknolojileri aracılığıyla kullanıcıdan bilgi ve veri toplanabilmekte, aynı zamanda bu bilgilere dayalı içerikler kullanıcıya geri iletilebilmektedir. Bu süreçler, kullanıcı deneyimini artıran, kullanıcı dostu arayüz teknolojileriyle donatılmış mobil uygulamalar üzerinden yürütülmektedir. Ayrıca, nesnelerin interneti (IoT) ve büyük veri analitiği gibi dijital teknolojiler sayesinde, sistemler hem gerçek zamanlı hem de öngörüye dayalı olarak akıllı veri toplama ve işleme kapasitesine ulaşmıştır. Bu gelişmeler, lojistik ve son kilometre teslimat süreçlerinde operasyonel verimliliği önemli ölçüde artırmaktadır (Ranieri vd., 2018). Son kilometre, tedarik zincirinin en maliyetli ve problemli aşaması olarak öne çıkmakta, özellikle teslimat süreçleri başlıca sorun kaynağını oluşturmaktadır. Eve teslimat, yüksek maliyet, çevresel kirlilik ve nakliye sorunlarına yol açarken, kapıdan kapıya teslimatta ise boş rotalar oluşabilmektedir. Ayrıca, teslimatın güvenliği de önemli bir konudur, çünkü başarılı teslimatlar çoğu zaman alıcının imzasını gerektirmektedir (Juhász ve Bányai, 2018).

Son kilometre lojistiğinin rekabet açısından ortaya koyduğu önemli mesafeler verimli çözümler üretilmesine yönelik çabaların kaynağı olmuştur. Son kilometre özelliklerini analiz etmek ve tanımlamak için, son kilometre içindeki alt akışları tanımlayan ve sınıflandıran bir yaklaşıma ihtiyaç bulunduğu açıktır. Literatür incelendiğinde, geçmişte farklı son kilometre sınıflandırmaları yapıldığı görülmektedir. Boyer, Frohlich ve Hult (2005) tipolojisi, bazı akademik makalelerde kullanılan bir tipolojidir. Bu tipoloji, son kilometreyi dört sınıfa ayırmaktadır: yarı genişletilmiş tedarik zincirleri, ayrıştırılmış tedarik zincirleri, tam genişletilmiş tedarik zincirleri ve merkezi tedarik zincirler (Gevaers, Van de Voorde ve Vanelslander, 2011). Sınıflandırma şekilleri şu şekildedir (Juhász ve Bányai, 2018; Gevaers, Van de Voorde ve Vanelslander, 2011):

- Yarı genişletilmiş tedarik zinciri: Teslimatın dolaylı olduğu ve sipariş karşılamanın mağaza bazlı olduğu toplama süreçlerinde kullanılır. Siparişler mağazada toplanır, teslimatlar eve olmadığı durumlarda kullanılmaktadır.

- Tam genişletilmiş tedarik zinciri: Sipariş karşılamanın mağaza bazlı olduğu sipariş toplama süreçlerinde de kullanılabilir. Doğrudan eve teslimat türüdür.

- Ayrışmış tedarik zinciri: Teslimatın dolaylı olduğu dağıtım merkezlerine uygulanır. Bu türde ev teslimatlarından yararlanılmamaktadır.

- Merkezi Genişletilmiş Tedarik Zinciri: Ürünler, dağıtım merkezleri kullanılarak merkezi bir genişletilmiş tedarik zinciri aracılığıyla müşteriye teslim edilir. Teslimatlar evde yapılmaktadır.

Tablo 1: Son Kilometre Lojistiğinin Sınıflandırılması

Teslimat	Sipariş İşleme	
Dolaylı	Yarı-Genişletilmiş Tedarik Zinciri	Ayrışmış Tedarik Zinciri
Doğrudan	Tam-Genişletilmiş Tedarik Zinciri	Merkezi Genişletilmiş Tedarik Zinciri

Kaynak: Juhász ve Bányai, 2018.

DIŞSALLIK VE LOJİSTİK SEKTÖRÜNE YANSIMALARI

Dışsallık, bir ekonomik birim tarafından gerçekleştirilen üretim veya tüketim faaliyetlerinin, piyasa mekanizması dışında kalan üçüncü taraflar üzerinde doğrudan fiyatlandırılmayan etkiler yaratması olarak ifade edilmektedir (Helbling, 2010). Dışsallıklara yönelik farklı sınıflandırmalar yapılmaktadır. Bator'un (1957, 1958) sınıflandırması, dışsallık kavramını daha geniş rekabetçi denge teorisinin içine yerleştirerek üç kategoride ele almaktadır. Bunlar, mülkiyet dışsallıkları, teknolojik dışsallıklar ve kamusal mal dışsallıklarıdır (Paniagua ve Rayamajhee, 2024). Teknolojik dışsallık, bir ekonomik faaliyetin (üretim ya da tüketim) diğer ekonomik aktörlerin fayda ya da üretim fonksiyonları üzerinde fiyat mekanizması dışında yarattığı dolaylı etkileri ifade eder. Bu dışsallıklar olumlu ya da olumsuz olabilir; ancak çevreye zarar veren olumsuz dışsallıklar (örneğin; hava, su ve gürültü kirliliği) özellikle çevre ekonomisi açısından büyük önem taşımaktadır. Teknolojik dışsallıkların mikroekonomik modellemesi, bireylerin veya firmaların fayda ve üretim fonksiyonlarının, diğer aktörlerin faaliyetlerine işlevsel olarak bağımlı hâle getirilmesiyle gerçekleştirilir. Örneğin, bir tüketicinin faydası, soluduğu havayı kirleten bir firmanın üretim düzeyinden etkilenebilir. Kirliliğin azaltılmasının mümkün olduğu durumlarda, ekonomik faaliyetle kirlilik arasındaki ilişki ayrıca belirtilmelidir. Bu tür analizlerde karşılaşılan temel zorluklardan biri ise dışsallıkların neden olduğu dışbükeyliklerdir (Laffont, 1989).

Olumsuz dışsallıkların çözümü konusunda yapılacak çalışmaların kurumsal sosyal sorumluluk kapsamında değerlendirilmesine yönelik bazı görüşler bulunmaktadır. Bu kapsamda, KSS'yi işletme faaliyetlerinin dışsallıklarının veya etkilerinin sorumlu bir şekilde yönetilmesi bağlamında tanımlanması düşüncesi 1960'lara kadar uzanmaktadır. Ancak bu kavram 21. yüzyılın başlarında ivme kazanmaya başlamış ve ISO 26000 Sosyal Sorumluluk Kılavuzu'nun yayınlanmasından sonra pekişmiştir. KSS genel anlamda, toplum sorunlarının çözümüne katkı sağlamak, paydaşların ihtiyaç ve taleplerini dikkate almak ve şirketin onlar üzerindeki olumsuz etkilerini azaltmayı ve olumlu etkiler yaratmayı amaçlamaktadır. Söz konusu etkilerin sorumlu şekilde yönetilmesine yönelik etik ilkelere göre karar vermek de bu kapsamda yer almaktadır (Licandro vd., 2023).

Son kilometre lojistiği kapsamında oluşması muhtemel olumlu dışsallıklar, rekabetçilik ve farklılaşma kapsamında ele alınabilmektedir. Bu kapsamda, aşağıdaki noktalar göz önüne çıkmaktadır (Juhász ve Bányai, 2018);

- Operasyonel Verimlilik ve Ekonomik Faydalar: Son kilometre çözümleri, zaman tasarrufu ve verimlilik artışı sağlayarak işletmelerin rekabet gücünü doğrudan desteklemektedir. Gelişmiş rota optimizasyonu yazılımları sayesinde nakliye süreleri ve gecikmeler azaltılırken araçların daha akıllı kullanımıyla mobilite arttırılabilmektedir. Bu operasyonel optimizasyon, aynı zamanda üretim ve diğer temel iş süreçleriyle daha uyumlu bir tedarik zinciri sağlarken, ürünler teslimata hazır olduğunda lojistik sorunlar da minimize edilebilmektedir. Ayrıca, verimli veri kontrol sistemleri sayesinde tüm aşamaların

takibi ve analizinin yapılması olanaklı hale gelmektedir. Bu şekilde işletmeler, stok yönetiminden talep tahminine kadar tüm süreçleri daha iyi yönetebilmektedir.

- Üstün Müşteri Deneyimi ve Memnuniyeti: Son kilometre, müşteri ile doğrudan temas kurulan en kritik aşamadır. Belirlenen hizmet seviyelerine (hız, esneklik, doğruluk, güvenlik) verimli çözümlerle ulaşabilmek pazarda güven oluşturmaktadır. Memnun kalan müşteriler, marka bağlılığı geliştirir ve bu da işletmeler için yeni pazar fırsatlarını değerlendirmesini ve sürdürülebilir büyümeyi teşvik edebilir.

- Çevresel Sürdürülebilirlik ve Toplumsal Katkı: Son kilometre lojistiğinin olumlu dışsallıkları yalnızca ekonomik boyutla sınırlı değildir. Elektrikli araç kullanımı, drone teslimatları veya optimize edilmiş rota planlaması gibi doğru teslimat yöntemleri, yakıt tüketimini ve sera gazı emisyonlarını önemli ölçüde azaltabilir. Trafikte daha az sayıda araç, daha temiz bir hava ve daha sessiz bir kent ortamı, son kilometre lojistiğinden tüm toplumun faydalandığı olumlu dışsallıklardır.

Yine yukarıda ifade edilen olumlu dışsallıklar kapsamında, ücretli üyeliğe dayalı teslimattan faydalanmak, sosyal medyada olumlu geri bildirimlerde bulunmak, yeni teklifleri denemeye istekli olmak, işletmeyle gelecekteki harcamalarını artırmak ve olumlu deneyimlerini arkadaşları ve aileleriyle paylaşmak gibi son kilometre çözümlerinin oluşturduğu bazı faydalardan bahsedilebilmektedir (Ha, Akbari ve Au, 2023).

Tablo 2: Son Kilometre Lojistiğinin Türlerine Göre Faydaları

Etkiler	Yarı-Genişletilmiş Tedarik Zinciri	Tam-Genişletilmiş Tedarik Zinciri	Ayrışmış Tedarik Zinciri	Merkezi Genişletilmiş Tedarik Zinciri
Güvenlik	**	**	**	***
Envanter	***	***	***	***
Network	**	***	**	**
TZY	***	***	***	***
Enerji	**	***	**	***
Üretim	*	*	*	*
Teslimat Hızı	**	**	***	***
Müşteri Memnuniyeti	**	**	**	***
Şehir Lojistiği	**	**	***	***
Mobilite	***	***	***	***

Kaynak: Juhász ve Bányai, 2018.

Son kilometre lojistiği kapsamında oluşması muhtemel olumsuz dışsallıklara yönelik ise toplumsal refah düzeyinin düşmesi kapsamında yaklaşılarak konu ele alınabilmektedir. Bu kapsamda; trafik sıkışıklığı, kazalar, gürültü, atıklar, hava kirliliği, karayolu ve demiryolu altyapısının aşınması ve yıpranması gibi konular ele alınabilmektedir (Ha, Akbari ve Au, 2023; Ambrosino ve Sciomachen, 2021). Hızlı ve düzensiz kentleşme, Covid-19 pandemisi, e-ticaretin büyümesi ilgili olumsuzluklara temel oluşturmaktadır. Kentleşme ve e-ticaret gibi iki mega trendin etkisiyle, son kilometre teslimat hizmetlerine olan talep giderek artmaktadır. Kentleşme, kentsel alanlarda büyük nüfus artışlarına yol açmıştır. Bazı araştırmalar, 2050 yılına kadar yaklaşık 6,3 milyar insanın, yani küresel nüfusun yaklaşık

%70'inin büyük şehirlerde yaşayacağını tahmin etmektedir. Artan çevrimiçi sipariş sayısı, paket teslimatlarının sayısını da artırmaktadır (Mohammad vd., 2023; Bertolini, De Matteis ve Nava, 2024). E-ticaretin büyümesi, üreticilerden tüketicilere mal ve doğrudan hizmet pazarlamasının bir türü olan B2C işletme konseptini yaygınlaştırmaktadır. B2C işletmelerinin hızlı büyümesiyle birlikte, mal teslimatına olan ihtiyaç da artmaktadır. E-ticaret faaliyetlerinin özellikle ana destekçisi haline gelen mal teslimatı türü ise eve teslimat sistemidir. Bu ihtiyacın artması, birçok mal teslimat hizmetinin ortaya çıkmasına ve bu hizmetler arasında rekabetçi bir pazarın oluşmasına neden olmaktadır. Sonuç olarak, tüketicilerin konumlarının dağılma eğilimi göstermesi ve kullanılan farklı teslimat hizmetlerinin sayısının artmasıyla, genel lojistik sisteminin son aşamasında teslimat faaliyetleri parçalanmış hale gelmektedir. Bu durum, teslimat seferlerinin kilometre sayısında artışa neden olmaktadır. Özellikle eve teslimat türünde, teslimatla ilgili ortaya çıkan çeşitli teknik sorunlar nedeniyle durum daha da kötüleşmektedir. Tedarik ağının en önemli parçası olan karayolu taşımacılığı, lojistik sektörü tarafından en çok kullanılan ve tercih edilen seçeneklerin başında gelmektedir. Ancak şehirlerin özelliklerine göre başka yöntemler de kullanılabilmektedir. Kentsel alanlarda, karayolu yük taşımacılığı, teslimatla ilgili dışsallıklardan sorumlu ana yöntemdir (Raniery vd., 2018). Bu nedenle, teslimat lojistiğinde verimliliği artırmanın yanı sıra ilgili olumsuz dışsallıkları azaltmayı amaçlayan çeşitli çalışmalar yürütülmüştür Karayolu taşımacılığındaki tüm süreç, çeşitli karar alma aşamalarını içermektedir (Demir, Syntetos ve van Woensel, 2022). Bu nedenle, son kilometre segmenti verimli olmayan, en pahalı ve en çok kirleten segmenttir ve gürültü, trafik sıkışıklığı ve artan hava kirliliği gibi çeşitli olumsuz etkilerle ele alınmaktadır (Meliaresti, 2022).

Tablo 3: Son Kilometre Lojistiğinin Olumsuz Dışsallıkları

Karayolu Ürün Taşımacılığının Negatif Dışsallıkları	
Emisyon	Yerel hava kirliliği; sülfür asit, nitrojen oksit, karbon monoksit, kolayca buharlaşabilen ve havaya karışabilen organik kimyasal maddeler, partikül maddeler ve diğer gazlar. Küresel sera gazları; karbon dioksit eşdeğeri, karbon dioksit, metan gazı, nitrous oksit, ozon, Kloro-floro-karbonlar (CFC) ve diğer gazlar.
Gürültü Kirliliği	0–60 dBA: Sessiz ve Rahat (Fısıltı, sessiz ofis, hafif yağmur gibi. Konuşma ve dinlenme için ideal), **61-85 dBA: Orta Seviye (yoğun trafik, elektrikli süpürge, restoran ortamı. Uzun süre maruz kalmak rahatsız edebilir),** 86-110 dBA Çok Gürültülü (motosiklet, konser, çim biçme makinesi. Kulak koruması gerekebilir), 110+ dBA: Rahatsız Edici / Tehlikeli (siren, jet motoru, patlama sesi. Kısa sürede bile işitme kaybına yol açabilir)
Trafik Sıkışıklığı	Zaman kaybı, gecikmeler, yakıt kullanımı, sağlık riski, araçlarda aşınma ve yıpranma, uzun tahmin edilemeyen seyahat süreleri.
Kazalar	İlk yardım hizmetleri, trafikte gecikmeler.
Yer Kullanımı	Doğanın bozulması, görsel kirlilik, normal işleyişin bozulmasına yönelik duyulan rahatsızlık.

Kaynak: Demir, Syntetos ve Van Woensel, 2022.

Tablo 3'te karayolu taşımacılığının olumsuz dışsallıklarının ayrıntılarını sunulmaktadır. İfade edildiği üzere, dışsallık kapsamında odak nokta emisyonlar olmalı ve taşımacılığın diğer tüm dışsallıkları daha iyi ve daha verimli bir ulaşım planlamasıyla dikkatlice değerlendirilmelidir (Demir, Syntetos ve Van Woensel, 2022).

Tablo 4: Taşınan Yük Başına Çevresel Maliyetler

	Trafik Sıkışıklığı	Gürültü	Kaza	Hava Kirliliği	Bozulma
Kara Yolu	0.8	0.5	1.3	0.8	0.2
Tren Yolu	0	0.6	0.1	0.2	0.2

Kaynak: Ambrosino ve Sciomachen, 2021.

Tablo 4'te, 1 ton ağırlığındaki yükün 1 kilometre taşınmasının kaç Euro-sent'lik çevresel maliyete yol açtığını göstermektedir. Bu birim, farklı mesafelerdeki ve farklı ağırlıklardaki taşımaların maliyetini karşılaştırmak için standart bir ölçüt sağlamaktadır. Sözü edilen ortalama değerler, mükemmel bir kesinlikten ziyade, politika geliştirmek, karşılaştırma yapmak ve farkındalık yaratmak için kullanılan güçlü ve gerekli bir araç niteliğindedir (Ambrosino ve Sciomachen, 2021). Kamyonların yük kapasitesi, yol durumu, teknoloji, hız vb. faktörler ilgili değerleri değiştirmektedir.

SONUÇ

Son yıllarda müşteriye temas noktası olarak da görülebilen son kilometre lojistiğinin, özellikle e-ticarette yaşanan büyümeyle birlikte ulaştırılması gereken mal miktarındaki artışla önemli bir baskı altında olduğu ifade edilebilir (Alverhed, vd., 2024). Kentleşme, Covid-19 pandemisinin etkileri, teknolojideki ilerlemelerle birlikte son kilometre lojistiğinin üreteceği çözümlere önemli düzeyde ihtiyaç duyulmaktadır. Bu eğilimle birlikte tüketicilerin e-ticaret hizmetlerinden özelleştirme ve kolaylık açısından daha fazlasını talep etmeye başlamasıyla beklentileri de değişmektedir (Silva, Amaral ve Fontes, 2023). Son kilometre lojistiği işletmelerin rekabetçi özelliklerinin geliştirilmesinin yanında oluşturduğu dışsallık ve maliyetlerinin çözümüne yönelik önemli modeller geliştirilmeye çalışılmaktadır. Otonom teslimat çözümlerinin sürdürülebilir lojistik üzerindeki etkilerine yönelik değerlendirmelere yapılmaktadır. Drone, otonom araç ve robot gibi teknolojiler; çevresel ayak izi, maliyet, erişilebilirlik ve trafik gibi sorunların çözümüne katkı sağlayabilir. Bu araçlar daha az sera gazı salarak çevreye olumlu etki yaparken, lojistik şirketlerinin dışsal maliyetlerini azaltmalarına da yardımcı olabilir. Yapay zeka ve Endüstri 4.0 gelişmeleri bu teknolojilerin ilerlemesini desteklemektedir. Ayrıca, insan kaynaklı kazaların azaltılmasıyla güvenlik açısından büyük avantajlar sunmaktadır. Ancak, bakım ve altyapı maliyetleri gibi ekonomik zorluklar da göz önünde bulundurulmalıdır. Teknolojinin henüz olgunlaşmamış olması, sürdürülebilirlik üzerindeki etkilerin değerlendirilmesini zorlaştırmaktadır (Engesser, vd., 2023; Giuffrida, vd., 2022).

Avrupa'da ve dünyada uzun süredir ulaştırma politikaları ve araştırmalarında önemli bir yer tutan bu konu, özellikle son zamanlarda dışsal maliyetlerin (çevre kirliliği, kazalar, trafik sıkışıklığı gibi) ulaşım akış modelleri üzerindeki etkilerini analiz etmeye odaklanmıştır. Avrupa Komisyonu destekli projeler, bu maliyetlerin marjinal sosyal maliyet fiyatlandırması gibi piyasa temelli araçlarla içselleştirilmesinin; altyapının daha verimli kullanılması, olumsuz etkilerin azaltılması ve kullanıcılar arasında adaletin sağlanması gibi faydalar sağlayabileceğini göstermektedir. Bu alandaki el kitapları, tüm ulaşım modlarını kapsayan çevresel, kaza ve trafik maliyetlerini hesaplamak için en iyi yöntemleri sunmaktadır (Ambrosino ve Sciomachen, 2021). Otonom araçlar, dronlar ve çevrimiçi platformlar gibi yenilikler, rota optimizasyonu ve depo yönetimi gibi gelişmelerle işletme maliyetlerini düşürebilir. Ancak, paydaşlar arası uyum eksikliği bu yeniliklerin tam uygulanmasını engellemektedir. Rakip firmaların teslimatlarının birleştirilmesi ve son kilometre hizmetlerinin paylaşılması, çevresel etki ve gürültü gibi dışsal maliyetleri azaltabilir. Elektrikli araçlar umut verici olsa da, yüksek satın alma maliyetleri ve teknik sınırlamalar sorun yaratmaktadır. Hibrit filolar geçici bir çözüm sunarken, elektrikli araçların şebeke üzerindeki etkisi ve şarj anındaki enerji kaynağının çevresel etkisi dikkatle değerlendirilmelidir (Bertolini, De Matteis ve Nava, 2024).

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AUDITING 5.0

Denetim 5.0

Cemal Elitaş[1], Zehra Demirdaş[2]

[1]Yalova Üniversitesi, İ.İ.B.F., Uluslararası Ticaret ve Finansman Bölümü, Yalova, Türkiye.

Email: cemal.elitas@yalova.edu.tr Orcid 0000-0002-6010-6574

[2]Yalova Üniversitesi, Lisansüstü Eğitim Enstitüsü, Uluslararası Ticaret ve Finansman Ana Bilim Dalı, Yalova, Türkiye.

Email: 200213041@ogrenci.yalova.edu.tr Orcid: 0009-0001-2886-2222

Abstract

Global digital transformation and sustainability-oriented paradigms have necessitated a redefinition of auditing practices. This study conceptualizes Audit 5.0 as a new-generation approach where technology and human intelligence are integrated. Unlike traditional audit models, Audit 5.0 encompasses AI-driven analytical tools, blockchain-based secure records, sustainability (ESG) compliance auditing, and ethics-centered governance frameworks. The evolution of auditing is outlined in five stages, from Audit 1.0 to 5.0, with an emphasis on real-time, predictive, and human-centered audit systems. The study highlights the potential of Audit 5.0 to enhance transparency, accountability, and sustainable value creation within organizations. It argues that audit functions should go beyond financial accuracy and incorporate social and environmental impacts into their scope. By doing so, Audit 5.0 supports the transition to responsible corporate behavior and aligns with global demands for inclusive and ethical assurance mechanisms. This conceptual framework not only provides insights into the future of accounting and assurance practices but also serves as a strategic guide for practitioners, regulators, and policymakers in the digital era.

Keywords: Audit 5.0, digital assurance, artificial intelligence, sustainability, accounting audit, ethical governance

Özet

Küresel dijital dönüşüm ve sürdürülebilirlik odaklı paradigmalar, muhasebe denetimini yeniden tanımlama gerekliliğini ortaya koymuştur. Bu çalışmada, teknoloji ve insan etkileşiminin bütünleştiği yeni nesil bir yaklaşım olarak Denetim 5.0 kavramsallaştırılmaktadır. Denetim 5.0, geleneksel denetim anlayışından farklı olarak, yapay zekâ destekli analiz araçlarını, blockchain tabanlı kayıt sistemlerini, sürdürülebilirlik (ESG), uyum denetimini ve etik ilkelere dayalı yönetişimi bütünsel biçimde ele almaktadır. Çalışmada, denetimin 1.0'dan 5.0'a evrimi beş aşamalı bir modelle sunulmuş; özellikle gerçek zamanlı, öngörücü ve insan-merkezli denetim yapısının önemi vurgulanmıştır. Ayrıca, Denetim 5.0'ın işletmelere şeffaflık, hesap verebilirlik ve sürdürülebilirlik açısından sunduğu potansiyel katkılar değerlendirilmiştir. Bu bağlamda, sadece finansal doğruluk değil, sosyal ve çevresel etkilerin de denetim kapsamına alınması gerektiği savunulmaktadır. Çalışma, muhasebe denetiminin geleceğine yönelik teorik bir çerçeve sunarken, uygulayıcılar ve politika yapıcılar için de yol gösterici niteliktedir.

Anahtar Kelimeler: Denetim 5.0, dijital denetim, yapay zekâ, sürdürülebilirlik, muhasebe denetimi, etik yönetişim

1. GİRİŞ

1980'ler ve 1990'lar boyunca, muhasebe mesleğindeki rekabetçi dinamikler, birçok uygulayıcının denetim hizmetlerini düşük kârlı hizmetler olarak nitelendirmesine yol açtı. Ancak bu ortamda, muhasebe firmaları kârlarını artırmak amacıyla giderek daha fazla danışmanlık hizmetlerine yönelmeye başladı. Verimlilik kavramı, insan bilgisinin gelişimi ve dünyanın tanıklık ettiği medeniyet ile teknolojik ilerlemeler ışığında, ekonomik birimler ve hizmet sağlayıcılar açısından dikkat çeken ve odaklanılan bir unsur hâline geldi. Bu gelişmeler, birçok alanda olduğu gibi, meslek ve iş dünyasında da uzmanlık alanlarının ve hatta özel uzmanlık alanlarının ortaya çıkmasına neden oldu. Bu durum, yöneticilerin ve personelin tüm alanlara hâkim olmasını neredeyse imkânsız hâle getirdi. Dolayısıyla, birimler zaman zaman belirli alanlarda veya uzmanlıklarda idari, muhasebe veya danışmanlık hizmetleri alma ihtiyacı duymaktadır. Ancak, bu görevleri yerine getirecek nitelikli bir kişiyi birim bünyesinde istihdam etmek, birimin elde edeceği faydalardan daha yüksek bir maliyete yol açabilir. Bu nedenle, dış uzmanlardan destek alınması, çoğu durumda daha etkin ve maliyet açısından daha avantajlı bir çözüm olacaktır (Al-Taee & Kadhim Al-Jauhar, 2022).

Bu durum, ekonomik birimlerin birçok işi yeniden değerlendirmesine ve bu görevlerin yüksek verimlilikle yerine getirilebilecek nitelikli dış kaynaklara devredilmesi olasılığını düşünmelerine neden olmuştur. Bu birimler, dışarıdan alınan hizmetler sayesinde hizmet kalitesini artırarak ve sermaye harcamalarını azaltarak somut faydalar elde etmişlerdir. Farklı ortamlarda çeşitli taraflara hizmet dış kaynak kullanımı konusuna olan ilginin artmasıyla birlikte, araştırmacılar da bu konuya yönelmiş; yerel çevrede bu hizmet türlerinin neler olduğunu, bu hizmetleri sunan ofislerin karşılaştığı fayda ve riskleri belirlemeye çalışmışlardır. Küresel piyasalarda görülen olağanüstü büyüme —özellikle uluslararası ve çok uluslu şirketlerin, endüstriyel, ticari ve hizmet sektörlerinde faaliyet gösteren ekonomik birimlerin yaygınlaşması— bu dönüşümün belirgin örneklerinden biridir. Bu gelişmeler, muhasebe, denetim ve idari işler gibi çeşitli görevleri yerine getirebilecek nitelikli personele olan talebi artırmıştır. Ancak gerekli tüm personelin işletme bünyesinde istihdam edilmesi, yüksek maliyet, kaynak eksikliği veya genel organizasyonel verimliliğin azalması gibi olumsuz etkiler doğurabilmektedir. Bu nedenle, ekonomik birimler ihtiyaç duydukları hizmetleri karşılamak adına dışarıdan nitelikli kişilerin desteğine başvurma gereği duymaktadır. Bu doğrultuda araştırma problemi, birçok ekonomik birimde uygun uzmanlık eksikliği nedeniyle muhasebe ve denetim hizmetlerinin (örneğin hesap organizasyonu, muhasebe, vergi ve idari danışmanlık, iç denetim, bulut denetimi) düşük kalitede gerçekleştirilmesi sorunu olarak özetlenebilir (Al-Taee & Kadhim Al-Jauhar, 2022).

Denetimin bu dönüşümü literatürde bazı çalışmalardan da görülebilmektedir. Örneğin, Al-Jafri (2010) tarafından Suudi Arabistan'da yürütülen araştırma, denetim ofislerinin hizmet yelpazesini; mali, idari, ekonomik, teknik, hukuki ve kredi danışmanlıkları gibi çeşitli alanları kapsayacak şekilde genişletme gerekçelerini ve nedenlerini incelemiştir. Araştırma, ekonomik birimlerin hizmet alımında en uygun yükleniciyi seçme kriterlerini ele almasına rağmen, esas olarak stratejik dış tedarik yöntemi yoluyla maliyetlerin azaltılması yoluyla dış kaynak kullanımının faydalarına odaklanmıştır.

Ezzamel vd. (2002) tarafından yapılan bir başka çalışma, alt yüklenici ve dış kaynak kullanımı yoluyla muhasebe hizmetlerinin sunulmasına ilişkin organizasyonel yapıları incelemiştir. Subramaniam, Ng ve Carey (2004) tarafından gerçekleştirilen çalışma ise, iç denetim hizmetlerinin dış kaynak yoluyla sunulması konusuna odaklanmış ve bu hizmetlerin denetçiler tarafından sağlanabileceğini değerlendirmiştir.

Dış kaynak kullanımı" (outsourcing) terimi, Amerikan ekonomik yaşamından doğmuş bir kavramdır ve "outside" (dış) ile "resource" (kaynak) kelimelerinin birleşiminden oluşan, türetilmiş bir sözcük olarak "harici kaynaklar" anlamına gelmektedir (Giertl, Potkany & Gejdos, 2015). Bu terim, yönetim

bilimlerinde başka pek çok kavramla ilişkilidir ve bu nedenle; dış kaynak faaliyetleri, mezun faaliyetler, tedarik faaliyetleri, dışarıdan sözleşme yapma ve görevlerin devri gibi karşılıklar yer almaktadır (Sumaya, 2012).

Kimmel, dış kaynak kullanımı (outsourcing) kavramının ilk kez imalat şirketlerinde kullanılmaya başlandığını vurgulamıştır. Bu dönemde, birçok ekonomik birim, tedarik zinciri faaliyetlerini harici kaynaklara devretmiştir. Ancak iletişim sistemleri ve teknolojideki büyük gelişmeler sayesinde, dış kaynak kullanımı kavramı zamanla genişleyerek, insan kaynakları, finansal sistemler ve muhasebe bilgi sistemleri gibi daha karmaşık işlev ve görevleri de kapsar hâle gelmiştir (Halmeenmaki, 2015).

Byamukama (2014) ise dış kaynak kullanımını, ekonomik birim içerisinde yürütülebilecek hizmetlerin, dış bir tarafla yapılan sözleşme yoluyla sağlanması olarak tanımlamaktadır. Bu kapsamda, muhasebe dış kaynak kullanımı, en önemli dış kaynak eğilimlerinden biri olarak öne çıkmakta ve muhasebe mesleğine ait görevlerin başka bir tarafa devredilmesi anlamına gelmektedir. Bu uygulama, küçük, orta ve büyük ölçekli birçok şirket tarafından dünya genelinde kullanılmaktadır. Başka bir ifadeyle; muhasebe hizmetlerinin, işletme bünyesinde yürütülmesi yerine, uzman bir üçüncü tarafın dış kaynak olarak kullanılması söz konusudur.

Denetim 5.0 aşamasında sürdürülebilirlik olgusu da yer almaktadır. Genel olarak kendi ihtiyaçlarımızı karşılarken, gelecek nesillerin kendi ihtiyaçlarını karşılama yeteneğinden ödün vermemek şeklinde tanımlanmaktadır. Bu kavram, ekonomik, çevresel ve sosyal boyutları kapsayan üç temel sütundan oluşur. Son yıllarda sürdürülebilirlik, politika yapıcılar açısından artan bir endişe kaynağı hâline gelmiş; düzenleyici otoriteler ise yeni sürdürülebilir ekonomik modelleri teşvik etmeye ve geliştirmeye yönelmiştir (Mensah, 2019).

Sürdürülebilirlik, bir ülkede faaliyet gösteren şirketlerin ve çevreyi korumayı taahhüt eden kamu kurumlarının (örneğin yenilenebilir kaynakların kullanımı yoluyla) çabaları sayesinde elde edilebilir ve geliştirilebilir. Aynı zamanda, iş gücüne yönelik adil çalışma uygulamaları, güvenli çalışma koşulları ve iş-yaşam dengesi gibi sosyal sürdürülebilirliği sağlamaya yönelik politikalar da bu sürecin bir parçasıdır. Ancak, bu aktörlerin sürdürülebilirliğe olan bağlılıkları, yetersiz denetim ve raporlama altyapısı altında işlevsel olamaz (Guidara, 2022).

Örneğin, denetim ve raporlama altyapısının zayıf olduğu bir ortamda, şirketin benimsediği sürdürülebilirlik stratejisinin izlenmesi ve şirketin beyan politikalarının fiili uygulamalarıyla ne ölçüde örtüştüğünün denetlenmesi oldukça güçtür. Böyle bir ortamda denetçiler, şirketin sosyal ya da çevresel sürdürülebilirlik açısından uygun olmayan bir strateji benimsediğini tespit etseler dahi, bu durumu raporlamaktan kaçınabilirler, çünkü denetim ve raporlama standartları onları yeterince korumamaktadır (Amara vd., 2020).

Buna karşılık, gelişmiş bir denetim ve raporlama altyapısı altında faaliyet gösteren denetçiler, tespit ettikleri usulsüzlükleri raporlamak için daha fazla teşvike sahip olurlar (Amara vd., 2020). Bu durumda, hem şirketler hem de kamu kurumları, paydaşların ihtiyaç ve beklentilerini karşılamak amacıyla sürdürülebilirlik politikalarını uyarlamak ve geliştirmek yönünde baskı hissedeceklerdir.

2. MUHASEBE DENETİMİNİN EVRİMİ

Denetimdeki evrim aslında endüstride de önemli gelişmelere neden olan dijitalleşme ile başlamıştır. Akademide, iş dünyasında ve hatta günlük kullanımda yaygın olan "Dijitalleşme" terimi öncelikle teknolojik olarak tanımlanmalıdır, ancak bu tanımlama elbette ekonomik bağlamda da ele alınabilir. Dijitalleşme kavramını, dijital teknolojiler ile iş modelleri arasındaki kullanım bağlamını ele alırsak, şu görüşe ulaşabiliriz: "Dijitalleşme, sürdürülebilir katma değerin etkili ve verimli bir şekilde sağlanması

amacıyla, modern Bilgi ve İletişim Teknolojileri (BİT) kullanılarak süreçlerin, ürünlerin, hizmetlerin ve hatta tam iş modellerinin stratejik olarak dönüştürülmesidir" (Becker ve Pflaum, 2019: 9).

Yapılan bu tanım, dijital yapıların oluşumuna yol açan stratejik bir dönüşüm sürecinin olması gerektiğini açıkça göstermekte ve dijital teknolojilerin iş modelleri bağlamında kullanıldığı gerçeğini de içermektedir. Bu bağlamda, dijitalleşmenin iş modellerini ve dolayısıyla katma değer yaratma şeklini çeşitli şekillerde etkilediği gerçeği ise bizce tartışmasızdır (Baumöl ve Bockshecker, 2019: 145). Ayrıca, dijital dönüşüm sürecinin pratikte tek bir olay olarak değilde, daha çok evrimsel, ancak kesinlikle bozucu yönleri olan, stratejik bir işletme gelişimi olarak karakterize edilebileceğini göz önünde bulundurmak gerekmektedir. Bunun yanı sıra, dijital dönüşüm süreçlerinin düzenli olarak Volatilite, Belirsizlik, Karmaşıklık ve Belirsizlik (Volatility, Uncertainty, Complexity, Ambiguity - VUCA) özellikleriyle karşı karşıya olduğunu ve iş modeli yeniliklerine atıfta bulunduğunu ve dolayısıyla nihayetinde katma değer yaratma amacına hizmet ettiğini belirtmemiz gerekmektedir (Bieger vd., 2011). Girişimsel dönüşüm süreçleri ve sonuçları, dijital değer yaratımının yönetimini gerektirmektedir (Baumöl, 2016). bu bağlamda kontrol, yapısal tasarım, süreç yönetimi ve düzenleme (başka bir ifadeyle yönlendirme) sorunları ile öncelikle davranışsal liderlikle ilgili sorunlarla ilgilenmektedir (Becker, 2020: 4).

Endüstri 5.0 kavramı, gelişmekte olan beşinci endüstri devriminin bir vizyonunu tanımlaması anlamında önemlidir. Bu devrimin özü, endüstriyel altyapının dijitalleştirilmesi ve tüm değer zinciri katılımcılarının birbirleriyle bağlanmasıdır. Bu dijital dönüşümün amacı, değer yaratma süreçlerinin verimliliğini ve etkinliğini artırmak, dijital ürünlerin akıllı bir şekilde birbirine bağlanmasını sağlamak ve bunun üzerine veri tabanlı hizmetlerin ve iş modellerinin kurulmasını mümkün kılabilmektir. Bunun temelini, "Endüstriyel Nesnelerin İnterneti (Industrial Internet of Things - IIoT)" olarak adlandırılan bir dizi yeni dijital teknoloji oluşturmaktadır. Bu teknolojiler, internet ve iletişim teknolojilerinin yanı sıra sensör teknolojisi, aktüatör teknolojisi (sistemi kontrol eden veya hareket ettiren bir tür motor), gömülü sistemler ve insan-makine arayüzleri gibi bileşenleri içermektedir. Bu teknolojilerin birleşimi, sensörler aracılığıyla veri toplayan, bunları gömülü yazılım aracılığıyla işleyen ve gerçek olaylara etki ederek süreçleri ve ürün-hizmet sistemlerini izleme, kontrol etme, optimize etme ve otonom hale getirme olanağı sağlayan "Siber-Fiziksel Sistemler"in (Cyber-Physical Systems - CPS) kurulmasına olanak tanımaktadır. Şirketler, genel olarak iki stratejik yönelim arasında seçim yapmaktadırlar bunlardan ilki, yeni teknolojiler aracılığıyla değer yaratma süreçlerini daha verimli ve etkili hale getirmek iken diğeri, dijital olarak bağlantılı ürünler ve hizmetler ile veriye dayalı iş modellerinin sunulmasıdır (Obermaier vd., 2021: 21). Aşağıda yer alan Şekil 1'de bu sürecin bir görselini görmek mümkündür.

Şekil 1. Endüstrinin Gelişim Evreleri (Elitaş, 2024).

Şekil 1'den de görüleceği üzere endüstrinin gelişim evrelerinde gerçekleşen her bir değişimin nedeni olan gelişmeler kuşkusuz, dijital teknolojilerin kullanım alanlarının genişlemesi sayesinde olmuştur. Bu gelişim elbette bir çok disiplini etkilemiş ve bu disiplinlerin de gelişmesini ve değişmesini böylece yeni bir evreye geçmesini sağlamıştır (Elitaş, 2024).

Aşağıda yer alan Şekil 2'de ise Denetim 5.0 için belirleyici olabilecek yeniliklere giden yol ve aşamalar ile süreçleri görmek mümkündür.

Şekil 2. Denetim 5.0 İçin Belirleyici Olan Yenilikler (Rausenberger & Prenrecaj, 2017'de yazarca uyarlanmıştır)

Sadece müşteri özelinde kullanılan finansal raporlama sistemlerinin giderek dijitalleşmesi ve gerçekleştirilecek denetim işlemlerinin artan karmaşıklığı değil, aynı zamanda denetim faaliyetlerinin dijitalleşme yoluyla ilerletilmesi ihtiyacı da bağımsız denetimin dijitalleşme ile geliştirilmesini zorunlu kılmaktadır. Bu bağlamda, Alman Mali Denetçiler Enstitüsü (Institut der Wirtschaftsprüfer – IDW) de, denetim firmalarının bilgi teknolojisi (BT) sistemlerini daha kolay kullanabilmesini sağlayacak düzenlemeler kabul etmiştir. Denetim işlemleri, esasen yeterli düzeyde denetim kanıtı elde edilecek şekilde yürütülmelidir. Bu yeterlilik hem nicelik hem de nitelik açısından değerlendirilir. Denetim kanıtlarının güvenilirliği, yalnızca içeriksel uygunluk açısından değil, aynı zamanda kanıt kalitesinin değerlendirilmesinde de kritik öneme sahiptir. Risklerin ağırlıklandırılması denetim firmalarının sorumluluğunda olsa da, dijitalleşme bu noktada da önemli bir rol oynamaktadır. Örneğin, risk seçimi alanında, derin öğrenme (Deep Learning) ve büyük veri (Big Data) teknolojileri kullanılarak, önceden tanımlanmış bir öğrenme kümesine dayalı olarak kendi kendini yöneten kurallar içeren karar modelleri geliştirilebilmektedir (Downar & Fischer, 2019).

Teknolojik dönüşüm, bu bağlamda bağımsız denetim mesleğini de yeni zorluklarla karşı karşıya bırakmaktadır. Yenilikçilik ve dijitalleşmenin sunduğu avantajları kullanma konusundaki isteklilik, gerçekleştirilen denetimlerin kalitesi üzerinde büyük bir etki yaratacaktır. Ancak bu durum, aynı zamanda veri koruma ve şeffaflık konularında da artan bir karmaşıklığı beraberinde getirerek, güvenilirliğin korunması açısından yeni gereklilikler doğurmaktadır. Denetim 5.0 kavramı, Endüstri 5.0'dan türetilmiştir ve kökeni Sanayi Devrimi dönemlerine dayanmaktadır. Otomasyon, büyük veri analitiği (Big Data Analytics) ve iletişim araçlarıyla sağlanan bağlantılılık gibi dijital yenilikler, bağımsız denetim şirketlerinin çalışma biçimlerini de etkilemekte ve bu mesleki alanın gelişimine büyük ölçüde yön vermektedir (Rausenberger & Prenrecaj, 2017). Bu bağlamda Şekil 3 Denetim 5.0'ın, Endüstri 5.0'dan benzer bir dönüşüm ile evrildiğini göstermektedir.

Şekil 3. Denetim 5.0 Süreci (Yazarlarca oluşturulmuştur).

3. DENETİM 5.0'IN TEMEL BİLEŞENLERİ

Denetim 5.0, yalnızca teknolojik gelişmelerin değil, aynı zamanda etik, sosyal ve çevresel sorumlulukların da entegre edildiği yeni nesil bir denetim yaklaşımını ifade etmektedir. Bu yaklaşım, geleneksel denetimden farklı olarak, dijital araçların sağladığı hız ve verimliliği insan-merkezli bir perspektifle birleştirir. Denetim 5.0'ın temelinde yer alan bileşenler; yapay zekâ ve makine öğrenmesi gibi akıllı teknolojilerin veri analizine katkısından, blockchain teknolojisi ile sağlanan şeffaflığa kadar uzanmaktadır. Aynı zamanda bu sistem; gerçek zamanlı risk izleme yetenekleri, sürdürülebilirlik ilkeleri doğrultusunda ESG denetimi, etik yönetişim ve toplumsal sorumluluk gibi güncel beklentileri de kapsamaktadır.

Bu bölümde, Denetim 5.0'ın temel bileşenleri alt başlıklar hâlinde ele alınacak; hem teknik hem de normatif yönleriyle yeni denetim anlayışının hangi unsurlar üzerine inşa edildiği açıklanacaktır. Özellikle büyük veri analitiği ile denetçi-insan rolü arasındaki dengenin dönüşümü, bu yapının geleceğini şekillendiren stratejik unsurlar arasında değerlendirilecektir.

3.1. Yapay Zekâ ve Makine Öğrenmesi

Yapay zekâ (YZ) ve makine öğrenmesi ile denetim konuları uzaktan bakıldığında birbirinden oldukça farklı ve ortak yönleri bulunmayan alanlar gibi görünmektedir. Yapay zekâ hâlen daha çok akıllı telefonlar ve uygulamalarla ilişkilendirilirken, bağımsız denetim hâlâ çoğunlukla manuel işlemlerle

özdeşleştirilmektedir. Ancak gerçekte, yapay zekâya ilişkin gelişmeler çoktan denetim dünyasına ulaşmış ve finansal raporlama süreçleri ekosistemini köklü biçimde etkilemeye başlamıştır. Zorunlu denetçi rotasyonunun yanı sıra, büyük hacimli verilerin (mass data) erişilebilir hâle gelmesi, denetim için yeni zorlukları da beraberinde getirmiş; bu da yeni çözümler gerektirmiştir (Loitz & Bauckhage, 2021).

Yapay zekâ (İngilizce: Artificial Intelligence – AI), teknolojik ve ekonomik birçok gelişmeye dayanmaktadır. Araştırma alanı olarak oldukça heyecan verici bir konudur çünkü devrim niteliğinde dönüşümlere yol açma potansiyeli taşımaktadır. Temel olarak iki ana boyutu vardır:

1) Zekice davranış biçimlerinin problem çözümünde nasıl kullanılabileceğini araştırmak,

2) Bu bilgiler ışığında, problemlere çözüm üretecek akıllı sistemler geliştirmek.

Bu süreçte özellikle, insanın çözüm kapasitesinin ötesine geçebilecek uygulamalar hedeflenmektedir. Yapay zekânın temel amacı, problem çözümüne yönelik yazılımlar geliştirmektir (Kreutzer & Sirrenberg, 2019).

Yapay zekâ ve makine öğrenmesi bir bilim alanı olarak ancak programlama yapabilecek bilgisayarların ortaya çıkmasıyla mümkün hâle gelmiştir. Bu durum ilk kez 1950'li yıllarda, Newell ve Simon'un ilk otomatik teorem ispatlayıcısını tanıtmasıyla gerçekleşmiştir. 2000'li yıllara gelindiğinde, teknoloji yeterince gelişmiş ve uygulama alanına özel yazılım kütüphaneleri ortaya çıkmıştır. Gerçek anlamdaki kırılma noktası ise, görüntülerdeki nesnelerin tanınmasıyla yaşanmış ve bu durum yapay sinir ağlarının geliştirilmesine olanak sağlamıştır. 2006–2016 yılları arasında bu alan çok hızlı gelişmiş; ev içi hizmet robotları, sürücü destek sistemleri gibi otonom çözümler uygulanmaya başlamıştır (Ertel, 2021).

Ayrıca, sayısız iş modelinin dijitalleşme dalgası ile yeniden yapılandırılması ihtiyacı, yapay zekânın denetim üzerindeki etkisini daha da hızlandırmıştır. Örneğin, içten yanmalı motor üreten geleneksel otomotiv firmaları, elektrikli araç üreten firmalar tarafından geride bırakılınca, iş modellerini köklü biçimde yeniden değerlendirmek zorunda kalmışlardır. Buna karşılık, veri toplama ve analizine dayalı iş modellerine sahip firmalar, günümüzde dünyanın en değerli şirketleri arasında yer almaktadır (Loitz & Bauckhage, 2021).

Bu bağlamda yapay zekâ ve makine öğrenmesi, denetim mesleği içinde giderek daha fazla önem kazanmakta ve bu eğilimin önümüzdeki yıllarda da artarak devam edeceği öngörülmektedir. Dijital veri kümeleriyle çalışan denetimlerde, denetim firmaları yeni teknolojileri kullanarak süreçleri otomatikleştirme ve analiz gerçekleştirme fırsatı bulmaktadır. Bu sayede standart işlemler çok daha hızlı yürütülmekte; denetçilerin vakitleri belirsizlik veya tutarsızlıkları hedefli analizlere yönlendirilebilmektedir (Ziegler vd., 2018).

Yapay zekâ tabanlı ve makine öğrenmesi destekli analiz sistemlerinin denetim süreçlerinde kullanılması, hem tüm paydaşlar açısından değer yaratma potansiyeli taşımakta hem de denetim kalitesini yükseltebilmektedir. Geleneksel manuel denetim yöntemlerine kıyasla, çok daha fazla sayıda bulguya erişmek mümkündür ve bu da yüksek ek maliyetler doğurmadan sağlanabilmektedir (Naumann & Feld, 2018).

Ancak, yapay zekânın ve makine öğrenmesinin denetim süreçlerindeki kullanımı henüz tam kapasitesine ulaşmamıştır. Bu teknolojiler genellikle sadece örnekleme yoluyla uygulanmaktadır, çünkü yaygın kullanım için hâlen standartlaşmış ve olgun sistemler eksiktir. Bununla birlikte, yapay zekâ sistemlerinin daha yaygın kullanılması, mevcut büyük veri kümelerinin analiz edilmesi ve sapmaların otomatik olarak tespit edilmesi yönünde güçlü bir eğilim bulunmaktadır (Loitz, 2017).

3.2. Blockchain ve Şeffaflık

Satoshi Nakamoto tarafından geliştirilen ve "Dağıtık Defter Teknolojisi" (Distributed Ledger Technology – DLT) olarak adlandırılan, ancak daha çok Blockchain teknolojisi olarak bilinen sistemin en büyük avantajı, bir varlığa ilişkin mülkiyet haklarının merkezi bir otoriteye—örneğin bir noter veya merkezi kayıt sistemine—gerek kalmaksızın doğru biçimde izlenebilmesini sağlamasıdır. Bu teknoloji başlangıçta, dijital para birimi olan Bitcoin'in yönetimiyle ilgili tüm faaliyetleri mümkün kılmak amacıyla geliştirilmiş olsa da, kullanım alanı yalnızca bununla sınırlı değildir (Hopf & Picot, 2018).

Temel olarak bu kavram, sistemde gerçekleşen tüm işlemlerin, dağıtık olarak tutulan halka açık bir kayıt defterinde tutulduğu merkeziyetsiz bir yazılım mimarisini ifade eder. Bu kayıt defteri Blockchain olarak adlandırılır ve kronolojik sırayla birbirine bağlanmış işlem veri bloklarından oluşur. Her blok, bir önceki bloğa kriptografik referanslarla bağlanır. Bu sistemde herhangi bir merkezi kontrol otoritesi bulunmaz ve veriler çok sayıda noktada saklanır (Tech vd., 2018).

Kripto para birimleri etrafında oluşan ilginin bir sonucu olarak geliştirilen bu teknolojinin finansal raporlama alanında kullanılması, bu sürecin çok daha şeffaf, verimli ve güvenilir hâle getirilmesini mümkün kılmaktadır. Özellikle günlük muhasebe işlemleri ve bağımsız denetim faaliyetlerinde bu teknolojinin ciddi potansiyeli vardır. Blockchain'in en büyük avantajlarından biri, veri tahrifine karşı dayanıklı olması ve örneğin standart işlem türlerini otomatik olarak muhasebeleştirebilmesidir (Leibfried & Petry, 2022).

Verilerin şeffaf ve güvenilir olması, bu teknolojinin bağımsız denetim süreçleri üzerinde de etkili olmasını sağlar. Blockchain teknolojisinin kullanımı ve beraberinde gelen otomasyon sayesinde, veri aktarımı hızlanmakta ve dış denetim süreçlerinin etkinliği artmaktadır. Ancak, Blockchain teknolojisinin etkin biçimde kullanılabilmesi için bazı ön koşulların da yerine getirilmesi gerekmektedir. Bir yandan, işlemde yer alan tüm tarafların muhasebeyle ilgili bilgileri eksiksiz biçimde Blockchain'e kaydetmesi gerekirken; diğer yandan muhasebe sistemlerinin bu bilgileri otomatik olarak işleyebilecek altyapıya sahip olması gerekmektedir (Leibfried & Petry, 2022).

3.3. Gerçek Zamanlı Denetim ve Risk İzleme

Gerçek zamanlı denetim, işletme faaliyetlerinin anlık olarak izlenmesini ve denetim kanıtlarının sürekli şekilde toplanmasını sağlayan bir modeldir. Bu yaklaşım, geçmişe dönük kontrollerin ötesine geçerek risklerin erken aşamada tespitine ve iç kontrollerin etkinliğinin artırılmasına olanak tanır. Özellikle ERP sistemleriyle entegre çalışan sürekli denetim sistemleri, hem verimliliği hem de güvenilirliği artırır (Alles & Vasarhelyi, 2014). Bu modelin uygulanmasıyla, geleneksel örnekleme yerine tam veri analizleri yapılabilir, böylece risk izleme süreçleri daha kapsamlı yürütülebilir (Chan & Vasarhelyi, 2011).

3.4. Sürdürülebilirlik ve ESG Denetimi

Sürdürülebilirlik ve ESG (çevresel, sosyal ve yönetişim) denetimi, şirketlerin yalnızca finansal değil, çevresel ayak izi, sosyal sorumluluk uygulamaları ve yönetişim yapıları gibi finans dışı performanslarını da kapsar. Avrupa Birliği'nin Kurumsal Sürdürülebilirlik Raporlama Direktifi (CSRD) gibi düzenlemeler, ESG denetiminin zorunlu ve sistematik hâle gelmesini teşvik etmektedir (European Commission, 2022). Bu bağlamda GRI ve TCFD gibi uluslararası raporlama çerçeveleri, sürdürülebilirlik raporlarının denetlenebilirliğini güçlendirir (KPMG, 2021). Etkin ESG denetimi, yatırımcı güvenini artırmakta ve uzun vadeli paydaş ilişkilerini desteklemektedir (Eccles & Krzus, 2018).

3.5. Etik Yönetişim ve Sosyal Sorumluluk

Etik yönetişim, yalnızca yasal çerçeveye uygunlukla sınırlı olmayan, aynı zamanda şirketin tüm karar alma süreçlerinde adalet, dürüstlük, hesap verebilirlik ve şeffaflık gibi normatif değerleri benimsemesini öngören bir yönetişim anlayışıdır. Kurumsal sosyal sorumluluk (CSR) ise şirketin yalnızca ekonomik çıkarlarını değil, aynı zamanda çevresel sürdürülebilirlik, insan hakları ve toplumsal refah gibi daha geniş sorumluluk alanlarını da içeren bir anlayışı temsil eder (Carroll & Shabana, 2010).

Etik yönetişim, şirketlerin yalnızca pay sahiplerine değil, aynı zamanda tüm paydaşlara karşı sorumlu olduğu bir kurumsal yapı oluşturmayı hedefler. Bu bağlamda, denetim sürecinde etik ihlallerin, çıkar çatışmalarının ve yönetişim zafiyetlerinin tespiti kritik bir rol oynar. Denetçiler, yalnızca mali tabloların doğruluğunu değerlendirmekle kalmamakta, aynı zamanda şirketin etik kültürünün değerlendirilmesinde de sorumluluk üstlenmektedir (Kaptein, 2008).

OECD'nin Kurumsal Yönetişim İlkeleri (2015), etkin yönetişimin yalnızca şirketin performansını değil, aynı zamanda ekonomik kalkınma ve toplumsal güveni de artıracağını belirtmektedir. Bu çerçevede etik yönetişim, şirketlerin itibar yönetimi açısından stratejik bir unsur hâline gelmiş, sosyal sorumluluk ise sürdürülebilir değer yaratımının temel dayanaklarından biri olmuştur.

Denetim 5.0 çerçevesinde etik yönetişim ve sosyal sorumluluğun daha sistematik bir biçimde denetim süreçlerine entegre edilmesi, hem iç hem dış paydaş güvenini pekiştirecek hem de etik risklerin erken tespitine olanak sağlayacaktır. Bu noktada, etik kültürün kurumsal yapıda ne ölçüde içselleştirildiği, denetçiler tarafından değerlendirilebilir hâle gelmelidir (Kaptein, 2008; IFAC, 2021).

3.6. Denetçi-İnsan Rolünün Dönüşümü

Dijitalleşme, yapay zekâ (YZ), büyük veri analitiği ve otomasyonun denetim süreçlerine entegrasyonu, denetçilerin geleneksel rollerini köklü biçimde dönüştürmektedir. Daha önce ağırlıklı olarak veri toplama, belge inceleme ve standart prosedürlerin uygulanması gibi görevlerle sınırlı olan denetçi rolü; bugün giderek daha analitik, eleştirel ve stratejik bir boyut kazanmaktadır (ICAEW, 2020).

Rutin ve tekrarlı işlemler yapay zekâ tabanlı sistemler tarafından gerçekleştirilirken, denetçiler daha çok anomalilerin tespiti, etik değerlendirmeler, risk yorumlama, stratejik danışmanlık ve paydaş iletişimi gibi yüksek katma değerli faaliyetlere yönelmektedir (IFAC, 2021). Bu dönüşüm, sadece teknik beceriler değil; aynı zamanda etik muhakeme, iletişim, problem çözme ve eleştirel düşünme gibi insani becerilerin önemini de artırmaktadır (Chartered Accountants Australia and New Zealand [CA ANZ], 2019).

Denetçi-insan artık sadece bir "veri doğrulayıcı" değil; karmaşık sistemleri okuyabilen, bütünsel bakış açısına sahip ve paydaş güveni inşa eden bir güven aktörü olarak konumlanmaktadır. Bu çerçevede, denetçilerin yeni dijital beceriler kazanması ve sürekli öğrenmeye açık olması, "Denetim 5.0" paradigmasının temel gereklilikleri arasında yer almaktadır.

Denetim mesleğinin bu evrimi, denetim ekiplerinde insan ve makine iş birliğini artırmakta; bu da karar destek sistemlerinin doğruluğunu artırırken, denetçinin sezgisel ve ahlaki yargısına olan ihtiyacı da ortadan kaldırmamaktadır (PwC, 2019). Aksine, insan unsuru artık veriye dayalı teknolojik çıktıların yorumlanması ve sorumlu kararların alınması süreçlerinde daha da kritik hâle gelmektedir.

3.7. Büyük Veri

İngilizcede "Büyük Veri" (Big Data) olarak adlandırılan çok sayıda veri, özel kriterler temelinde küçük veri kümelerinden ayrılır. Bu kriterler genellikle "V özellikleri" olarak tanımlanmaktadır. Tech America Foundation, "Büyük Veri" terimini şu şekilde anlaşılır biçimde tanımlamaktadır (Engels & Goecke, 2018):

"Büyük Veri, yüksek hızda, karmaşık ve değişken yapıdaki büyük veri hacimlerini tanımlar. Bu veriler, bilginin yakalanması, depolanması, dağıtılması, yönetilmesi ve analizini mümkün kılmak için ileri düzey teknik ve teknolojiler gerektirir."

Bu kavram genellikle "3 V" ile tanımlanır:

- Volume (Hacim): Bu bağlamda büyük veri, çok büyük veri hacmini ifade eder. Özellikle internet üzerinden üretilen verilerin hızla artması sonucu veri miktarı artık gigabayt ya da terabayt yerine petabayt, eksabayt ve zettabayt[9] ile ölçülmektedir.

- Velocity (Hız): Büyük veride "hız", bir yandan verilerin işlenme hızını, diğer yandan da veriler arasındaki ilişkilerin değişme hızını ifade eder. Burada hem işleme dinamiği hem de değişim dinamiği ayrıştırılır.

- Variety (Çeşitlilik): Bu özellik, verilerin farklı tür ve biçimlerini (metin, ses, görsel, yapılandırılmamış veriler vb.) ifade eder. Buradaki temel gereksinim, yapılandırılmamış veri kümelerinin işlenmesidir (Bachmann vd., 2014).

Büyük veri ve yeni nesil veri analiz yöntemleri, muhasebe alanını da giderek daha fazla etkilemektedir. Bu etki özellikle denetim ve danışmanlık hizmetlerinde kendini göstermektedir. Karar vericiler tarafından sağlanan bilgi akışı, hem önemli fırsatlar hem de riskler barındırmaktadır (Mcbride & Philippou, 2020). Denetim firmaları, geleneksel denetim yöntemleri ile uzman görüşlerini, büyük veri teknolojileriyle birleştirerek denetim sürecinin neredeyse tamamına olumlu katkı sağlayabilmektedir (Dang, 2022).

Büyük verinin etkin analizi, işletmeler açısından; metin, ses ve bulut tabanlı verilerden anlamlı bilgi elde etmek ve bunları denetim amacıyla kullanmak açısından büyük değer taşır. Bu ayrıntılı analiz biçimi, denetim firmalarının müşterileri için daha iyi karar destekleri sağlamasına olanak tanımaktadır. Ancak daha önce de belirtildiği üzere, bu süreç artan karmaşıklık ve daha yüksek maliyetler ile birlikte gelir. Bu noktada yalnızca işlemci maliyetleri değil; aynı zamanda istatistiksel sapmalar ve algoritmik hatalar da göz önünde bulundurulmalıdır (Dang, 2022).

3.8. Bulut Bilişim

Bulut bilişim temelde yeni bir trend olmamakla birlikte, bağımsız denetim alanında giderek artan bir öneme sahiptir - özellikle de şirketin finansal muhasebe süreçlerinin bu teknoloji kullanılarak yürütülmesi durumunda- (Groß, 2019).

Bulut bilişimin en belirgin özelliği, esnek ve ölçeklenebilir bir altyapı tanımı ile her zaman erişilebilir kaynakların sunulmasıdır. "Bulut" kavramı mecazi anlamda, tüm hizmetlerin internet üzerinden sağlandığını ve verilerin adeta bir bulut içinde saklandığını ifade etmektedir (Hentschel & Leyh, 2018).

Bu nedenle bulut bilişim, bilgi teknolojileri (BT) dış kaynak kullanımının bir uzantısı olarak görülebilir ve kişiselleştirilmiş çözümler ve görsel ara yüzler ile şekillenir. Bulut bilişimin en büyük avantajlarından biri, BT verimliliği ile BT çevikliği olmak üzere iki temel bilgi teknolojisi eğilimini bir araya getirmesidir. Ayrıca farklı sistemler arasındaki uyumsuzluk sorunları da neredeyse tamamen ortadan

[9] Zetta 21 sıfırı olan bir sayıyı temsil etmektedir.

kalkmaktadır; çünkü veriler genellikle internet üzerinden güvenli bir şekilde erişilen bulut sağlayıcısının merkezi sunucularında saklanmaktadır (Deiminger, 2021).

Bulut bilişimin kullanımı sayesinde, özellikle yüksek sermaye gerektiren donanım ve yazılım maliyetlerinde önemli tasarruflar elde edilebilir. Operasyonel avantajlar, esasen hesaplama ve depolama kapasitelerindeki esneklikle ilgilidir. Öte yandan, stratejik avantajlar, başta iş süreçlerinin optimize edilmesi olmak üzere çeşitli alanlarda ortaya çıkmaktadır (Hentschel & Leyh, 2018).

SONUÇ VE GENEL DEĞERLENDİRME

Bu çalışma kapsamında, denetim mesleğinin tarihsel gelişim çizgisinden hareketle Denetim 5.0 paradigmasına doğru geçiş süreci ele alınmış; teknolojik dönüşümün, sürdürülebilirlik anlayışının ve etik yönetişimin denetim süreçleri üzerindeki etkileri analiz edilmiştir. Dijitalleşme, yapay zekâ, büyük veri analitiği ve blockchain gibi teknolojilerin denetim alanına entegrasyonu, yalnızca araçsal değil, aynı zamanda kavramsal bir dönüşümü de beraberinde getirmektedir. Artık denetçiler yalnızca geçmiş verileri inceleyen pasif kontrolörler değil; stratejik danışmanlık yapan, gerçek zamanlı karar destek sağlayan ve kurumsal yönetişime rehberlik eden çok yönlü profesyonellerdir.

Ancak Denetim 5.0'a geçiş, bazı yapısal ve etik zorlukları da beraberinde getirmektedir. Özellikle küçük ve orta ölçekli denetim firmalarının ileri düzey teknolojilere erişiminde yaşanan eşitsizlik, dijital uçurumun derinleşmesine neden olabilir. Regülasyonların geride kalması, veri güvenliği açıkları ve yapay zekâ uygulamalarında karşılaşılan etik ikilemler de denetimin güvenilirliğini tehdit eden faktörlerdendir. Ayrıca, denetçilerin dijital yetkinliklerini geliştirme ihtiyacı, mesleki yeniden yapılandırmayı zorunlu kılmaktadır. Denetim süreçlerinde "yeşil aklama" gibi sahte sürdürülebilirlik iddialarının fark edilememesi de, etik denetim sorumluluğunun yeniden tanımlanmasını gerekli kılmaktadır. Bu bağlamda denetim 5.0'a geçişte karşılaşılaşılabilecek zorlukları şu başlıklar altında sıralamak sanırız ki yanlış olmayacaktır.

- Teknolojiye erişim eşitsizliği,
- Regülasyon ve etik riskler,
- Veri güvenliği ve mahremiyet,
- Denetçilerin dijital yetkinlikleri,
- Yeşil aklama / etik denetim yanılmaları.

Geleceğe dönük olarak, denetim 5.0'ın denetçiyi yalnızca doğrulayıcı bir figür olmaktan çıkararak, kurumsal stratejilere yön veren bir aktöre dönüştüreceği öngörülmektedir. Denetim artık sadece mali tabloların kontrolü değil; çevresel etkilerin, sosyal sorumluluk uygulamalarının ve yönetişim kalitesinin de bütüncül olarak değerlendirildiği bir güven inşası sürecidir. Paydaş odaklılık bu bağlamda ön plana çıkarken, yapay zekânın etik kullanımı ve algoritmik kararların sorumluluğu gibi yeni sorun alanları, denetimin etik boyutunu daha da kritik hale getirmektedir. Denetim 5.0'a geçiş süreci kapsamında denetimin stratejik rolünde oluşabilecek değişiklikleri de aşağıdaki şekilde sıralayabiliriz:

- Denetçinin yalnızca doğrulayıcı değil rehberlik eden role geçişi,
- Kurumsal sürdürülebilirlik için denetimin destekleyici işlevi,
- Paydaş odaklılık ve sosyal etki denetimi,
- Yapay zekâ etiği ve denetim sorumluluğu.

Bu alanda çalışmak isteyenlerin denetim 5.0 ile denetim sürecinin stratejik rolünün dönüşümünü fiilen izlenebileceği, gözlemlenebileceği veya fiilen uugulanabaileceği örnekleri konu edinmeleri bu alandaki

uygulama örneği eksikliğinin giderilmesinde ve literatürün daha destekli bir şekilde gelişmesine önemli katkıları olacağı inancındayız.

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ENVIRONMENTAL ISSUES BETWEEN THE CONFLICT OVER FOSSIL ENERGY AND THE INEVITABILITY OF RENEWABLE ENERGY.

CUESTIONES AMBIENTALES ENTRE EL CONFLICTO POR LAS ENERGÍAS FÓSILES Y LA INEVITABILIDAD DE LAS ENERGÍAS RENOVABLES.

Dr Berlgacemi Mouloud [10]

ABSTRACT

This paper attempts to provide an analysis of the relationship between environmental issues, fossil fuel consumption rates, and economic practices. All environmental protection initiatives remain hostage to strategic calculations, the crisis of the transition to renewable energy, and the state's public policy priorities.

Study Objectives: Through an interpretive and methodological approach, this study aims to:

First: shed light on the relationship between environmental practices and the environment through the concept of economic growth rates and fossil energy consumption, and analyze the relationship of influence and impact between the environment, economy, and energy triad.

Second: employ a political-economic approach through countries geostrategic calculations to provide an explanation for current wars and conflicts.

Theoretical Framework and Methodology: The methodological and theoretical framework adopted to analyze the study topic includes the following:

First: The descriptive-analytical approach, which helps describe, analyze, and predict by identifying its characteristics and dimensions, describing the relationships between its variables, and their correlation symbols, with the aim of arriving at a comprehensive scientific description. This approach is considered one of the most important scientific approaches adopted in studying phenomena.

Second: The interpretive approach: To build a logical structure to describe and explain the relationship between the environment and energy, we relied on the economic-political approach, based on the realism of the concept of state interests and conflicts over energy resources.

Results and Discussion: From the approach used, it can be concluded that countries are unable to overcome the dominance of fossil fuels over their economies, which drives them to conflict over oil and gas resources, at least in the foreseeable future. Despite the environmental crisis, countries' geostrategic calculations drive them to exploit the environment to achieve their interests and ensure their influence.

Therefore, environmental issues in securing energy resources are evident as one of the most significant obstacles to reaching a comprehensive and binding agreement between major powers. Each country seeks to negotiate with the least possible responsibility and cost. Therefore, countries view environmental negotiations either as a means to weaken their economy, thereby diminishing their influence and role, or as an opportunity to weaken other competing powers regionally and internationally.

[10] Associate Professor,Institute of Economics and Management Sciences, University Center Salihi Ahmed, Naama, Algeria. E-mail: belgacemi.mouloud@yahoo.com

Research Content: Using a political-economic approach, the study focuses on statistical data to examine the relationship between economic growth and energy consumption, and countries' economic calculations for maintaining their influence.

Accordingly, energy resources influence the orientations of their foreign policies and the limits of this influence. By energy resources, we mean traditional energy sources, specifically oil and natural gas, which constitute a significant axis of economic growth and foreign policy, making them clearly influential in countries' geostrategic calculations.

Originality/Value: The originality and value of the study lie in establishing an explanatory correlation between fossil energy consumption rates, economic growth, and the contradictions in the use of environmental issues within geostrategic calculations.

Keywords: Fossil energy, economic growth, renewable energy, geostrategic calculations**.**

1. INTRODUCTION

The environment has been impacted by human activity. Environmental imbalance quickly spread, and the problem of the environment's weak and ineffective ability to digest its waste emerged, as a result of receiving horrific quantities of industrial and other human waste. This is perhaps due to the loss of the environment's ability to self-dispose of its waste, and the failure to control pollution sources and address the environmental deficit at the international level.

The Earth's condition is deteriorating with the continued and increasing population pressure and shifting economic patterns across vast areas. This is in addition to the repercussions of changing global politics, the proliferation of nuclear tests, and the spread of crimes related to military operations. Furthermore, wars for dominance over mineral resources in smaller countries (including oil fields) are being waged through military intervention and occupation.

On the other hand, major powers exploit the opportunity of these wars (outside their territories) to conduct live experiments and observe the effects on environmental and human barriers to various types of weapons, including weapons of mass destruction. This has disrupted the environment's integrity, threatening environmental security in war zones and natural and human-caused disasters that transcend their geographical boundaries and often lead to various forms of environmental change.

2 THEORETICAL FRAMEWORK

To create a logical structure for describing and explaining the relationship between the environment and energy, we adopted a political-economic approach based on the interests of states and conflicts over energy resources, and the attempt to maintain economic growth through the continued consumption of fossil fuels.

Research Problem:

How do major powers deal with environmental issues?

And What is the nature of the disagreement between the world's major powers on environmental issues and the possibility

of an agreement to protect the environment?

Hence, the following questions can be raised:

- What are environmental problems?
- What are international efforts to protect the environment?
- How do major powers deal with environmental issues?

The importance of the study lies in its attempt to shed light on environmental problems and international efforts, including agreements and conferences, to protect the environment. It also attempts to analyze the nature of the disagreement between major powers regarding the possibility of establishing a final agreement binding on countries to protect the environment.

Study Hypothesis: This research attempts to prove or refute the following hypothesis:

National interests are the cause of disagreement between major powers on environmental issues.

The objectives of this study are to determine the cause of disagreement between major powers on environmental issues. It also seeks to analyze the reasons that prevent major powers from reaching a binding global agreement to protect the environment.

Based on the nature of the topic, in line with the methodology used and in order to reach results, the study structure was divided into:

Axis 01: Economic Practice and the Mass Destruction of the Environment.

First: The Relationship Between Economic Growth and Energy Consumption.

Second: Fossil Energy as the World's Most Important Energy Source and the Problem of Environmental Pollution.

Axis 02: Environmental Issues and the Inevitability of the Transition to Renewable Energy.

First: The Cost Problem of the Transition to Renewable Energy.

Second: Renewable Energy and State Public Policy

Axis 03: Environmental issues between political and economic considerations.

First: The environment and the problem of conflict over energy resources.

Second: Environmental issues and geostrategic balances.

2. THEORETICAL FRAMEWORK:

There is a body of literature and previous studies that have analyzed the relationship between environmental issues, fossil energy consumption, and the future of the energy transition. Perhaps the most prominent of these are the official reports of international, regional, and national institutions that focus on this topic. The theoretical framework will also address the concept of economic practices through the relationship between the concept of growth, energy consumption rates, and the continued existence of fossil fuels as a primary source of energy, at least in the medium term. It is also necessary to point out the pressures imposed by the concept of the transition to renewable energy and the challenges and threats it entails through the concept of the cost of the transition and its relationship to the state's public policy.

AXIS 1: ECONOMIC PRACTICE AND THE MASS DESTRUCTION OF THE ENVIRONMENT.

FIRST: THE RELATIONSHIP BETWEEN ECONOMIC GROWTH AND ENERGY CONSUMPTION.

The oil sector is the world's most important source of energy. It is a closed sector due to the nature of the extraction process, coupled with fluctuating oil prices. This sector requires significant capital, advanced technology, and highly skilled labor. This forces countries rich in this resource to rely on advanced foreign companies to exploit this wealth. Consequently, they are unable to benefit from oil revenues and increase economic growth rates without resorting to Western production factors. (Akanni, September 2007)

Long-term economic growth, represented by the rate of increase in gross domestic product (GDP), is one of the most important priorities that countries seek to achieve. Economic theories differ on the determinants of economic growth, based on a number of micro- and macroeconomic variables. Identifying the source of growth is essential to activating economic growth and ensuring its continuity through the adoption of appropriate economic policies. Therefore, economic growth has become the focus of many economic studies. (Karan, 2008)

Energy production and prices in general, and oil in particular, have the greatest impact on the economic activities and financial and monetary policies of many countries in general, and on hydrocarbon-rich countries in particular, given that these countries are oil-producing and exporting countries. Accordingly, the problem is whether the increase in global energy consumption and consequently the volatility in oil prices have positive or negative effects on economic growth. Studies prove that a decrease in global energy consumption or a decrease in global energy prices will negatively impact economic activity levels, especially in countries that depend on oil revenues in their economies, especially with the rise of new economic powers capable of consuming energy, especially oil, such as China, India and Brazil, as the following figure shows.

Figure 01 : Global primary energy consumption by source (2010-2050)

Source: Jeremiah Shelor, World Energy Demand, Including Oil and Gas, Rising to 2050, EIA Says, Natural gas intelligence, on October 07, 2021, web: https://naturalgasintel.com/news/world-energy-demand-including-oil-and-gas-rising-to-2050-eia-says

The world is witnessing an increase in the consumption and production of all types of energy, with the consumption increase rate reaching about 2.3%. Oil remains the most important fuel to this day, although it is not the primary source of energy in general in the world, as coal has been the king of energy since the Industrial Revolution. (Khaled, 2014)

Thus, there is a mutual influence between economic growth and the environment. This mutual influence appears in the form of a contradictory relationship that focuses on the problem of achieving economic growth rates while simultaneously preserving the environment. Environmental protection has become a fundamental element in the calculations of development and growth. On the other hand, economic growth is necessary to provide financial budgets to establish environmental protection programs and policies. (Lami, 2013)

Second: Fossil Energy as the World's Most Important Energy Source and the Problem of Environmental Pollution

Fossil energy is the world's most important energy source. Coal is the world's primary energy source, accounting for approximately 30% of global energy production and more than 40% of electricity production. Although its heyday ended decades ago, followed by the oil, nuclear, and other revolutions, its consumption and production are still increasing. It is the fastest-growing fossil fuel, but its growth is declining compared to its previous rates. Unlike oil and gas, whose natural reserves are expected to be exhausted in less than a century, analysts expect coal reserves to last for about a century and a half. The United States and China consume all of their domestic oil and gas production, leaving Saudi Arabia and Russia as the world's top exporters. Liquefied natural gas (LNG) is better to use due to its lower pollution levels. The carbon dioxide released from burning gas is about a third lower than that of oil and about half lower than that of coal. (Khaled, 2014)

Figure 01 : Growth in energy demand surged in 2024

Source: Roberto Bocca, Surge in global energy demand growth, and more top energy stories, World Economic Forum, Published Apr 2, 2025 · Updated Apr 3, 2025, web:

https://www.weforum.org/stories/2025/04/surge-in-global-energy-demand-growth-and-more-top-energy-stories/

Global energy demand growth in 2024 is expected to be nearly double its recent average, according to a new report from the International Energy Agency. Global energy demand rose by 2.2% compared to last year, significantly faster than the average annual increase of 1.3% over the previous ten years. Emerging and developing economies accounted for more than 80% of the increase in 2024. After several years of decline, advanced economies are returning to growth. The IEA reported that the energy sector was at the forefront of this acceleration in growth rates. In 2024, global electricity consumption rose by 4.3%, with low-emission energy sources accounting for most of this increase.

AXIS 02: ENVIRONMENTAL ISSUES AND THE INEVITABILITY OF THE TRANSITION TO RENEWABLE ENERGY.

FIRST: THE COST PROBLEM OF THE TRANSITION TO RENEWABLE ENERGY.

Industrialized countries have begun to reassess the cost of tampering with climate change on their medium- and long-term budgets. They have begun to see that current industrial technologies, which are wasteful to the environment and the climate, could allow emerging industrialized countries like China, India, and Brazil to catch up if they maintain their current growth rate in global energy consumption of oil, gas, and coal. This threatens industrialized countries' ability to share global markets. For this reason, they have resorted to hindering emerging countries by introducing new, clean technologies before their current technologies expire, increasing the cost of their transition to clean technologies.

The core problem at environmental conferences lies not so much in the lack of agreement on the principles of compensation and aid as in how developed countries manage the necessary funds, especially in light of the growing global financial crisis and the enormous cost of combating global warming. Paying this bill requires at least $150 billion annually. Similar disagreements also exist between emerging powers, particularly China, India, and Brazil, and between the European Union, Japan, Australia, and the United States. The United States believes that these economies are no less polluting than it, and therefore must make specific concessions and pledge to reduce these emissions. Given all these issues, each party seeks to emerge from environmental negotiations with the greatest possible gains or the least costly bill, so as not to impact national development strategies and policies. (Mufadel, 2016)

In anticipation of oil depletion, and for economic, political, and environmental reasons, many countries have taken a series of measures to modify their energy systems and develop diverse and alternative sources. Although fossil fuels are expected to dominate global energy supplies, their contribution to energy growth is likely to decline from 80% to 65%. The most important renewable energy sources are solar, wind, and biomass. (Hani Ragab, 2015).

Figure 02 : Renewable energy growth 2010-2025

Source: Richard matthews, Renewable Energy is Growing Rapidly but is it Enough to Stop Climate Change?, by Change Oracle, Published January 31, 2023, web:

https://i0.wp.com/changeoracle.com/wp-content/uploads/2023/02/2022-energy-energy-growth-good.png?w=667&ssl=1

SECOND: RENEWABLE ENERGY AND STATE PUBLIC POLICY

Development and progress plans are linked to energy, and thus securing its sources is at the forefront of the state's priorities in establishing its general policy. Renewable energy represents the ideal choice in the midst of these facts, especially if it coincides with the rapid development of technology and its decreasing costs. These developments have made renewable energy sources more attractive in global markets. Facilitating access to renewable energy has become one of the most important political decisions that a country can take in the long term. (Marabet, 2015)

The emergence of green parties in various countries, and their affiliated members from environmental organizations, is discussed. The impact of the political influence of official green parties in various parliaments, as well as agreements and treaties (such as the Kyoto Protocol), is discussed. Environmental policy expresses a general philosophy and orientation, providing a background for discussion and finding solutions to the obstacles faced by both parties, whether green parties, interest groups, or entities attempting to formulate public policy. (Anbatawi, 2015)

Therefore, energy remains the most important element in the equation for formulating and succeeding public policy. Without a secure and reliable energy source, formulating public policy will be difficult. Given the shift toward renewable energy, pressure from environmental organizations, and the global trend toward developing this type of energy, the pressure and complexity of the public policy process will increase, especially in light of fluctuating oil prices, the financial cost issue, and the limited technological capabilities of the state, which represent a real obstacle to formulating a national program.

Figure Primary energy consumption worldwide from 2000 to 2022, with a forecast until 2050, by energy source

Source: Primary energy consumption worldwide from 2000 to 2022, with a forecast until 2050, by energy source, Published by Statista Research Department, Mar 19, 2025, https://www.statista.com/markets/408/energy-environment.

3. METHODOLOGY

The methodological framework of the study is based on the use of a descriptive analytical approach, attempting to analyze and establish a correlation between the study variables—environmental issues, economic growth rates, and future energy consumption—in the context of geostrategic balances.

Bibliographical and documentary research was used as a tool to collect information and data, presenting them in a statistical form for use in analyzing and interpreting the correlations between variables while maintaining the credibility of the data and statistics.

Among the epistemological difficulties facing the study is the question of whether the data collection tool reflects the credibility of generalizing the results. This is particularly true given the study's approach to the concept of interest, which remains confined to the strategic perception of each state. It also

addresses the contradiction between the ethical discourse of environmental conservation and the reality of interest and power within geostrategic balances that reflect the concept of conflict and war.

4. RESULTS AND DISCUSSIONS

Through the research results, we note that environmental issues are confined to political and economic considerations, which imposes the need to address the environment and the conflict over energy resources, and to use environmental issues in geostrategic balances**.**

Axis 03: Environmental issues between political and economic considerations.

First: The environment and the problem of conflict over energy resources.

One of the most important files in environmental issues is the attempt to find alternative and clean energy sources that reduce dependence on oil and fossil fuels in general, as they are primarily responsible for the release of harmful gaseous emissions and current pollutants. There are intensive global efforts to search for new energy alternatives, including biofuels and hydrogen fuel. There are also other efforts to expand the use of clean energy sources, especially nuclear energy, wind energy, solar energy, and hydroelectricity. The success of these efforts and the expansion of the use of one of these alternative sources will naturally lead to the gradual elimination of the use of fossil fuels and the harmful gases emitted from them.

Therefore, any negotiations will face major obstacles, including that the three countries, China, India, and Brazil, refuse to bear responsibility for what was previously caused by Western industrial countries, especially the United States of America and the European Union, over the course of two centuries since the first industrial revolution. They also refuse to give priority to climate protection instead of economic and, consequently, industrial development, which they are keen on, because it alone is the gateway to obtaining a place on the map of a future international system. (Shabib, 2016)

On the other hand, the bet on climate change raises security questions as a result of global warming, threatening regional and global stability through water shortages and environmental migration. In 2007, the Security Council discussed the relationship between climate and security, which many countries, including the African Group of States, considered a prelude to environmental intervention. Some of these environmental challenges are cross-border, which justifies sending forces to restore environmental stability by order of the Security Council. (Marqus, October 2010)

It should be noted that new resource wealth has begun to transform the energy landscape. It is shifting and changing the centers of gravity of global production, redirecting the emerging renewable energy industry eastward from the United States and Europe to China. The spread of new resource wealth threatens the foundations of long-standing energy powers, including OPEC, major electricity producers, and multinational manufacturers. All of these parties are trying to adapt rather than collapse. (Ball, Septembre 2014)

Energy resources play a fundamental role in the orientations of countries, especially oil, as a strategic resource, with a very important impact on the national security of both exporting and importing countries, through its impact on international security and the nature of international strategies and alliances. It appears from current data that security issues and strategic alliances will remain for a long time to come based on the issue of energy security and resources. Water is also necessary for energy production, which doubles the pressure on water resources. Accordingly, the expected increase in water consumption may reach 85% during this period until 2035, which reflects the move towards generating more water-intensive energy. (International energy Agency, 2012)

Finally, the transformation of energy sources through countries' efforts to ensure energy security will impose many challenges on the world in general and the international economy in particular, threatening international stability. This is due to the sensitivity of the global energy system, especially with the entry

of shale gas into the global energy market and the decline in oil prices and their political and economic repercussions. (Brown, April 2003)

Second:Environmental issues and geostrategic balances.

The world is witnessing a growing pattern of conflict in many strategic regions, including, but not limited to, what is happening in Ukraine and Syria in the Middle East. These conflicts are caused by the intersection of lines of influence of international or regional powers, most notably the global energy space, whether in terms of energy sources in the Arabian Gulf, Africa and South America, or in terms of land or sea energy corridors such as the South China Sea region and in Syria and Ukraine. This explains why any agreement on environmental issues between the major powers will be hostage to geostrategic calculations, especially since the national security of countries is linked to energy security. (Aouni, April 2014)

Energy resources influence the foreign policy orientations of countries, especially in the field of international cooperation and conflict. In the cases of Saudi Arabia and Russia, energy resources had an impact on foreign policy. Saudi Arabia had an impact on the international system through its policy in the field of oil production and marketing, and Russia had an impact through the use of energy as a weapon to restore its international standing, especially in the Ukrainian crisis. Securing energy resources remains the most important approach to analyzing conflicts. (Khadija, No576)

Accordingly, there is a sharp conflict of interests between industrialized countries, especially the Arab oil-producing countries, regarding the relationship between oil, finance, and the environment. Arab oil-producing countries are crude oil exporters. They exploit a portion of their natural wealth to satisfy their domestic needs and implement their development programs. They also depend primarily on the proceeds of their oil exports, and therefore their interests require increasing consumption and exports. Industrialized countries, on the other hand, are usually non-producing countries, but rather importers of oil. Moreover, their technological capabilities are sufficient to limit consumption and thus reduce imports without negatively impacting their economies. Thus, the economic interests of industrialized countries clash with those of oil-producing countries. (Naoush, 2016)

The Arab oil-producing countries' lack of support for environmental measures should be interpreted as a defense of their economic interests, not as a sign of their indifference to environmental considerations. It is a mistake to assume that these considerations prevail in industrialized countries. For example, the European Union does not impose a carbon tax on its major companies, despite them being the largest contributors to pollution and global warming. The reason for their tax exemption is purely commercial: to maintain their competitiveness.

Although the Paris Agreement does not fulfill the aspirations of all Arab countries, it is essential to preserve environmental safety. This agreement must also serve as an incentive to develop manufacturing industries and diversify sources of income in Arab countries. (Naoush, 2016)

5. CONCLUSION

Traditional energy sources, specifically oil and natural gas, are a key driver of economic growth, clearly impacting the public policy of both exporting and importing countries. It is worth noting that the availability of energy resources is not simply the availability of oil or natural gas in a country, but rather

their availability in large quantities that exceed domestic consumption requirements, making it a major energy exporter.

The lack of energy resources does not mean that a country has no oil or natural gas resources at all, but rather that there is a significant gap between production and domestic consumption. Hence, this relationship between exporting and importing countries, especially in light of the problem of economic growth and development, poses a relationship of influence and impact, and countries' attempts to seek international standing, especially oil-exporting countries.

All of these problems are present in environmental issues, with the issue of energy resources being one of the most important obstacles to reaching a comprehensive and binding agreement between countries. Each country seeks to reach a consensus with the least possible responsibility and cost.

Thus, countries view environmental negotiations as either a means to weaken their economies and public policies, thereby diminishing their power and role in the international arena, or an opportunity to weaken other competing powers, whether at the regional or international levels.

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TÜRKIYE'NIN İLK İKLIM KANUNU'NUN TARIM SEKTÖRÜNE POTANSİYEL ETKİLERİ

Resül YAZICI

Doç. Dr., Bilecik Şeyh Edebali Üniversitesi, İİBF, İktisat Bölümü, 11100-Bilecik, Türkiye
E-mail: resul.yazici@bilecik.edu.tr
ORCID ID: 0000-0002-7875-3331

Özet

İklim değişikliği, özellikle iklimsel değişkenlik ve kırsal bağımlılığın kesiştiği Türkiye gibi ülkelerde tarımsal sistemleri önemli ölçüde etkilemektedir. Etkiler, birçok alanda olmakla birlikte çoğunun yansıması, etki alanında olan tarım sektöründe, ürün çeşitliliğinden kırsal kalkınmaya kadar farklı sonuçlara sebep olmaktadır. Türkiye'nin 2025 yılında ilk iklim kanununu yürürlüğe koyması, düşük karbonlu, iklime dirençli dönüşüm için sağlam bir çerçeve oluşturmayı amaçlayan yasal bir kilometre taşına işaret etmektedir. Bu bağlamda yasa hem hukuki hem de uygulayıcı düzeyde yeni fırsatlar ve riskler barındırmaktadır. Bu niteliksel çalışma, Türkiye'nin ilk İklim Kanunu'nun, tarım sektörü üzerindeki etkilerini araştırmakta, yasal çerçevesini, kurumsal koordinasyonunu ve saha düzeyindeki etkilerini analiz etmektedir. Bulgular, tarımda iklim direncini güçlendirmek için yasal uyumlaştırma, gelişmiş kurumsal kapasite ve sosyal olarak kapsayıcı uygulamalara duyulan ihtiyacın altını çizmektedir. Çalışma, iklim yönetişimi literatürüne, düzenleyici ve denetleyici yapının oluşturulması ile pratik uygulama arasında köprü kuran sistemik adaptasyon için öneriler sunarak katkıda bulunmaktadır.

Anahtar Kelimeler: Ekosistem, İklim Değişikliği, Tarım Sektörü, Türkiye İklim Kanunu, Yeşil Dönüşüm

POTENTIAL IMPACTS OF TÜRKIYE'S FIRST CLIMATE LAW ON THE AGRICULTURAL SECTOR

Abstract

Climate change significantly affects agricultural systems in countries like Türkiye, where climatic variability intersects with rural dependency. Although the impacts span multiple domains, many are most visibly reflected in the agricultural sector—leading to varied outcomes from crop diversity to rural development. Türkiye's enactment of its first Climate Law in 2025 marks a legal milestone aimed at establishing a robust framework for low-carbon, climate-resilient transformation. In this context, the law presents both new opportunities and risks at legal and implementation levels. This qualitative study investigates the effects of Türkiye's inaugural Climate Law on the agricultural sector by analyzing its legal framework, institutional coordination, and on-the-ground impacts. Findings highlight the need for legal harmonization, enhanced institutional capacity, and socially inclusive practices to strengthen climate resilience in agriculture. The study contributes to climate governance literature by offering recommendations for systemic adaptation, bridging the gap between regulatory structure and practical implementation.

Keywords: Ecosystem, Climate Change, Agriculture Sector, Türkiye Climate Law, Green Transformation

GİRİŞ

Geleneksel ekonomiye dayalı üretim faaliyetlerinin, doğadaki tüm üretim faktörlerini bitmeyecek, kirlenmeyecek varsayımıyla kullanması sebebiyle yaşanan iklim değişikliklerine çare olarak döngüsel, yeşil ekonomi modeli önem kazanmaya başlamıştır. Bu yeni ekosistem yaklaşımının, yerel ve küresel seviyede uygulanması, iklim değişimine bağlı sorunların çözülmesine veya artmamasına katkı verecektir.

İklim değişikliği, 1950'li yıllardan itibaren insan faaliyetleri veya doğal faktörler nedeniyle artan küresel bir çevre sorunudur. Yağış rejimindeki değişkenlik, sıcaklık artışı gibi değişimler nedeniyle, küresel ölçekte ve Türkiye'de tarımsal ürün verimliliğinde düşüşler yaşanmaktadır. Ayrıca uluslararası ve ulusal ölçekteki politik süreçlerle tarımdaki dönüşümler ekolojik tahribatları derinleştirmiştir. Böylece, Türkiye tarımı iklim değişikliğinden olumsuz etkilenen bir faaliyete dönüşmüştür. Bu olumsuzlukların rakamlara yansımalarını Selçuk ve Gülümser (2023: 425) çalışmalarında şu şekilde belirtmektedirler: 2050'li yıllarda buğdayda yüzde 7,4 ile İç Anadolu; mısırda yüzde 13,6 ile Doğu Anadolu; ayçiçeğinde yüzde 7,7 ile İç Anadolu Bölgesinde, 2080'li yıllarda ise buğdayda yüzde 11,85 ile Güneydoğu Anadolu; mısırda yüzde 19 ile Doğu Anadolu; ayçiçeğinde yüzde 13,5 ile İç Anadolu Bölgesinde en yüksek verim düşüşü beklenmektedir.

Bu beklentilerin temel sebebi, doğadan üstün olduğu kanısıyla; onunla mücadeleye girmiş insanoğlunun, ekonomi temelli bir yarışı başlatmasıdır. Yıllar itibariyle ortaya çıkan sorunların ana kaynağı iklim değişiklikleri olarak adlandırılsa da zamanla ciddi boyutlara ulaşmıştır. Birçok sektöre yansıyan iklim değişikliği olgusundan tarım sektörü de kendisine ayrılan payı almıştır. Fakat sorunun kökenine inildiğinde tarım sektöründeki birçok yanlış uygulamanın da iklim değişikliğine sebep olduğu görülmektedir. Tarım arazilerinde uygulanan sulama yöntemleri nedeniyle su kıtlığının yaşanması, hasat verimliliğinin artması için kullanılan kimyasal maddeler ile çevreye zarar verilmesi ve toprağın yapısının değiştirilmesi bu uygulamalardan yalnızca birkaçı olmuştur (Aydoğdu, 2020: 43).

Bunların ve daha fazlasının etkisiyle ekosistemlerin tehdit altında bulunmasıyla, geçim kaynaklarının ve gıda güvenliğinin azalması gibi sorunlar hem günümüz hem de gelecek nesiller için gittikçe önemli olmaya başlamıştır. Bu ilişkiler örgüsü, acilen ve ödün vermeden mevcut ve gelecek kuşaklar için gıda ihtiyaçlarını karşılamayı amaçlayan sürdürülebilir tarımın önemine vurgu yapan çalışmanın giriş kısmından sonraki başlığında tarım ekonomisinin önemi verilmiştir. Devamında Türkiye'deki tarımsal ekonomideki uygulamalar ve sorunlarına bakıştan sonra iklim değişikliklerinin etkilerini inceleyen literatür yer almaktadır. Sıradaki alt başlıkta ise çalışmanın ana amacını veren Türkiye'nin İlk İklim Kanunu'nun tarım sektörüne potansiyel etkileri, ardından sonuç ve öneriler kısmı ile çalışma bitirilmektedir.

MATERYAL VE YÖNTEM

2 Temmuz 2025 tarihinde Türkiye Büyük Millet Meclisi'nde kabul edilen ve 9 Temmuz 2025 tarihli Resmî Gazete'de yayımlanarak yürürlüğe giren 7552 sayılı Türkiye'nin ilk İklim Kanunu'nun, tarım sektörü üzerindeki etkilerini niteliksel yöntemle araştıran çalışmada; ilk yasal çerçevenin, kurumsal koordinasyonda önemi ve saha düzeyindeki etkileri analiz edilmektedir. Bu kapsamda, iklim yönetişimi literatürüne; düzenleyici ve denetleyici yapının oluşturulması ile pratik uygulamalar arasında köprü kuran sistemik adaptasyon için neler yapılması gerektiği konusunda katkılarda bulunmaktadır.

BULGULAR

Türkiye'nin ilk İklim Kanunu, hem hukuki hem de uygulayıcı düzeyde yeni fırsatlar ve riskler barındırmaktadır. Çalışma bulguları, tarımda iklim direncini güçlendirmek için yasal uyumlaştırmanın; gelişmiş kurumsal kapasite ve sosyal olarak kapsayıcı uygulamalara duyulan ihtiyacın altını çizmektedir.

Tarım Ekonomisi Kavramı ve Önemi

Ekonomi nosyonu en basit ifadesiyle insan ihtiyaçlarının, kıt üretim faktörleriyle nasıl karşılanabileceğini; kaynakların, alternatif kullanımları arasında nasıl tercihler yapılabileceğini içermektedir. Tercihler, tüketiciler yönünden olduğu gibi diğer taraflar için de söz konusudur. Bu bağlamda tüketici, üretici, firma, tarım ve sanayi gibi sektörler ile genel anlamıyla ekonominin çözüm aradığı esas sorun, mevcut sınırlı kaynakların etkin kullanımı olarak ortaya çıkmaktadır. Tarımın teknik olarak dalları ve ekonomi ile çok yakın ilişkisi olan Tarım Ekonomisi bilim dalı, tarım tekniği ile ilgili temel bilgilerin yanı sıra istatistik, matematik, işletme, ekonomi ve sosyal bilimlerin birçok dalının bir karışımı olarak ortaya çıkmaktadır. Bitkisel ve hayvansal ürünlerin üretilmesi ve işlenmesini içeren tarımsal faaliyetin ekonomi biliminin ışığı altında, makro ve mikro düzeyde etkin bir şekilde yürütülüp yönlendirilmesi fonksiyonunu üstlenen Tarım Ekonomisi bilim dalı bir başka anlatımla ekonominin ilkelerini ve analitik modellerini tarımsal sorunlara uygulayan bir disiplindir (Rehber ve Çetin, 1998: 2).

Tarım Ekonomisinin bu bakışı, dünyada artan nüfus, hızlı şehirleşme, sanayileşme, iklim değişikliği, savaş, salgın hastalıklar gibi birçok soruna karşı önlemler geliştirerek gıdanın güvenliğini ve güvenilirliğini artırmayı hedeflemektedir. Bu hedef her geçen gün daha önemli olmaya başlamıştır.

Türkiye'de Tarımsal Ekonomideki Uygulamalara ve Sorunlarına Bakış

Türkiye, coğrafi olarak çeşitli iklim koşullarına sahip olduğu için tarımsal üretim potansiyeli yüksek bir ülkedir. Fakat temelde ölçek ekonomisinden yararlanılamamasıyla; tarımsal verimlilikte düşüklük, arazi bölünmesiyle köyden kente göç, sulamadaki eksiklikler, modern teknoloji ve bilgiye erişimdeki çeşitli sorunlar nedeniyle potansiyelini kullanamamaktadır. Bu sorunların neden ve sonuçları şu şekilde özetlenebilir:

- Arazi Bölünmesi: Tarım arazilerinin, miras yoluyla kuşaktan kuşağa aktarılmasıyla bölünmesi sonucunda ölçek ekonomisinden yararlanılamaması, üretim üzerinde ciddi bir baskı oluşturmaktadır.

- Köyden Kente Göç: Kırsal alanlardaki sosyal ve ekonomik koşulların iyileştirilememesi köyden kente göçe, dolayısıyla tarımsal işgücü üzerinde olumsuz etkilere sebep olmuştur.

- Sulama Yapısındaki Eksiklikler: Tarımsal üretimde, sulama altyapısının yetersizliği, yüzeysel sulama yöntemlerinin yaygınlığı; su kaybına, kaynaklarının etkin kullanılamamasına yol açmaktadır.

- Modern Teknoloji ve Bilgiye Erişimdeki Yetersizlik: Çiftçilerin, eski alışkanlıklarına bağlılığı esas olmak üzere modern tarım teknolojilerine ve kullanımı konusundaki bilgilere erişimi yetersizdir. Bu da ölçek ekonomisinden yararlanılamamasına; sonuçta verimliliği sınırladığı için üretim maliyetlerinde artışa neden olmaktadır.

Türkiye'deki bu temel sorunlar ve tarımsal destekleme politikalarının yetersizliği ya da verimsiz olması sebebiyle geleneksel üretim yöntemi, çiftçiler ve ülke için önemli riskler taşımaktadır. Sayın ve Sayın'a (2004: 467) göre, tarımsal yapıdan kaynaklanan ekonomik ve sosyal sorunların, toplumun bir arada yardımlaşma yoluyla ortadan kaldırılacağı düşüncesiyle ülkemizde de çeşitli amaçlarla üretici örgütlenme modelleri gündeme gelmiştir. Üretici örgütlerini oluşturmada çiftçiler güçlü konumda olamamış fakat Cumhuriyetin ilk yıllarından bu yana gerek örgüt sayısı ve gerekse üye sayısındaki artışa bakıldığında ülkemizde örgütlenmenin gelişmişlik gösterdiği söylenebilir. Fakat bu gelişmişlik veya çeşitlilik sorunlara çare olamamıştır.

Genel olarak tarımsal ekonomideki başarısızlık iki ana başlıkta toplanabilir. Birincisi, ne, ne zaman ne kadar, nasıl üretileceği konularında karar verme ve uygulama teknikleri konusunda çiftçilerdeki bireysel eksikliklerdir. İkincisi ise üretilen ürünlerin ilgili pazarlara zamanında ulaştırılmamasıdır. Yani ürünlerde zamansal ve mekânsal mülkiyet faydasının yaratılamaması ve yüksek katma değerin elde edilememesidir. Dolayısıyla "gıda üretiminde yaşanan değişimler ve ürünlerdeki fiyat artışı vb. nedenlerle gıda krizine yol açan çeşitli faktörler, birçok kesim için ciddi sorunlar yaratmaktadır. Ortaya

çıkan bu sorunları doğru bir şekilde yorumlayarak sorunların etkisini hafifletici politikalar oluşturmak ise karar vericiler için oldukça önemlidir. Ülkelerin uygulayacağı politikalar mevcut kaynakları ve gıda arzını korumaya yönelik önemli olsa da açlığı azaltmak, gıda üretimini artırmak ve gıda güvenliğini sağlamak gibi çeşitli amaçlara sahip kuruluşlar gıda krizinde önemli bir rol üstlenmektedir" (Dağ ve Akbay, 2022: 185).

Tablo 1: Tarım Sektörünü Olumsuz Etkileyen Temel Faktörler ve Çözüm Önerileri

Alan	Tarıma Etkisi	Çözüm Önerileri
İklim Değişikliği	**Verim düşüşü, su kıtlığı**	**İklim dirençli üretimi esas alan agroekoloji yaklaşımı**
Şehirleşme	**Altyapı baskısı nedeniyle tarım alanlarının azalması**	**Yeşil şehirler, sürdürülebilir ulaşım**
Su Kaynaklarında Azalma	**Azalan rezervler, kirlenme**	**Entegre su yönetimi, geri dönüşüm sistemleri**
Ekosistemin Bozulması	**Tür kaybı, habitat bozulması**	**Koruma alanları, karbon yutakları**

Tablo 1'de özetlenen faktörler nedeniyle; bitki fizyolojisi metabolizması, toprak verimliliği, karbon tutumu, mikrobiyal aktivite ve çeşitlilik iklim değişikliğinden negatif etkilenmekle birlikte, bunlar aynı zamanda bitkilerin büyümesi ve verimliliği için sınırlayıcı faktörlerdir. Gıda güvencesi ve güvenliği ile ilgili olarak, tarımda kullanılabilir su mevcudiyeti tarımsal verimi en sınırlayıcı faktörlerden biriyken, tek başına kuraklık stresi, dünyadaki işlenebilir alanların yarıdan fazlasının verimliliğini sınırlamaktadır. Bununla birlikte, toprakta çoraklaşma ve tuzluluk dünya çapında tarım için sürekli artan bir tehlike olarak karşımıza çıkmaktadır (Gıda Güvenliği, 2019: 11).

İklim değişikliğinin tarım sektörü üzerindeki etkilerini azaltarak; küresel rekabet gücünde artışın sağlanabilmesi, çiftçilerin ne yetiştireceklerinin planlanabilmesi, ürün çeşitliliği ve farklılaştırmanın yapılabilmesi, tüketici taleplerine cevap verilebilmesi gibi değişen durumlara uyum sağlama kapasitelerinin artırılması gerekmektedir. Bunun için de İlk İklim Kanunu gibi yasal düzenlemeler yanında kurumsallaşma kapasitesinin artırılabilmesi gerekmektedir. Bunların yapılamaması bulaşıcılık etkisiyle birçok olumsuzluğa yol açacaktır.

İklim Değişikliklerinin Etkilerini İnceleyen Literatüre Genel Bakış

İklim değişikliklerine bağlı olarak atmosferin giderek ısınması sonucu, ekstrem hava olaylarının sayı ve etkilerinin artması tarımda olumsuzluklar yaratmaktadır. Bu etkiler gıda güvenliği, kalkınma ve uluslararası ticaret gibi alanlarda ortaya çıkmaktadır (Bayraç ve Doğan, 2016). Türkiye'nin iklim değişikliğine uyum süreçleri, özellikle tarım sektöründe önemli zorluklara sebep olmaktadır (Kurnaz, 2023). İklim değişikliği, tarımsal üretimi, gıda güvenliğini ve ekonomiyi olumsuz etkilemektedir (Dağ ve Aktaş, 2024). Sıcaklık artışı, yağış düzensizlikleri ve CO2 emisyonları tarımsal GSYH'yi negatif yönde etkilemektedir (Akalın, 2014). Uyum stratejileri arasında sürdürülebilir toprak ve su yönetimi, akıllı tarım uygulamaları ve teknolojik yenilikler yer almaktadır (İpek, 2022; Kara ve Yereli, 2022). Su güvenliği için çok paydaşlı iş birliği, su koruma programları ve yasal düzenlemeler önerilmektedir (Ahsan, 2020). Avrupa Birliği'nin iklim değişikliğine uyum politikaları, Türkiye için de önem taşımakta ve ticari ilişkiler açısından uyum sağlanması gerekmektedir (Tuğaç, 2022).

Aydoğdu (2020: 43) çalışmasında, günümüzde modern tarım tekniklerini uygulamak, organik tarım uygulama örneklerini incelemek ve çiftçileri bilinçlendirmek gibi birçok yöntemle tarımdaki yanlış uygulamaların asgari düzeye indirilebildiği sonucuna ulaşmıştır. Bu kapsamda çalışmasında; tarımdaki iklim değişikliğine neden olan uygulamaların asgari düzeye indirilebilmesi için öneriler sunmaktadır.

Oğul (2023) çalışmasında, yağış miktarı ve nem oranlarındaki artışın tarım sektörünün GSYİH içindeki payını pozitif bir şekilde; sıcaklık, nüfus artışı ve CO2 emisyonunun ise tarım sektörünün GSYİH içindeki payını negatif etkilediğini göstermektedir.

Selçuk ve Gülümser (2023: 425) çalışmalarında, Türkiye'nin tarım sektöründe iklim değişikliğine uyum için bölgesel verim senaryoları ve projeksiyonları sunmaktadırlar. Analiz sonucunda; projeksiyon ve senaryo sonuçlarının bölgelere göre farklılıklar gösterdiği fakat çoğunda sıcaklığın artacağı, yağışın azalacağı ve dolayısıyla ürün veriminin büyük oranlarda düşeceği ortaya konulmuştur.

Gelecek nesillere yaşam döngüsü içinde gereksinimlerini karşılayabilmeleri için; doğal kaynakların korunması, erozyonun ve orman yangınlarının önlenmesinde entegre ilaç yönetimi, tarım arazilerinin verimliliğinin arttırılması ve gıda güvenliğinin sağlanması sürdürülebilir bir tarım ve yaşam için önemli konulardır (Kayışoğlu ve Türksoy, 2023: 300).

Sürdürülebilir kalkınmanın temelinde çevresel, ekonomik ve sosyal unsurlar başta olmak üzere çok katmanlı bir kalkınma anlayışı yer almaktadır. Bununla birlikte, sürdürülebilir kalkınma amaçları dünyadaki tüm ülkelerin uygulayabileceği sürekli ve gelişen bir kalkınma amacına (Gündoğdu ve Aytekin, 2022: 33); savunma sanayisi gibi stratejik bir konuma odaklanmak zorunda kalmaktadır.

Türkiye'nin İlk İklim Kanunu'nun Tarım Sektörüne Potansiyel Etkileri

İklim değişikliği, özellikle değişen yağış koşulları ve daha sık görülen aşırı hava olayları yoluyla tarımı etkilemektedir. Bu değişikliklerin mahsul verimini azaltması, tedarik zincirlerini bozması gibi nedenlerle üretim maliyetleri artmakta dolayısıyla enflasyon meydana gelmektedir. Bu sorunların etkisini azaltmayı hedefleyen sürdürülebilir tarım için temel gereklilikler kısaca şu şöyle özetlenebilir:

- Atıkların çevresel etkilerini azaltarak su, gübre ve enerji gibi girdilerin kullanımı optimize edilmeli.

- Zararlılara, hastalıklara ve iklim değişkenliğine karşı dayanıklılığı artırarak biyoçeşitliliği sağlamak.

- Toprağı ve yapısını korumak için ürün rotasyonu, örtü altı yetiştiriciliği ve azaltılmış toprak işleme gibi uygulamaların hayata geçirilmesi gerekir.

Bu kapsamda Türkiye'nin İlk İklim Kanunu, ülkenin iklim değişikliğiyle mücadele etmesinde, ne tür önlemler alması gerektiği konusunda kurumsal çerçeveyi düzenleyen önemli bir adımdır. Zira iklim değişikliğinin tarım sektörü üzerinde, kuraklık, su kıtlığı, sıcaklık artışı gibi faktörler nedeniyle doğrudan üretimi olumsuz etkileyen boyutları vardır.

Bu etkilerin kontrol edilebilmesi, önlemler alınabilmesi için iklim kanununun tarımla ilgili doğrudan hükümlerinin, temel hedeflerinin; karbon nötrlük, emisyon azaltımı, iklim uyumu gibi alanlarda aşağıdaki amaçlara hizmet etmeyi hedeflediği söylenebilir:

- Tarımsal üretimde karbon ayak izinin azaltılması.

- Toprak ve su yönetiminde iklim uyumlu planlamanın sağlanması.

- Tarım politikalarının iklim risklerine duyarlı hale getirilmesi.

SONUÇ VE ÖNERİLER

İklim değişikliği, tüm ülkeleri fakat üretimde toprağa bağlı Türkiye gibi ülkelerde tarım sektörünü önemli ölçüde etkilemektedir. Bu bağlamda 2025 yılında çıkarılan Türkiye'nin İlk İklim Kanunu, düşük karbonlu ve iklime dayanıklı bir dönüşüm için sağlam bir yasal çerçeve oluşturmayı amaçlamaktadır.

İklim değişikliğinin hem ekosistem hem de özelde tarım üzerindeki etkilerini azaltabilmek için tutarlı yasal yapılar, yetkilendirilmiş kurumlar ve kapsayıcı uyum yolları gerekmektedir. Çalışma kapsamında verilen önerilerin işlerlik kazanabilmesi için uluslararası iklim yönetişim standartlarıyla uyumlu kurumsal yapının inşası ve kapsayıcı bir şekilde işlemesinin sağlanması en temel gerekliliktir.

On İkinci Kalkınma Planı da konuya şu şekilde dikkat çekmektedir: Küresel gıda güvenliği üzerinde her geçen gün artan endişelere karşın, yürüttüğü aktif diplomasi çerçevesinde Karadeniz Tahıl Koridoru Anlaşması benzeri girişimler sonucunda uluslararası alanda oluşturduğu güvenle küresel fiyat dalgalanmalarının önlenmesi, düşük gelirli ülkelerin gıdaya erişiminin, orta ve yüksek gelirli ülkelerin hammadde temininin devam etmesine yönelik katkılarını sürdürmesi, Türkiye'nin her alanda arabulucu, tedarikçi rolüyle uluslararası bir aktör olarak önemini göstermektedir (Kalkınma Planı, 2023: 21).

Özetle, Türkiye'de iklim değişikliğinin tarıma etkisi konusunda yapılan çalışmalar, verimde azalma ile kuraklık, sel gibi olağan dışı meteorolojik olaylarda fazlalaşma, ürün kayıplarında artışa işaret etmektedir. İklim değişikliğinin tarımda yaratacağı olumsuz etkilerin azaltılması ve önlenmesi için uyum çalışmalarının hızlandırılması gereklidir (Gıda Güvenliği, 2019: 37).

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TÜRK HUKUKUNDA ALTERNATIF BIR FINANSMAN YÖNTEMİ OLAN PAYA DAYALI KITLE FONLAMASINDA YATIRIM KOMITESINE İLIŞKIN DÜŞÜNCELER

REFLECTIONS ON THE INVESTMENT COMMITTEE IN EQUITY-BASED CROWDFUNDING AS AN ALTERNATIVE FINANCING METHOD IN TURKISH LAW

Mehmet Murat AKTAŞ
Asst. Prof. Dr., Kütahya Dumlupınar University FEAS Head of Department of Commercial Law
E-mail: mmurat.aktas@dpu.edu.tr
ORCID ID: https://orcid.org/0000-0002-5438-1414

Abstract

"Crowdfunding" (CF) refers to the public collection of funds—through crowdfunding platforms—within the framework of principles established by the local legal system, for the purpose of raising the capital a company or project requires, instead of relying on venture capital firms. Crowdfunding is not designed for institutional investors. Small investors, or in other words, the "crowd," are the main financiers of this funding or financing system.

CF represents an alternative to traditional fundraising processes, enabling an issuer or project to collect the funds it needs from the public via crowdfunding platforms, in accordance with principles set by local regulations. The main types of crowdfunding can be categorized as "equity-based crowdfunding," "debt-based crowdfunding," "reward-based crowdfunding," and "donation-based crowdfunding."

Under Turkish law, crowdfunding is regulated by the Communiqué on Crowdfunding (III–35/A.2) issued by the Capital Markets Board (CMB). The Communiqué sets out the procedures and principles applicable only to equity-based and debt-based crowdfunding. This presentation will address the regulations concerning investment committees within the framework of equity-based crowdfunding—an alternative financing method for small enterprises under Turkish law—and will also include some reflections and recommendations on the subject**.**

Keywords: Commercial Law, Capital markets law, Crowdfunding, Equity-based, Investment committee

GİRİŞ

"Kitle fonlaması" (KF/crowdfunding-CF), 2000'li yıllardan itibaren gelişen[11] ve çok sayıda küçük yatırımcının internet platformları aracılığıyla girişimlere fon sağlamasına dayanan yeni nesil bir finansman modelidir. Kitle fonlaması, ihraççı kuruluşun/projenin ihtiyaç duyduğu fonları toplamak için yerel düzenlemelerin belirlediği ilkeler çerçevesinde kitle fonlaması platformları aracılığıyla halktan klasik bağış toplama süreçlerine alternatif bir süreçtir. KF aynı şekilde, ihraççı kuruluşun/projenin ihtiyaç duyduğu fonları toplamak için halka arz (*ınitial puclic offering*-IPO) standartlarını sağlayamaması halinde kullanılan alternatif finansman modelidir.

[11] Schwartz, Andrew A., Investment Crowdfunding (New York, 2023; online edn, Oxford Academic, 22 June 2023), https://doi.org/10.1093/oso/9780197688526.001.0001, 11 .

Türk Hukuku bakımından kitle fonlaması, 6362 sayılı Kanunu (SerPK) m. 35A ve Sermaye Piyasası Kurulu (SPK) tarafından 27.10.2021 Tarih ve 31641 Sayılı Resmi Gazete'de çıkarılan Kitle Fonlaması Tebliği (III – 35/A.2) ile düzenlenmiştir (Tebliğ olarak alınacaktır).

Kitle fonlaması türleri, "Paya dayalı kitle fonlaması", "Borca dayalı kitle fonlaması", "Ödüle dayalı kitle fonlaması" ve "Bağışa dayalı kitle fonlaması" olarak kategorize edilebilir.Tebliğ, kitle fonlaması türlerinden sadece paya ve borçlanmaya dayalı kitle fonlamasına ilişkin usul ve esasları düzenlemektedir. Bu sunumda daha önce belirtilidiği üzere sadece paya dayalı KF bakımından yatırım komitesi ele alınmakta birlikte genele ilişkin de tespit yapılmaktadır.

KF, bir risk sermayesi şirketi veya şirketin ihtiyaç duyduğu fonları toplamak amacıyla, yerel yasal çerçevenin belirlediği ilkeler çerçevesinde kitle fonlaması platformları aracılığıyla kamuya açık olarak fon toplanmasıdır. KF, kurumsal yatırımcılar için tasarlanmamıştır. Küçük yatırımcılar (Tebliğ'de «Üye») veya diğer bir ifade ile "kitle" bu fonlama veya finansman sisteminin platform ile yapılan sözleşme gereğince ana finansörleridir. KF, Tebliğ bağlamında bir Projenin (Planlanan teknoloji ve/veya üretim faaliyetlerinin gerçekleştirilmesi için kaynak) ihtiyaç duyduğu fonları toplamak amacıyla, SerPK yatırımcı tazmini hükümlerine tabi olmaksızın kitle fonlaması platformları (platform) [12] aracılığıyla kamuya açık olarak halktan (kitle) fon toplanmasını ifade eder.

Tebliğ'e göre "Platform", PKF fonlamasına aracılık eden ve elektronik ortamda hizmet veren ve 2025 yılı itibari ile nakden ödenmiş asgari sermayesi 15milyon TL (2024/60) olan, Tebliğ m. 5 vd. ile düzenlenen, ve SPK arafından listeye alınmış anonim ortaklıktır. Türkiye'de gerçekleştirilen Kitle fonlaması işlemlerine ilişkin Merkezi Kayıt Kuruluşu- MKK nezdinde "Kitle Fonlaması Platformları, Emanet Yetkilileri, Girişimci [13]veya Girişim Şirketleri[14] ile platformlara üye olarak fonlama yapacak yatırımcıların katılacakları ve kitle fonlaması süreçlerinde işlemlerini gerçekleştirecekleri", "Kitle Fonlaması Sistemi (KFS)" düzenlenmiştir[15].

MKK, KFS'ye sistemsel entegrasyon sağlayarak Sermaye Piyasası Kurulu (SPK) tarafından KF faaliyetine izin verilen platformlara, KFS üyeliklerinin tanımlanması sonrasında hizmet vermekte ve Fon toplama süreci başarılı olarak gerçekleşen projeler için girişim şirketlerinin ortaklık bilgilerinin ve paylarının Merkezi Kaydi Sistem (MKS) uygulamasında kayden oluşturulması da MKK tarafından yapılmaktadır.

KF sisteminde yatırımcıların sağlayabileceği fon miktarı sınrlanmıştır. Buna göre yatırımcı (nitelikli yatırımcı değilse) fazla 400.000TL ila 1.5 milyonTL yatırabilecektir (yatırım sınırı) (m.15(1)). Tebliğ'de özel fon toplama limitleri de bulunur: Tebliğ m. 16(4),(5); İzahname ve İhraç Belgesi Tebliği (II-5.1) m. 6 (İzahname hazırlama yükümlülüğünden muafiyetin tespiti):7.500.000TL-112.500.000TL.

[12] Türkiye'de kurulu kitle fonlaması platform listesi için bkz. https://spk.gov.tr/sirketler/kitle-fonlama-platformlari/listeye-alinan-platformlar . Burada dikkati çeken husus, listedeki Platformların sadece paya dayalı kitle fonlama konusunda faaliyet gösteriyor olmalarıdır.

[13] Girişimci: Projesine PKF yoluyla kaynak arayan Türkiye'de yerleşik gerçek kişileri ve limited veya anonim şirket türündeki tüzel kişilerdir. 3 yıl süreli pay devri yasağı için bkz. Tebiğ m. 16.

[14] Girişim şirketi: Anonim şirket kurma zorunluluğu olmadan faaliyetlerine devam edecek ve Türkiye'de kurulu olan, gelişme potansiyeli taşıyan ve projesine kaynak ihtiyacı bulunan anonim şirketleri veya toplanan fonların emanet yetkilisi nezdinde açılan bloke hesabına aktarılması öncesinde anonim şirkete dönüşmesi zorunlu olan limited şirketlerdir. Burada dikkat edilecek olursa SerPK sisteminde olmayan limited şirketler de sisteme dahil edilebileceklerdir. Buna göre anonim şirketi esas alan SerPK sisteminden KF bakımından ayrılınmıştır. Bu durum, KF ve micro finansmanın doğasına uygundur.

[15] MKK tarafından 07.11.2024 tarihinde yayınlanan "Kitle Fonlaması Sistemi İş ve İşlem Kuralları Yönergesi, Sürüm no : 1.4" için bkz. https://www.mkk.com.tr/sites/default/files/2024-11/KFS_Is_ve_Islem_Kurallari_Yonergesi.pdf .

PAYA DAYALI KİTLE FONLAMASI

Paya dayalı kitle fonlaması (PKF), pay karşılığında platformlar aracılığıyla halktan para toplanmasını ve pay ise Fonlanan şirketin sermayesini temsil eden ve sahibine ortaklık hakkı veren menkul kıymeti ifade eder. PKF, Tebliğ m. 15-17, 21 ve diğer bazı maddelerde özel olarak düzenlenmiştir. Paya dayalı kitle fonlamada şirketin ortağı olunmakta ve bu ortaklığa bağlı olarak şirketin taşıdığı yatırım riskleri beraberinde olası getirisine yatırım yapılmaktadır.

PYF'de "Kampanya süresi", yatırım komitesi tarafından onaylanmış bilgi formunun kampanya sayfasında yayımlandığı tarihte başlar ve bu sürealtmış günü geçemez. Platform üyeleri tarafından kampanya süresi boyunca ilgili projeye yönelik fon sağlama talepleri platforma iletilir (Tebliğ m. 17(2)).

YATIRIM KOMİTESİNİN TANIMI, HUKUKİ NİTELİĞİ VE ÖNEMİ

III – 35/A.2 sayılı Tebliğ bakımından "Yatırım komitesi", "girişimci veya girişim şirketi tarafından hazırlanan fizibilite (PKF) ve/veya kredibilite raporunu (borçlanmaya dayalı KF) değerlendiren, kampanyalara (Platform internet sitesindeki projeye ilişkin, üyelere özel fon toplama duyurusu) ilişkin hazırlanan bilgi formunu[16] onaylayan (zorunludur; Tebliğ 11(7)(8),(10) ; m. 26(2)) ve platform yönetim kurulu tarafından belirlenen komite" olarak tanımlanmıştır.

Yatırım Komitesinin hukuki niteliği, 6102 sayılı Türk Ticaret Kanunu-TTK m. 366(2)'da düzenlenen yönetim kuruluna yardımcı olan ve organ niteliği olmayan "komite ve komisyon" olarak nitelendirilmektedir[17]. "Görev dağılımı" başlıklı TTK m. 366 şu şekildedir: "(1)Yönetim kurulu, üyeleri arasından bir başkan ve bulunmadığı zamanlarda ona vekâlet etmek üzere, en az bir başkan vekili seçer. Esas sözleşmede, başkanın ve başkan vekilinin veya bunlardan birinin, genel kurul tarafından seçilmesi öngörülebilir.(2) Yönetim kurulu, işlerin gidişini izlemek, kendisine sunulacak konularda rapor hazırlamak, kararlarını uygulatmak veya iç denetim amacıyla içlerinde yönetim kurulu üyelerinin de bulunabileceği komiteler ve komisyonlar kurabilir".

Yatirim komitesinin asıl önemi yatırım sürecinin yapılmasına bilgi formunu onaylamak suretiyle onay verme ve Tebliğ'de verilen diğer görevleri yerine getirme noktasındadır. İlgili KF platformu tarafından üyeleri belirlenen yatırım komitesinin onayı olmadan bilgi formu onaylanamayacak ve fon toplama sürecine devam edilemeyecektir. Ancak, Platformlar, girişim şirketlerinin veya girişimcilerin kampanya başvurularını yatırım komitesine sunmadan önce de reddedebilir.

Tebliğ 26(4) gereğince Yatırım komitesi ilave gelişmelerin niteliğini ve potansiyel etkilerini değerlendirerek "kampanya süreci"ni iptal edebilecektir.

YATIRIM KOMİTESİNE YÖNELİK ANA DÜZENLEME

Yatırım Komitesine ilişkin ana düzenleme Tebliğ m. 9 ile yapılmıştır. Maddenin esaslı noktaları şu şekildedir:

(1) Platform yönetim kurulu tarafından oluşturulacak yatırım komitesi En az 3 üyeden oluşması ve çoğunluğunun finans, girişimcilik, işletmecilik, hukuki danışmanlık, teknoloji, sanayi ve ticaret gibi alanlarda en az 5 yıllık tecrübeye sahip kişilerden olması; en az Bir üyesinin platformun yönetim kurulu üyesi olması gibi (fıkra 4'te istisnası bulunur) nitelikleri sağlaması.

(2)Üyelerinin tamamının Tebliğ m. 6 birinci fıkrasında yer alan şartları (müflis olmama, belirli suçları işlememe vb.) sağlamış olması, zorunludur.

[16] Şablon bilgi formları için bkz. https://spk.gov.tr/sirketler/kitle-fonlama-platformlari/bilgi-formlari .

[17] Küçükgüngör, M. A. (2020). Sermaye Piyasası Hukukunda Erken Aşama Girişimlerin Paya Dayalı Kitle Fonlaması yoluyla Finansmanı. Yetkin Yayınevi, 221.

(3) Platformlar, birden fazla yatırım komitesi oluşturulabilir.

(4) Yatırım komitesi, bilgi formunun onaylar ve paya dayalı kitle fonlaması bakımından Tebliğ Ek-2'de asgari unsurları belirlenen fizibilite raporunun (borçlanmaya dayalı KF'de kredibilite raporu) yönelik olarak objektif değerlendirme ölçüt ve yöntemlerini içeren bir değerlendirme politikası oluşturur. Bu politika, platform yönetim kurulu tarafından karara bağlanarak platformun internet sitesinde kamuya duyurulur.

(5)Yatırım komitesinin **bilgi formunu** onaylaması üye tamsayısının çoğunluğunun bu yönde karar vermesi ile mümkündür. Platform tarafından bu fıkrada belirtilenden daha ağır bir nisap belirlenebilir.

(6) Oy yasağı/olası menfaat çatışması: Yatırım komitesi üyeleri; kendilerinin, eşlerinin, alt ve üstsoylarının sermaye, denetim ve idari bakımdan doğrudan veya dolaylı olarak ilişkili oldukları projelere ait kampanya başvurularının değerlendirilmesine ilişkin yatırım komitesi müzakerelerine katılamaz.

(7) Yatırım komitesi üyeleri bu Tebliğ kapsamındaki faaliyetleri karşılığında girişim şirketlerinden veya girişimcilerden herhangi bir ekonomik menfaat temin edemez ve değerlendirdikleri kampanyalara hedeflenen fon tutarının %5'inden fazla fon sağlayamazlar. (olası menfaat çatışması; Tebliğ m. 9(11))

YATIRIM KOMİTESİNİN SORUMLULUĞU

Burada sorumluluk kategorileri idari, hukuki ve cezai olarak tasniflenebilecektir. İdari sorumluluk, Tebliğ ve diğer SerPK mevzuatı hükümlerine kabahat niteliğindeki aykırılıklar nedeni ile SPK'nın idari para cezası şeklinde yaptırım uygulaması[18], Cezai sorumluluk ise başta SerPK olmak üzere ilgili cezai düzenlemeler kapsamında suç niteliğinde fiil işlenmesinden sorumluluk olarak belirtilebilecektir. Sermaye piyasasında izinsiz faaliyette bulunma ve piyasa dolandırıcılığı gibi suçlar SerPK'da özel cezai yaptırımlara tabidir. TCK anlamında da sorumluluk doğabilir.

Hukuki sorumluluk ise tazminat sorumluluğudur. Sermaye Piyasası Kanunu'nun 10. maddesi, izahnamede yer alan yanlış bilgilerden ihraççıların sorumlu olduğu düzenlenmiştir[19]. Ayrıca, Tebliğ m. 29'da Yatırım Komitesi üyeleri için "Hukuki Sorumluluk" özel olarak düzenlenmiştir.

"Sorumluluk" başlıklı Tebliğ m. 29 şu şekildedir: (1) Bu Tebliğde platformlar için öngörülen yükümlülüklerin yerine getirilmesinden platformun yönetim kurulu üyeleri, yatırım komitesi için öngörülen yükümlülüklerin yerine getirilmesinden yatırım komitesi üyeleri ile platformun yönetim kurulu üyeleri, fonlanan şirketler için öngörülen yükümlülüklerin yerine getirilmesinden ise fonlanan şirketin yönetim kurulu üyeleri sorumludur.

(2) Bilgi formunu imzalayan gerçek ve tüzel kişiler bilgi formunda yer alan yanlış, yanıltıcı veya eksik bilgilerden kaynaklanan zararlardan müteselsilen Sorumludur" .

Buna göre genel olarak yatırım komitesi için öngörülen yükümlülüklerin yerine getirilmesinden, yatırım komitesi üyeleri ile platformun yönetim kurulu üyeleri sorumludur. Buradaki sorumluluk kanımızca müteselsil sorumluluktur. Burada yükümlülüklerin yerine getirilmemesinden zarar görenler, sorumluların yani hem platform yönetim kurulu üyeleri hem de yatırım komitesi üyelerinin herhangi birinden veya tamamından şartları var ise tazminat talep edebilecektir

Tebliğ m. 29(2) gereğince ayrıca özel olarak "Bilgi formunu imzalayan gerçek ve tüzel kişiler bilgi formunda yer alan yanlış, yanıltıcı veya eksik bilgilerden kaynaklanan zararlardan müteselsilen

[18] İdari yaptırımlar, SPK'nın düzenleyici ve denetleyici yetkisi kapsamında uygulanır. 2025 yılı için parasal sınırlar güncellenmiştir. Bkz. https://idariyaptirimlar.spk.gov.tr/IdariParaCezalari .

[19] Ayrıntılı bilgi için bkz. Turan, G. "Türk Hukukunda İzahnameden Doğan Hukuki Sorumluluğun Esasları." Gazi Üniversitesi Hukuk Fakültesi Dergisi 20, no. 1 (2016): 222.

sorumludur" düzenlemesi yapılmıştır. Bu düzenleme gereğince bilgi formu bakımından da yatırım komitesi yanlış, yanıltıcı veya eksik bilgi vermesi sonucunda yatırımcıların zarara uğraması halinde müteselsilen tazminat sorumluluğu doğabilecektir.

Kitle fonlama konulu SPK'nın idari para cezası uygulaması örnekleri henüz sınırlı sayıdadır. SPK'nın sitesinde yer alan bilgiye göre[20] Global KF Platformu Anonim Şirketi Hakkında, 06.02.2025 tarih ve 7/247 sayılı SPK kararında III-35/A.2 Kitle Fonlaması Tebliği md.12/7 gereğince ₺ 466.701 idari para cezası uygulanmış ve dava süreci devam etmektedir. Ayrıca gene aynı Platform hakkında 17.05.2023 tarih ve 27/617 sayılı SPK kararı ile III-35/A.2 Kitle Fonlaması Teb.md. 8/6,7 gereğince ₺ 500.000 idari para cezası uygulanmıştır.

SONUÇ VE ÖNERILER

Kanımızca, kitle fonlama Platformları, yatırım komitesi üyelerini seçerken liyakat, nitelik ve bağımsızlık kriterlerine azami dikkat göstermelidir. Komite üyeleri, gerçek kişi şeklindeki mer'i düzenleme yerine olası davalardaki tazminat yükümünü garanti altına alacak şekilde yüksek asgari ödenmiş sermaye standartlarına tabi kurumsal tüzel kişiler olarak düzenlenmelidir. Komite üyelerinin sorumluluklarına ilişkin kusurun derecesi ve görev ifasındaki özenin standardı açıkça Tebliğ'de belirlenmelidir. Son olarak ise SPK, yatırım komitelerinin çalışmalarını düzenli olarak denetlemeli ve SerPK'da KF'ya ilişkin özel suç düzenlemesi yapılmalıdır.

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FAALİYET, FİNANSAL VE BİRLEŞİK KALDIRAÇ: BIST OTOMOTİV SEKTÖRÜNDE BİR İNCELEME

Nazif AYYILDIZ

Öğr. Gör. Dr. Harran Üniversitesi
E-mail: nazifayyildiz@harran.edu.tr
ORCID ID: 0000-0002-7364-8436

Özet

Bu çalışmanın amacı, Borsa İstanbul Otomotiv sektörü şirketlerinden Doğuş Otomotiv Servis ve Ticaret A.Ş. (DOAS), Ford Otomotiv Sanayi A.Ş. (FROTO) ve Tofaş Türk Otomobil Fabrikası A.Ş. (TOASO) firmalarının 2019–2023 dönemine ait faaliyet, finansal ve birleşik kaldıraç seviyelerinin incelenmesidir. Çalışmada, her bir kaldıraç türü, şirketlerin risk profili ve büyüme stratejileri açısından değerlendirilmiştir. Elde edilen bulgular, firmaların kaldıraç kullanımında farklı yaklaşımlar benimsediğini göstermektedir. DOAS, nispeten daha yüksek faaliyet ve finansal kaldıraç oranlarıyla agresif bir büyüme stratejisi izleyerek yüksek kârlılık sağlamış, ancak satışlardaki olası düşüşlere karşı daha savunmasız bir konuma gelmiştir. FROTO, faaliyet kaldıracını etkin kullanırken finansal kaldıraç oranını dengede tutmuş ve orta seviyede risk-getiri profili sergilemiştir. TOASO ise düşük finansal kaldıraçla temkinli ve istikrarlı bir yapı benimseyerek uzun vadeli sürdürülebilirliğe odaklanmıştır. Çalışma, kaldıraç oranlarının sadece finansal riskleri değil, aynı zamanda şirketlerin büyüme ve sürdürülebilirlik stratejilerini de yansıttığını ortaya koymaktadır. Bu nedenle, yatırımcılar ve yöneticilere, şirketlerin kaldıraç stratejilerini piyasa koşulları ve risk tercihlerine göre değerlendirmeleri önerilmektedir.

Anahtar Kelimeler: Faaliyet Kaldıracı, Finansal Kaldıraç, Borsa İstanbul, Otomotiv Sektörü

OPERATING, FINANCIAL, AND COMBINED LEVERAGE: A STUDY ON THE BIST AUTOMOTIVE SECTOR

Abstract

The aim of this study is to examine the operating, financial, and combined leverage ratios of Borsa İstanbul automotive sector companies, specifically Doğuş Otomotiv Servis ve Ticaret A.Ş. (DOAS), Ford Otomotiv Sanayi A.Ş. (FROTO), and Tofaş Türk Otomobil Fabrikası A.Ş. (TOASO) for the 2019–2023 period. Each type of leverage is evaluated in terms of the companies' risk profiles and growth strategies. The findings reveal that the companies adopt different approaches to leverage usage. DOAS achieved high profitability through relatively higher operating and financial leverage, adopting an aggressive growth strategy, but became more vulnerable to potential declines in sales. FROTO effectively utilized operating leverage while maintaining financial leverage at moderate levels, demonstrating a balanced risk-return profile. TOASO, on the other hand, adopted a conservative and stable approach with lower financial leverage, focusing on long-term sustainability. The study highlights that leverage ratios reflect not only financial risk but also companies' growth and sustainability strategies. Therefore, it is recommended that investors and managers carefully assess companies' leverage strategies in line with market conditions and risk preferences.

Keywords: Operating Leverage, Financial Leverage, Borsa İstanbul, Automotive Sector

GİRİŞ

Dünyanın en büyük üretim ve istihdam alanlarından biri olan otomotiv sektörü, küresel ekonominin lokomotiflerinden biri konumundadır. Yıllık ortalama 70 milyon araç üretimi ve yaklaşık 4 milyon kişilik istihdam kapasitesiyle bu sektör, dünya gayri safi yurt içi hasılasının (GSYİH) yaklaşık %3'üne katkı sağlamaktadır (Sabır Taştan ve Taştan, 2023). Türkiye otomotiv sanayii ise 2 milyon adedi aşan kurulu kapasitesiyle, 2022 yılında 1,35 milyon adetlik üretim gerçekleştirmiştir. Bu üretim düzeyiyle

Türkiye, dünya motorlu araç üretiminde 13'üncü, Avrupa Birliği ülkeleri arasında ise 4'üncü sırada yer almıştır. Söz konusu yılda üretim bir önceki yıla göre %6 oranında artarak, Türkiye'nin %5'lik Avrupa ortalamasının üzerinde bir performans sergilediğini göstermiştir. Özellikle ticari araç üretiminde Türkiye'nin AB ülkeleri arasında ilk sıradaki konumunu koruması, sektörün rekabet gücünü yansıtmaktadır (T.C. Cumhurbaşkanlığı Strateji ve Bütçe Başkanlığı, 2023).

Son yıllarda küresel ekonomi, teknolojik gelişmeler, dijitalleşme, salgınlar, jeopolitik gerilimler ve artan rekabet gibi faktörlerin etkisiyle sürekli değişen bir yapıya bürünmüştür (Aba Şenbayram, 2022). Bu dönüşüm süreci, işletmeler açısından belirsizlikleri artırarak finansal dayanıklılığı kritik bir unsur haline getirmiştir. Otomotiv sektörü de bu dönüşümün merkezinde yer almakta; elektrikli ve yazılım tabanlı araçların yaygınlaşması, tedarik zincirlerinin yeniden yapılanması ve dijitalleşmenin hızlanması gibi gelişmeler, sektörün rekabet dinamiklerini köklü biçimde değiştirmektedir (KPMG, 2025). Öte yandan, Covid-19 pandemisi üretim kesintileri, arz zinciri aksamaları, finansman darboğazları ve nakit akışı problemleriyle sektörün kırılganlığını artırmıştır. Bu süreçte firmalar, faaliyetlerini sürdürebilmek amacıyla maliyet azaltma, alternatif tedarik stratejileri ve kriz yönetimi planlamalarına yönelmişlerdir (Paksoy ve Duran, 2022). Bu belirsizlik ortamında, işletmelerin risk yönetimi kapasitesini ve finansal dayanıklılığını ölçmede kaldıraç göstergeleri temel bir analiz aracı haline gelmiştir. Kaldıraç analizi, bir işletmenin sabit ve değişken maliyet yapısına bağlı olarak faaliyet kârı ve net kâr üzerindeki duyarlılığı ölçmeye imkân tanır. Faaliyet kaldıracı, satışlardaki değişimlerin faaliyet kârına etkisini, finansal kaldıracı ise borçlanmanın özkaynak getirisi üzerindeki etkisini gösterir. Her iki kaldıraç türünün birleşiminden oluşan bileşik kaldıraç, işletmenin toplam risk düzeyine dair bütüncül bir bakış sunar (Akgüç, 2013; Ross vd., 2022).

Bu çalışmada, Borsa İstanbul'da işlem gören otomotiv sektörüne ait üç büyük üretici —Doğuş Otomotiv (DOAS), Ford Otosan (FROTO) ve Tofaş Türk Otomobil Fabrikası (TOASO)— örnekleminde, 2019–2023 dönemine ait finansal veriler kullanılarak faaliyet, finansal ve bileşik kaldıraç oranlarının analizi yapılmaktadır. Böylece, firmaların operasyonel ve finansal risk yönetiminde kaldıraç yapılarının nasıl bir rol oynadığı incelenmekte, sektörün kriz sonrası dönemdeki finansal davranışları değerlendirilmekte ve firmalar arası stratejik farklılıklar ortaya konulmaktadır. Literatürde farklı sektörlerde faaliyet, finansal ve bileşik kaldıraç ilişkilerini inceleyen pek çok araştırma bulunmakla birlikte, Borsa İstanbul otomotiv sektörü özelinde kaldıraç–risk–kârlılık dinamiklerini bütüncül biçimde ele alan kapsamlı bir çalışmaya rastlanmamıştır. Bu bağlamda mevcut araştırmanın, söz konusu sektöre yönelik özgün ampirik bulgular sunarak finansal analiz literatürüne katkı sağlaması beklenmektedir.

Çalışma beş bölümden oluşmaktadır. İkinci bölümde, konuya ilişkin literatür taraması yapılarak faaliyet, finansal ve bileşik kaldıraç derecelerine odaklanan çalışmalar incelenmiştir. Üçüncü bölümde araştırmanın veri seti ve kaldıraç analizi yönteminde kullanılan oranların hesaplama biçimleri açıklanmıştır. Dördüncü bölümde seçilen otomotiv firmalarına ait 2019–2023 dönemine ilişkin finansal veriler analiz edilerek bulgular sunulmuştur. Son bölümde ise elde edilen sonuçlar değerlendirilmiş ve sektörün finansal yapısına ilişkin genel çıkarımlarla birlikte gelecekte yapılabilecek çalışmalara yönelik önerilerde bulunulmuştur.

LİTERATÜR ARAŞTIRMASI

Otomotiv sektöründe finansal kaldıraç ve risk yönetimi konularında yapılan çalışmalar, zaman içinde sektörün dinamiklerini anlamada önemli katkılar sağlamıştır. Rafique (2011) tarafından yapılan çalışmada, Pakistan otomotiv sektöründe finansal kaldıraç ve karlılık arasındaki ilişkinin anlamlı olmadığı sonucuna ulaşılmıştır. Bununla birlikte, Abey ve Velmurugan (2019) Hindistan otomotiv sektörü üzerine yaptıkları araştırmada, şirket büyüklüğü, varlık yapısı ve satış büyümesi gibi faktörlerin finansal kaldıraç üzerindeki etkilerini incelemiş ve bu faktörlerin finansal kaldıraç kullanımını belirleyici olduğu sonucuna ulaşmışlardır. Rückova ve Skulanova (2020) tarafından gerçekleştirilen bir başka çalışmada, Orta ve Doğu Avrupa otomotiv sektöründe dışsal ekonomik faktörlerin, özellikle faiz oranlarındaki değişimlerin, şirketlerin kaldıraç düzeylerini önemli ölçüde etkilediği sonucuna

ulaşılmıştır. Yaman ve Korkmaz (2023) çalışmasında, Türkiye otomotiv sektörünün finansal analizi yapılarak, sektördeki şirketlerin genellikle yüksek likidite yapısına sahip oldukları, kısa vadeli borçlanmaların en önemli finansman kaynağı oluşturduğu belirtilmiştir. Ayrıca, Covid-19 pandemisinin sektördeki karlılık oranlarını önemli ölçüde artırmasına rağmen, tedarik zinciri problemleri ve döviz kurlarındaki dalgalanmaların sektörel zorlukları daha belirgin hale getirdiği vurgulanmıştır. Bu bulgular, otomotiv sektöründeki şirketlerin finansal kaldıraç stratejilerini ve borçlanma tercihlerini etkileyen iç ve dış faktörlerin çok çeşitli olduğunu göstermektedir. Anjelita ve Falikhatun (2024) çalışmasında, Asya otomotiv sektöründe finansal kaldıraç ve karbon riskinin finansal sıkıntı üzerindeki etkileri incelenerek, finansal kaldıracın otomotiv şirketlerinin finansal sağlığını doğrudan etkileyen bir faktör olduğu vurgulanmıştır. Chap ve Liu (2024) çalışmasında, otomotiv sektöründeki finansal risk yönetimi ele alınmış ve geleneksel otomotiv şirketlerinin finansal durumlarının stabil olduğu, ancak yeni enerji araçları üreticilerinin daha düşük uzun vadeli borç oranlarına ve daha güçlü likiditeye sahip oldukları belirlenmiştir. Yeni enerji araçlarında üreticilerinin finansal risklerinin ele alındığı farklı bir çalışma olan Sovanhangmeas ve Liu (2024) çalışmasında da benzer sonuçlara ulaşılmıştır. Yeni enerji araçları üreten şirketlerin geleneksel otomotiv üreticilerine kıyasla daha düşük borçlanma oranları ve daha güçlü kısa vadeli likiditeye sahip oldukları tespit edilmiştir. Bu sonuçla birlikte, yeni enerji araçlarını üreten şirketlerin uzun vadeli finansal risklerini daha düşük olduğu ve daha stabil bir finansal yapı sergiledikleri vurgulanmıştır.

Literatürde otomotiv sektörüne odaklanan uygulamaların dışında faaliyet, finansal ve bileşik kaldıraç ilişkilerinin incelendiği çok sayıda çalışma bulunmaktadır. Söz konusu çalışmalardan biri olan Lord (1995) çalışmasında, faaliyet kaldıracı derecesinin hesaplanmasına yönelik alternatif yöntemleri incelemiş ve sabit ile değişken maliyetlerdeki değişimlerin faaliyet kaldıracı üzerindeki etkilerinin farklı yönlerde olabileceğini belirlemiştir. Özkan (2005) tarafından Borsa İstanbul'da 11 sektörde yapılan analizde, 2001–2002 yıllarında kaldıraç derecelerinin olumsuzlaştığı, 2003 yılında ise toparlanma yaşandığı; faaliyet kaldıracının genellikle pozitif, finansal kaldıracın ise negatif ve daha değişken olduğu sonucuna ulaşılmıştır. Weiying ve Baofeng (2008) tarafından Çin lojistik sektöründe yürütülen araştırmada, finansal ve faaliyet kaldıraç derecelerinin işletme değeri üzerinde negatif etkiye sahip olduğu saptanmıştır. Akcanlı ve Erem (2013) tarafından Borsa İstanbul'daki 153 imalat işletmesi üzerinde yapılan çalışmada, 2007–2011 döneminde genel olarak faaliyet kaldıracının negatif, finansal kaldıracın ise pozitif olduğu, metal eşya, makine, kâğıt ve basım sektörlerinde faaliyet riskinin yüksek düzeyde gerçekleştiği belirlenmiştir. Ünal ve Dube (2017) tarafından BİST metal sektöründe yapılan araştırmada, piyasa riskinin faaliyet kaldıracı ile negatif, finansal kaldıracın ise pozitif ilişkili olduğu, ancak kaldıraç türleri arasında anlamlı bir ilişkinin bulunmadığı ifade edilmiştir. Dayı (2019) tarafından uluslararası havayolu şirketlerinde yapılan çalışmada, faaliyet kaldıracı ile satış gelirleri arasında pozitif bir ilişki olduğu ve en yüksek faaliyet kaldıracının Lufthansa'da, en düşük düzeyin ise Türk Hava Yolları'nda görüldüğü saptanmıştır. Bilen ve Kalash (2020) çalışmasında, Borsa İstanbul hizmet sektörü firmalarında finansal kaldıracın kârlılık üzerindeki etkisi incelenmiş ve borç oranı arttıkça kârlılığın azaldığı, bu etkinin faaliyet riski düzeyine göre farklılaştığı belirlenmiştir. Karadeniz ve Aydın (2022) çalışmasında, hizmet sektörü (havayolu taşımacılığı) üzerine yapılan araştırmada, Covid-19 pandemisinin faaliyet risklerini artırarak finansal risklerin yükselmesine yol açtığı sonucuna ulaşılmıştır. Son olarak Kuzu (2025) çalışmasında, enerji sektöründe faaliyet, finansal ve bileşik kaldıraç derecelerinin firma ve piyasa değeri üzerindeki etkileri incelenmiş, bileşik kaldıracın en güçlü belirleyici olduğu ve kaldıraç türlerinin birlikte değerlendirildiğinde stratejik sinerji oluşturduğu sonucuna ulaşılmıştır.

Gerçekleştirilen literatür incelemesinde, farklı sektörlerde faaliyet, finansal ve bileşik kaldıraç ilişkilerinin çeşitli açılardan ele alındığı görülmektedir. Ancak, Borsa İstanbul'da işlem gören otomotiv sektörü firmaları özelinde finansal kaldıraç, risk ve kârlılık dinamiklerini birlikte inceleyen bir çalışmaya literatürde rastlanmamıştır. Bu bağlamda, mevcut araştırmanın BIST otomotiv sektörü kapsamında gerek faaliyet, finansal ve birleşik kaldıraç düzeylerini incelemesi gerekse de sektörün

finansal yapısına ilişkin özgün ampirik bulgular sunması yönüyle finansal analiz literatürüne katkı sağlayabileceği düşünülmektedir.

VERİ SETİ VE YÖNTEM

Bu çalışmada, Borsa İstanbul'da (BIST) işlem gören otomotiv sektöründen üç büyük firma – Doğuş Otomotiv Servis ve Ticaret A.Ş. (DOAS), Ford Otomotiv Sanayi A.Ş. (FROTO) ve Tofaş Türk Otomobil Fabrikası A.Ş. (TOASO) – incelenmiştir. Analiz kapsamında, 2019–2023 yıllarını kapsayan beş yıllık dönem ele alınmış, firmaların yıllık finansal tablolarından elde edilen veriler kullanılmıştır. Veriler, firmaların kamuya açıklanmış bağımsız denetim raporlarından ve Kamuyu Aydınlatma Platformu (KAP) üzerinden temin edilmiştir. Çalışmaya 2024 yılı verileri dahil edilmemiştir. Bunun temel nedeni, Türkiye'de 2023 yılı sonu itibarıyla geçilen enflasyon muhasebesi uygulamasıdır. 2024 yılı itibarıyla firmaların finansal tabloları enflasyon düzeltmesine tabi tutulmuş ve parasal olmayan kalemler yeniden değerlenmiştir. Bu durum, önceki yıllarda kullanılan finansal verilerle doğrudan karşılaştırma yapmayı güçleştirmekte, kaldıraç oranları başta olmak üzere çeşitli finansal göstergelerin tutarlılığını ve karşılaştırılabilirliğini azaltmaktadır. Bu nedenle çalışmanın metodolojik bütünlüğünü korumak adına, yalnızca 2019–2023 yılları arasındaki enflasyon muhasebesine tabi olmayan dönem verileri analiz kapsamına alınmıştır.

Kaldıraç analizi, işletmelerin finansal analiz, planlama ve kontrol süreçlerinde önemli bir araç olarak kullanılmaktadır. Bu analiz, işletmenin sabit giderlerinin ve her bir ilave satış biriminden elde edilecek karın, başabaş noktasına olan etkisini incelemektedir. Kaldıraç analizi, özellikle sabit ve değişken giderlerin işletmenin faaliyet kârı ve net kârındaki değişimler üzerindeki etkilerini ortaya koymaktadır. Faaliyet kaldıracı, finansal kaldıraç ve birleşik kaldıraç olmak üzere üç ana kaldıraç türü, bu analizde hesaplanan temel göstergelerdir. Çalışma kapsamında kullanılan söz konusu kaldıraç oranları (1), (2) ve (3) numaralı denklemde yer alan formüller kullanılarak hesaplanmaktadır (Gitman vd., 2018; Ross vd., 2022):

$$Faaliyet\ Kaldıracı = \frac{Faaliyet\ Kârındaki\ Yüzde\ Değişim}{Satışlardaki\ Yüzde\ Değişim} \qquad (1)$$

$$Finansal\ Kaldıraç = \frac{Net\ Dönem\ Kârındaki\ \ Yüzde\ Değişim}{Faaliyet\ Kârındaki\ Yüzde\ Değişim} \qquad (2)$$

$$Birleşik\ Kaldıraç = Faaliyet\ Kaldıracı\ X\ Finansal\ Kaldıraç \qquad (3)$$

Faaliyet kaldıracı, satış gelirlerindeki değişimin faaliyet kârındaki değişime oranı olarak tanımlanmakta ve işletmenin sabit maliyet yapısını yansıtmaktadır (Qurochman ve Putra, 2024). Bu oran, dönemsel veriler kullanılarak faaliyet kârındaki yüzdesel değişimin satışlardaki yüzdesel değişime oranlanmasıyla hesaplanır ve işletmenin satış hacmindeki dalgalanmalara karşı ne ölçüde duyarlı olduğunu göstermektedir (Brigham ve Ehrhardt, 2023). Finansal kaldıraç, işletmenin borçlanma yoluyla kârlılığını artırma potansiyelini ve borçların kâr üzerindeki duyarlılığını ortaya koyan bir göstergedir (Akgüç, 2013). Başka bir ifadeyle, faaliyet kârında meydana gelen değişimlerin net dönem kârına ne ölçüde yansıdığını göstererek, finansal yapıdaki risk düzeyini ölçmektedir (Beyazgül vd., 2022). Borç kullanımı, özkaynak getirisi üzerinde hem olumlu hem olumsuz etki yaratabileceğinden, bu oran işletmenin sermaye yapısının etkinliğini değerlendirmede kritik bir role sahiptir. Finansal kaldıraç derecesi, faaliyet kârındaki yüzdesel değişimin net dönem kârı üzerindeki etkisini sayısal olarak ifade eder ve bu kapsamda net kâr değişim oranının faaliyet kârı değişim oranına bölünmesi yoluyla hesaplanır (Gitman vd., 2018; Ross vd., 2022). Bileşik kaldıraç ise faaliyet ve finansal kaldıracın etkilerini birleştiren, firmanın toplam risk düzeyini gösteren kapsamlı bir göstergedir (Brigham ve Ehrhardt, 2023). Bu oran, faaliyet kaldıraç derecesi ile finansal kaldıraç derecesinin çarpımı şeklinde veya doğrudan net kâr değişim oranının satışlardaki değişim oranına bölünmesiyle hesaplanabilir (Ross vd., 2022). Üç kaldıraç göstergesi birlikte değerlendirildiğinde, işletmelerin operasyonel maliyet yapısı

ile finansal borçlanma düzeylerinin kârlılık üzerindeki etkilerini bütüncül biçimde ortaya koyarak finansal risk analizine güçlü bir temel sağlamaktadır.

Gerçekleştirilen analizde, her bir işletmenin faaliyet kaldıraç derecesi, finansal kaldıraç derecesi ve birleşik kaldıraç derecesi yıllık olarak hesaplanmış ve dönemsel eğilimler incelenmiştir. Ardından, 2019-2023 dönemi için bu oranların beş yıllık ortalamaları hesaplanarak sektörel eğilimlerle karşılaştırılmıştır. Böylece, kaldıraç türlerinin işletmelerin finansal yapıları ve kârlılıkları üzerindeki etkileri ortaya konulmuş ve finansal riskler detaylı bir şekilde analiz edilmiştir.

BULGULAR

Analiz kapsamında, Doğuş Otomotiv Servis ve Ticaret A.Ş. (DOAS), Ford Otomotiv Sanayi A.Ş. (FROTO) ve Tofaş Türk Otomobil Fabrikası A.Ş. (TOASO)'nin 2019–2023 dönemine ait Net Satışlar, Faaliyet Kârı (Zararı) ve Net Dönem Kârı (Zararı) hesapları ile bu hesaplardaki yıllık değişim oranları incelenmiştir. İlk aşamada firmaların temel finansal performans göstergeleri dönemsel olarak değerlendirilmiş, ardından söz konusu değişim oranları üzerinden faaliyet, finansal ve bileşik kaldıraç oranları hesaplanmıştır. İkinci aşamada kaldıraç oranlarının 2019-2023 dönemindeki ortalama değerleri dikkate alınarak grafiksel karşılaştırmalar yapılmış ve firmaların kaldıraç kullanımına ilişkin stratejik eğilimleri analiz edilmiştir. Böylece, her bir işletmenin operasyonel yapı ve finansman kararlarının kârlılık üzerindeki etkileri karşılaştırmalı olarak ortaya konmuştur.

Tablo 1: Finansal Göstergeler ve Yıllık Değişim Oranları (2019-2023)

Finansal Oranlar						
Firma	**Oranlar**	**2019**	**2020**	**2021**	**2022**	**2023**
DOAS	**Net Satışlar**	**9844,13**	**18900,15**	**24306,21**	**88487,13**	**215477,93**
	Faaliyet Kârı (Zararı)	**486,11**	**1444,47**	**3092,74**	**16714,64**	**38449,37**
	Net Dönem Kârı (Zararı)	**76,76**	**1041,87**	**2336,06**	**15864,75**	**28532,35**
FROTO	**Net Satışlar**	**39209**	**49451,41**	**71101,26**	**322556,45**	**594705,18**
	Faaliyet Kârı (Zararı)	**2422,03**	**4805,66**	**9437,74**	**27271,09**	**63551,08**
	Net Dönem Kârı (Zararı)	**1959,48**	**4194,91**	**8801,01**	**27729,93**	**70826,09**
TOASO	**Net Satışlar**	**18896,90**	**23556,75**	**29684,31**	**124019,06**	**184228,76**
	Faaliyet Kârı (Zararı)	**1660,10**	**2066,16**	**4095,72**	**9250,58**	**20224,58**
	Net Dönem Kârı (Zararı)	**1481,64**	**1784,17**	**3281,32**	**9374,04**	**21777,28**
Yıllık Değişim Oranları						
Firma	**Oranlar**	**2019**	**2020**	**2021**	**2022**	**2023**
DOAS	**Net Satışlar**	**-0,08**	**0,92**	**0,29**	**2,64**	**1,44**
	Faaliyet Kârı (Zararı)	**-0,08**	**1,97**	**1,14**	**4,40**	**1,30**
	Net Dönem Kârı (Zararı)	**-0,43**	**12,57**	**1,24**	**5,79**	**0,80**
FROTO	**Net Satışlar**	**0,18**	**0,26**	**0,44**	**3,54**	**0,84**
	Faaliyet Kârı (Zararı)	**0,06**	**0,98**	**0,96**	**1,89**	**1,33**

	Net Dönem Kârı (Zararı)	**0,16**	**1,14**	**1,10**	**2,15**	**1,55**
	Net Satışlar	**0,02**	**0,25**	**0,26**	**3,18**	**0,49**
TOASO	**Faaliyet Kârı (Zararı)**	**0,41**	**0,24**	**0,98**	**1,26**	**1,19**
	Net Dönem Kârı (Zararı)	**0,11**	**0,20**	**0,84**	**1,86**	**1,32**

Tablo 1'de yer alan 2019–2023 dönemi verileri, DOAS, FROTO ve TOASO şirketlerinin satış ve kârlılık göstergelerinde dikkat çekici artışlara işaret etmektedir. Örneğin DOAS'ın net satışları 2019'da 9.844 milyon TL iken 2023'te 215.478 milyon TL'ye yükselmiş, yani yaklaşık 22 kat artmıştır. Aynı dönemde net dönem kârı 76,8 milyon TL'den 28.532 milyon TL'ye çıkarak yaklaşık 370 katlık bir büyüme göstermiştir. FROTO'nun net satışları 39.209 milyon TL'den 594.705 milyon TL'ye (15 kat), TOASO'nun ise 18.897 milyon TL'den 184.229 milyon TL'ye (10 kat) yükselmiştir. 2022 yılı, tüm firmalar açısından en yüksek büyüme oranlarının görüldüğü yıl olmuştur; örneğin DOAS'ın satışlarında 2022'deki artış oranı %264, FROTO'da %354, TOASO'da ise %318 olarak gerçekleşmiştir. 2023 yılında büyüme oranları belirgin biçimde yavaşlamış ancak firmalar yüksek seviyelerini korumuştur. Örneğin DOAS'ın net satış artışı 2022'deki %264'ten 2023'te %144'e gerilemiş, FROTO'da ise %354'ten %84'e düşmüştür. TOASO'da da benzer şekilde satış artış oranı %318'den %49'a inmiştir. Faaliyet kârı ve net kâr büyüme oranlarında da aynı eğilim izlenmiştir. Bu tablo, 2020–2022 döneminin hızlı genişleme yılları olduğunu, 2023'te ise büyümenin normalleştiğini göstermektedir. Üç firma da 2023'te büyüme hızını azaltmakla birlikte, 2019'a kıyasla çok daha yüksek bir satış ve kârlılık düzeyine ulaşmıştır. İncelenen firmaların 2019–2023 döneminde elde ettikleri bu finansal performansın kaldıraç yapıları üzerindeki etkisini değerlendirmek amacıyla, faaliyet, finansal ve bileşik kaldıraç oranlarına ilişkin hesaplamalar Tablo 2'de ayrıntılı olarak sunulmuştur.

Tablo 2: Faaliyet, Finansal ve Birleşik Kaldıraç Oranları

Firma	Kaldıraç Türü	2019	2020	2021	2022	2023
	Faaliyet Kaldıracı	**0,98**	**2,14**	**3,99**	**1,67**	**0,91**
DOAS	**Finansal Kaldıraç**	**5,57**	**6,38**	**1,09**	**1,31**	**0,61**
	Birleşik Kaldıraç	**5,43**	**13,67**	**4,34**	**2,19**	**0,56**
	Faaliyet Kaldıracı	**0,34**	**3,77**	**2,20**	**0,53**	**1,58**
FROTO	**Finansal Kaldıraç**	**2,73**	**1,16**	**1,14**	**1,14**	**1,17**
	Birleşik Kaldıraç	**0,92**	**4,37**	**2,51**	**0,61**	**1,84**
	Faaliyet Kaldıracı	**1,87**	**0,99**	**3,78**	**0,40**	**2,44**
TOASO	**Finansal Kaldıraç**	**0,28**	**0,83**	**0,85**	**1,48**	**1,12**
	Birleşik Kaldıraç	**0,52**	**0,83**	**3,23**	**0,58**	**2,73**

Tablo 2 incelendiğinde, DOAS, 2020 yılında faaliyet ve finansal kaldıracı birlikte kullanarak dikkat çekici bir kâr artışı elde etmiştir. Faaliyet kaldıracının 2,14 ve finansal kaldıracın 6,38 gibi oldukça yüksek seviyelere ulaşması, birleşik kaldıraç oranını 13,67'ye çıkarmış ve bu durum şirketin net kârında çarpan etkisi yaratmıştır. Yani satışlardaki görece sınırlı artış, sabit maliyetlerin ve borçla finansmanın etkisiyle kâra büyük oranda yansımıştır. Bu yapının sonucu olarak, DOAS 2020 yılında önceki yıla kıyasla çok daha yüksek bir kârlılık açıklamıştır. Bu olağanüstü kâr artışının sebepleri araştırılmış, bu artışta sadece kaldıraç etkisinin değil; aynı zamanda sektörde yaşanan canlanma, otomotiv talebindeki artış, fiyatlardaki yükseliş ve döviz kuru avantajları gibi faktörlerin de etkili olduğu görülmüştür. Ayrıca bu dönemde şirketin operasyonel verimliliği artmış, satış hacmi yükselmiş ve bazı iştiraklerden (örneğin

TÜVTÜRK) elde edilen gelirler de kârlılığı desteklemiştir. Tüm bu etkiler bir araya geldiğinde, 2020 yılı DOAS için güçlü bir performans yılı olmuştur. Ancak bu performans, kaldıraç oranlarının yüksekliği nedeniyle dikkatle kontrol edilmesi gereken bir risk yapısı da barındırmaktadır. Nitekim bu durumun farkında olan şirket, sonraki yıllarda hem faaliyet hem de finansal kaldıracı azaltarak daha dengeli ve sürdürülebilir bir finansal yapıya geçiş yapmıştır. 2020 yılında 13,67 olan birleşik kaldıraç değeri 2021'de 4,34'e, 2022'de 2,19'a, 2023'te ise 0,56'ya gerilemiştir.

FROTO, 2020 yılında özellikle faaliyet kaldıraç oranındaki 3,77'lik artışla dikkat çekmiştir. Bu, üretim hacminin artmasıyla sabit maliyetlerin daha iyi dağıldığını ve faaliyet kârının satışlara duyarlılığının arttığını gösterir. Finansal kaldıracın aynı dönemde düşük seviyelerde (1,16) kalması, şirketin borç kullanımını sınırlı tuttuğunu ve bu nedenle risk düzeyini kontrol altında tuttuğunu ortaya koyar. Birleşik kaldıraç oranı 4,37 ile yüksek ancak DOAS'a kıyasla çok daha kontrollü bir seviyededir. FROTO, faaliyet verimliliğini artırarak büyüme sağlamış ancak borçla risk almayı tercih etmemiştir. Bu da şirketin daha sürdürülebilir ve istikrarlı bir büyüme modeli izlediğini göstermektedir.

TOASO, 2020 yılında kaldıraç oranları bakımından en istikrarlı ve düşük riskli yapıya sahip firmadır. Faaliyet kaldıracı 0,99 ve finansal kaldıracı 0,83 gibi düşük seviyelerde seyretmiş, birleşik kaldıraç oranı ise yalnızca 0,83 olarak gerçekleşmiştir. Bu oranlar, şirketin hem operasyonel hem de finansal açıdan düşük riskle çalıştığını, sabit maliyetlerini ve borç yükünü çok iyi yönettiğini gösterir. Dolayısıyla TOASO'nun kârı büyük oynamalar göstermemiş, daha stabil bir şekilde artış göstermiştir. Bu yapı, yatırımcı açısından düşük oynaklık ve uzun vadeli güvenilirlik sunar ancak hızlı büyüme dönemlerinde sınırlı getiri potansiyeli anlamına da gelebilir.

Üç firmanın 2019–2023 yılları arasındaki faaliyet, finansal ve birleşik kaldıraç oranları incelendiğinde; kaldıraç kullanımına ilişkin farklı stratejiler benimsedikleri dikkat çekmektedir. Bu farklılıkları daha net görebilmek adına, her üç firma için beş yıllık ortalama kaldıraç değerlerini içeren karşılaştırmalı grafik Şekil 1'de sunulmuştur.

Şekil 1: 2019-2023 Dönemindeki Ortalama Kaldıraç Oranları

Şekil 1'de yer alan 2019–2023 dönemine ait ortalama kaldıraç oranları, üç firma arasında belirgin stratejik farklılıklar olduğunu ortaya koymaktadır. DOAS, bu dönemde ortalama 1,94 faaliyet kaldıracı ve 2,99 finansal kaldıraca ulaşarak toplamda 5,24 ortalama birleşik kaldıraç ile en yüksek kaldıraç kullanımına sahip firma konumundadır. Bu durum, DOAS'ın sabit maliyet yapısının görece yüksek olduğunu ve borç finansmanını yoğun bir şekilde kullandığını göstermektedir. FROTO ise ortalama 1,68 faaliyet kaldıracı ve 1,47 finansal kaldıracı ile daha dengeli bir kaldıraç yapısı benimsemiş; 2,05 ortalama birleşik kaldıracıyla orta düzeyde risk taşıyan bir profil çizmiştir. Öte yandan TOASO, 1,87 gibi dikkat çekici bir faaliyet kaldıracına rağmen, sadece 0,81 ortalama finansal kaldıraca sahiptir. Bu sayede ortalama 1,32 birleşik kaldıraç oranı ile en düşük toplam risk seviyesine sahip firma olmuştur. Veriler, DOAS'ın daha agresif, FROTO'nun dengeli, TOASO'nun ise temkinli bir kaldıraç politikası izlediğini göstermekte ve her bir şirketin risk-getiri yaklaşımı hakkında önemli bilgiler sunmaktadır.

Sonuç olarak, birleşik kaldıraç oranları yalnızca şirketlerin risk düzeyini değil, aynı zamanda büyüme stratejilerinin finansal temelini de yansıtmaktadır. DOAS, yüksek risk ve yüksek getiri stratejisiyle dikkat çekerken; FROTO, daha dengeli bir büyüme ve sürdürülebilirlik yaklaşımı benimsemiştir. TOASO ise düşük kaldıraç politikasıyla temkinli ve istikrarlı bir büyüme çizgisi izlemektedir. Bu nedenle kaldıraç oranları değerlendirilirken yalnızca borçluluk oranları değil, aynı zamanda büyümenin niteliği, istikrarı ve uzun vadeli sürdürülebilirliği de dikkate alınmalıdır.

SONUÇ

Bu çalışmada, Doğuş Otomotiv Servis ve Ticaret A.Ş. (DOAS), Ford Otomotiv Sanayi A.Ş. (FROTO) ve Tofaş Türk Otomobil Fabrikası A.Ş. (TOASO) firmalarının 2019–2023 dönemine ait faaliyet, finansal ve birleşik kaldıraç oranları analiz edilmiştir. Elde edilen bulgular, üç firmanın kaldıraç kullanımında belirgin farklılıklar gösterdiğini ortaya koymuştur. DOAS, yüksek faaliyet ve finansal kaldıraç oranlarıyla agresif bir büyüme ve risk yönetimi stratejisi izleyerek yüksek kârlılık sağlamıştır. Ancak bu yaklaşım, satışlarda yaşanabilecek olası düşüşlere karşı şirketi daha savunmasız kılmaktadır. FROTO, faaliyet kaldıracını etkin kullanırken finansal kaldıraç oranını kontrol altında tutmuş ve dengeli bir risk-getiri profili çizmiştir. TOASO ise nispeten düşük finansal kaldıraç oranlarıyla temkinli ve istikrarlı bir finansal yapı benimseyerek uzun vadeli sürdürülebilirlik odaklı hareket etmiştir.

Elde edilen bulgular ışığında, kaldıraç oranlarının şirketlerin sadece finansal risk düzeylerini değil, aynı zamanda büyüme stratejilerini ve uzun vadeli sürdürülebilirlik yaklaşımlarını da yansıttığı sonucuna varılmıştır. DOAS'ın yüksek kaldıraç ve borç kullanımı kısa vadede yüksek kârlılık sağlarken, beraberinde önemli finansal riskler barındırdığı; FROTO'nun daha dengeli kaldıraç yönetimi ile orta seviyede risk ve getiri dengesini sağladığı; TOASO'nun ise düşük kaldıraç politikası ile istikrarlı ve düşük riskli büyüme stratejisi izlediği belirlenmiştir.

Sonuç olarak, şirketlerin finansal kaldıraç stratejilerinin yatırımcıların risk tercihlerine ve piyasa koşullarına göre dikkatle değerlendirilmesi gerekmektedir. Ayrıca, kaldıraç oranları analizlerinde yalnızca borç yükü değil, şirketlerin faaliyet yapısı, büyüme hedefleri ve sürdürülebilirlik planlarının da göz önünde bulundurulmasının rasyonel finansal kararlar verilmesi noktasında önemli olduğu düşünülmektedir.

Bu çalışmanın bazı kısıtları bulunmaktadır. Öncelikle, çalışma kapsamında otomotiv üretimi sektöründe yer alan firmalarından yalnızca üç firma ve sadece 2019–2023 dönemi ele alınmış olup, bu durum çalışmanın kapsamını ve bulguların genellenebilirliğini sınırlı kalmaktadır. Ayrıca, makroekonomik değişkenler, sektör dinamikleri ve piyasa koşullarının kaldıraç oranları üzerindeki etkileri kapsamlı şekilde analiz edilmemiştir. Diğer finansal göstergelerle birlikte çok değişkenli analizlerin yapılmaması, sonuçların bütüncül yorumlanmasını güçleştirmiştir. Gelecek araştırmalarda, farklı sektör ve dönemlerde kaldıraç kullanımının incelenmesi; makroekonomik faktörlerin etkisinin değerlendirilmesi, ayrıca kaldıraçla birlikte likidite, kârlılık gibi diğer finansal göstergelerin çok değişkenli modellerle analiz edilmesi önerilmektedir.

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THE ROLE OF ORGANIZATIONAL CULTURE IN ENHANCING INSTITUTIONAL PERFORMANCE (A CASE STUDY OF A SAMPLE OF WORKERS IN TOURISM COMPANIES IN NAJAF GOVERNORATE)

[1]Assist. Prof. Dr. samyiah Hani Ajeel

samyiah.alouity@uokufa.edu.iq

https:// orcid.org/0000-0003-0971-3608

School of Administration and Economics. University of kufa, Najaf, IQ.

[2]Assist. Prof. Dr. Mohammed Saleh Mahdi

mohammeds.alasdy@uokufa.edu.iq

https://orcid.org/0000-0002-9906-4738

School of Administration and Economics. University of kufa, Najaf, IQ

[3]Prof. Dr. Azhar Neama Abugnum

azharn.abugnem@uokufa.edu.iq

https://orcid.org/0000-0003-0971-3608

School of Administration and Economics. University of kufa, Najaf, IQ

[4]Prof. Dr. Mohanad Abdulabbas Jasim AL-Janabi

School of Administration and Economics. University of kufa

Abstract

The current study aimed to examine organizational culture in enhancing institutional performance to ensure its continued performance and long-term success. The study's results demonstrated a correlation between organizational culture and institutional performance through continuous communication and reinforcement, achieving improvements and working with high efficiency and effectiveness, whether at the institutional, individual, or group level.

key words: organizational culture**,** organizational performance**.**

1- Introduction

Today's business organizations operate in a dynamic environment characterized by intense competition and rapid change. This places them in dire need of greater flexibility to adapt, respond, and take proactive steps to address these unexpected changes. The concept of organizational culture is a contemporary approach through which organizations seek to sense opportunities, recognize unexpected changes and associated threats, and then respond quickly. In light of the above, business organizations have become more in need than ever before of greater attention to organizational performance, as it is

one of the most important pillars of their continuity and development. Therefore, it is essential for organizations to pursue effective organizational performance practices that can contribute to enhancing their institutional work. Perhaps the concept of organizational performance is one of the contemporary concepts most appropriate for confronting the intensity of competition and rapid environmental changes in the business environment. The concept of institutional performance is linked to both individual and organizational behavior. It occupies a special place within any organization as the ultimate outcome of all its activities, both at the individual and organizational levels. The local authority is the cornerstone of any societal fabric and one of the most important tools for meeting employee needs, providing services, and improving the principles of good governance, ensuring rapid responses to employee needs, conditions, and living environments, and shaping their priorities. The concept of organizational culture has also attracted the attention of researchers over the past ten years as one of the most prominent organizational concepts that positively impacts individual performance and proactive behavior. The research comprises three sections: the first section (the scientific methodology of the research), the second section (employee well-being, institutional performance), and the third section (conclusions and recommendations)..

2. Literature review

2.1 organizational culture

There are many definitions that have addressed the topic of organizational culture, with no complete agreement on the concept of organizational culture, as (Abdul Qader, 2014:12) indicated that there are more than (250) definitions of organizational culture. The reason for the lack of agreement in defining organizational culture may be due to the background of these researchers, and the differences in their environments and cultures, as some researchers focused in their definitions on intellectual patterns in describing culture, such as values, beliefs, language, symbols, and slogans. Another group of researchers focused in their definition of organizational culture on material manifestations such as clothing and buildings, while the third group combined intellectual patterns and material manifestations. (Abdul Hamid, 2022:56) defined it as a social environment that drives the formal and informal expectations of individuals, and chooses the types of individuals who will suit the organization, as it shapes their freedom to carry out work without obtaining prior approval, in addition to affecting how they interact with others inside and outside the organization.

(Abdul-Ali, 2018: 112) refers to organizational culture as a system of meanings, symbols, beliefs, rituals, and practices that develop and stabilize over time, and become a special feature of the organization such that it creates a general understanding among its members about the characteristics of the organization and the behavior expected from its members. It is an easy concept, but it carries very difficult results, and the results or contents of organizational culture.

2.2. Denison's model of organizational culture

Discussions about the dimensions of organizational culture overlap, sometimes with its characteristics, and sometimes with its elements and components. Opinions differ regarding the main dimensions of organizational culture, which can be summarized in the following elements (Ibrahim, 2015:15):

1. Organizational flexibility: its ability to respond to and adapt to changing internal and external circumstances.

2. The nature of the work: The routine nature of work demands, which foster boredom and limit creativity, or which challenge employees, pushing them toward experimentation, innovation, and creativity.

3. Focus on achievement: Most projects emphasize achievement as the basis for rewards, promotion, or advancement.

4. The importance of administrative development and training: This refers to the degree to which management prioritizes employee training and development. Investing in human capital is considered one of the most important types of investment, as it builds the trainee's self-confidence to achieve their goals and raises their morale, thus reducing employee turnover within the project.

5. Authority patterns: Centralized authority suggests rigidity and inflexibility, thus limiting creativity because employees lack the power to make decisions. .

2.3. institutional performance (IM):

PM is one Institutional performance is the final result of efforts, activities, processes, or behaviors related to the goals or results that organizations seek to achieve, at three levels: the individual level, the partial functional level, and the performance of units (Raba'a, 122:2011).

Institutional performance is the result of an organization's outputs and the sum total it relies on to achieve this outcome. Researchers share commonalities, including how to achieve objectives. It is also the final outcome that reveals an organization's ability to invest its resources across all activities, operations, and procedures (Kassab, 1:2021). (Suwais and Al-Qabaj, 90:2021) defined it as: "An organization's ability to leverage its financial, organizational, and technological resources and work to achieve interaction between these resources and the organization's external environment."

2.4. Dimensions of Institutional Performance:

Idris and Abu Al-Rus (2022:386) proposed four dimensions for measuring institutional performance, as follows:

1. Institutional Effectiveness:

This is achieved when the institution succeeds in achieving the purpose of its existence, as stated in its bylaws, mission, and general and strategic objectives.

2. Institutional Efficiency:

This represents the optimal use of financial and human resources to achieve objectives. Here, the question arises as to whether the institution is implementing its activities at costs that are commensurate with the outputs, whether the outputs of activities and programs are commensurate with the size of the institution's workforce, and whether the implementation of activities and programs is timely and sufficient for their implementation.

3. Relevance (Appropriateness):

This reflects the extent of beneficiaries' and stakeholders' satisfaction with the services provided, both quantitatively and qualitatively. This means whether the organization selects its programs and activities to suit the needs of the target groups, and what is their level of satisfaction with them.

4- Sustainability:

This refers to an organization's ability to raise the necessary funds to implement various programs and activities. It also addresses whether it has the financial and human resources to enable it to continue its work, and whether it has the capacity to provide its services to its beneficiaries with the same efficiency and effectiveness. Sustainability also addresses whether an organization's programs and activities are consistent with the social and cultural context..

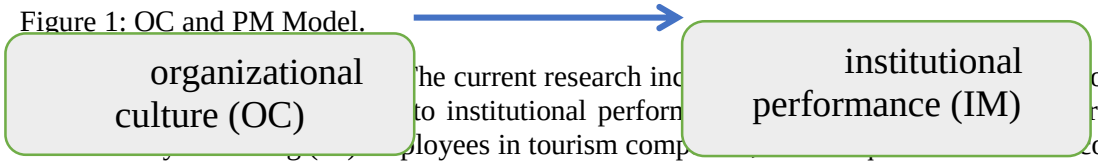
2.6 Hypotheses and Conceptual Model

The primary objective of this research is to examine the relationship between organizational culture and institutional performance, as illustrated in Figure 1. We can propose the following hypotheses:

Hypothesis 1: Organizational culture has a significant positive relationship with institutional performance styles.

Hypothesis 2: The dimensions of organizational culture, represented by Authority patterns The importance of administrative development and trainingThe nature of the work . Organizational flexibility,Focus on achievement, have a strong positive impact on institutional performance styles..

Figure 1: OC and PM Model.



he current research inc out whether to institutional perform ry data was ployees in tourism comp onducted to complete its requirements. To analyze the organizational culture, the organizational culture survey questionnaire from Denison (2000) and the organizational performance management questionnaire from Khatri (2000) were used, which contains 60 items on a five-point Likert scale, to analyze the organizational culture (5) ranging from (strongly disagree = 1 to "strongly agree = 5). As cultural attributes, this model focuses on.

2.8 Data Interpretation

Pearson's correlation coefficient and one-way analysis of variance were used to assess the significance of the correlation and the strength of the relationship between the two variables, respectively. At a confidence level of 0.99, hypothesis (H1) can be accepted, which states that organizational culture is positively and statistically significantly related to institutional performance. This supports the directional confirmation shown in Table 1..

Table (1): OC and PM Correlation Analysis

		OC	PM
OC	Pearson Corr. Sig. N	1 .000 68	0.695 .000 68
PM	Pearson Corr. Sig. N	0.889 .000 69	1 .000 77

** Corr. is sig. = 0.01 level of sig. (2-tailed).

Table (2) also shows that, at a confidence level of 0.99, each of the four organizational leadership attributes (authority styles, importance of management development and training, nature of work, organizational flexibility, and focus on achievement) is positively and strongly related to project management. This alone is sufficient evidence to support Hypothesis H2.

Table (2) shows the correlation between OC attributes and PM

Correlations						
		Inov.	**Cons.**	**Adap.**	**Miss.**	**PM**
authority styles .	**Pearson Corr.**	1	.865**	.811**	.835**	.775**
importance of management d vand tra,.	**Pearson Corr.**	.865**	1	.823**	.802**	.897**
organizational flexibility .	**Pearson Corr.**	.811**	.823**	1	.799**	.818**
focus on achievement .	**Pearson Corr.**	.835**	.802**	.799**	1	.858**
IM	**Pearson Corr.**	.775**	.897**	.818**	.858**	1
****. Corr. is sig. at the 0.01 level (2-tailed).**						

Table 2 describes the association analysis of OC traits with PM. The variables, including Inov., Cons., Adap., and Miss. have a significant positive impact on PM . The participation value for PM is a sig.= 0.0% , r=0.875 . The symmetry value is 0.01% (r = 0.797), which indicates the importance of the relationships. While A and M had values of r=0.788 and 0.815, respectively, with sig. = 0.01%. Because all OC values have a strong positive effect on PM, the H2 hypothesis that OC has a favorable effect on PM is accepted.

Table (4) also shows us that the ANOVA F test is sig. at the significance level of 0.000, which indicates that this model is appropriate for it. As a result, CO is a strong predictor of IM. Table 3 shows that the R2 value is 0.870, which is the dependent variance of the project management practices and OC variables. The value of r = 0.829 was shown, which is consistent with the model, and is a highly acceptable value as an acceptance value for the model..

Table (3): Summary of in the Model

R	**R Squared**	**R Square has been adjusted.**
870a	.829	.769

a. Predictors: (Continuous), Inov., Cons., Adap., and Miss.

Table (4). ANOVAb

	Model	Sum of Squares	df	Mean Square	F	Sig
1	regression	4818.247	5	1105.55		
	Residual	1688.757	22	74.816	15.535	.000
	Total	7499.004	26			

Conclusion

The main objective of the research is to understand the existing nature of the interaction between organizational culture and its enhancement and level of performance. The results of this study revealed to us that there are significant and positive effects and capabilities between organizational culture and its level of performance in terms of the process of linking them. All these dimensions and standards must be positive in order for technologies to achieve the highest levels of performance. Therefore, these cultures must be studied independently to coordinate the tasks and roles assigned to the employees in charge of them, based on that. The results of the current study indicate that there is a clear and explicit link between organizational culture and institutional performance if each is reinforced in a positive manner.

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QLOBAL QEYRİ-SABİTLİK ŞƏRAİTİNDƏ MİLLİ İQTİSADİ TƏHLÜKƏSİZLİYİN İDARƏETMƏ MEXANİZMLƏRİ

Lalə VƏLİYEVA

Dosent, Sumqayıt Dövlət Universiteti

E-mail: lala.valiyeva@sdu.edu.az

ORCID ID: 0000-0002-9528-5912

ABSTRACT

Since the second decade of the 21st century, structural transformations in the global economic system, instability in international trade relations, pandemics, and geopolitical risks have turned national economic security into one of the main priorities of state policy. Economic security is not merely a mechanism ensuring the stability of macroeconomic indicators but also the foundation for protecting national sovereignty, maintaining social welfare, and guaranteeing fiscal sustainability. Managing economic security in conditions of global instability requires a multi-level coordination between the state, the private sector, and international partnerships. The efficiency of management mechanisms under such circumstances depends on the adaptability of economic policy, the capacity for forecasting, and the ability to prevent emerging risks.

In the modern era, the concept of economic security extends far beyond national borders. The rapid movement of capital, technology, and information connects national economies with global networks, making them increasingly interdependent. These interconnections mean that disruptions in global supply chains, energy markets, and financial systems directly affect national economic stability. For energy-exporting countries in particular, price volatility, inflationary pressures, and exchange rate risks have become central to economic security management. In this context, the role of the state lies in balancing regulatory and stimulatory functions. Fiscal rules, management of sovereign wealth funds, and the coordination of public investment policies are vital instruments in maintaining overall macroeconomic stability.

Keywords: economic security, management mechanisms, public–private partnership, global stability

Xülasə

XXI əsrin ikinci onilliyindən etibarən dünya iqtisadi sistemində müşahidə olunan struktur dəyişikliklər, qlobal ticarət münasibətlərinin qeyri-sabitliyi, pandemiya və geosiyasi risklər milli iqtisadi təhlükəsizlik anlayışını dövlət siyasətinin əsas prioritetlərindən birinə çevirmişdir. İqtisadi təhlükəsizlik təkcə makroiqtisadi göstəricilərin sabitliyini təmin edən mexanizm deyil, həm də milli suverenliyin qorunması, sosial rifahın davamlılığı və dövlətin maliyyə dayanıqlığının təməlidir. Qlobal qeyri-sabitlik şəraitində iqtisadi təhlükəsizliyin idarə olunması dövlət, özəl sektor və beynəlxalq tərəfdaşlıqlar arasında çoxsəviyyəli koordinasiyanı tələb edir. Belə bir şəraitdə idarəetmə mexanizmlərinin səmərəliliyi iqtisadi siyasətin adaptivliyi, proqnozlaşdırma qabiliyyəti və risklərin qarşısını alma potensialı ilə müəyyən olunur.

Müasir mərhələdə iqtisadi təhlükəsizlik konsepsiyası yalnız milli sərhədlərlə məhdudlaşmır. Kapital, texnologiya və informasiya axınlarının sürətli hərəkəti milli iqtisadi sistemləri beynəlxalq şəbəkələrlə sıx şəkildə əlaqələndirir. Bu əlaqələr isə qlobal təchizat zəncirlərində, enerji bazarlarında və maliyyə sistemlərində yaranan dəyişikliklərin milli sabitliyə birbaşa təsir göstərməsinə səbəb olur. Xüsusilə də enerji ixracatçısı olan ölkələr üçün dünya bazarlarında qiymət dalğalanmaları, inflyasiya təzyiqləri və valyuta riskləri iqtisadi təhlükəsizlik idarəçiliyinin əsas obyektinə çevrilmişdir. Bu kontekstdə dövlətin

rolu tənzimləyici və stimullaşdırıcı funksiyalar arasında balans yaratmaqdan ibarətdir. Fiskal qaydalar, ehtiyat fondlarının idarə olunması və dövlət investisiya siyasətinin koordinasiyası iqtisadi sabitliyin qorunmasında mühüm alətlər hesab olunur.

Açar sözlər: iqtisadi təhlükəsizlik, idarəetmə mexanizmləri, dövlət-özəl sektor tərəfdaşlığı, qlobal sabitlik

GİRİŞ

Müasir dövrdə qlobal iqtisadi sistemin dinamik və çoxpilləli quruluşu milli iqtisadi təhlükəsizliyin təmin olunmasını təkcə milli maraqların müdafiəsi kimi deyil, eyni zamanda dövlət idarəetməsinin strateji prioriteti kimi aktuallaşdırır. Beynəlxalq münasibətlərdə qeyri-sabitlik, geosiyasi qarşıdurmalar, regional münaqişələr, enerji bazarlarında volatillik, texnoloji asılılıqlar, qida və su təhlükəsizliyi riskləri ölkələrin iqtisadi dayaqlarını zəiflədən əsas amillərdir. Belə bir şəraitdə milli iqtisadi təhlükəsizliyin idarəetmə mexanizmlərini araşdıran məqalənin elmi və praktiki əhəmiyyəti çox yüksəkdir, çünki mövzu həm nəzəri, həm də tətbiqi baxımdan kompleks yanaşma tələb edir.

Məqalə ölkələrin qarşılaşdığı yeni iqtisadi təhlükə formatlarının mahiyyətini izah etməyə imkan verir. Əgər XX əsrin sonlarına qədər iqtisadi təhlükəsizliyə daha çox hərbi-siyasi kontekstdə baxılırdısa, XXI əsrdə bu fenomenin məzmunu kəskin şəkildə dəyişib. Artıq dövlətlər üçün əsas risklər iqtisadi diversifikasiyanın zəifliyi, enerji ixracından asılılıq, qlobal təchizat zəncirlərinin pozulması, maliyyə böhranlarının domino effekti, rəqəmsal təhlükələr, informasiya müharibələri və s. kimi yeni formalar alır. Bu səbəbdən məqalə iqtisadi təhlükəsizliyin strukturunu yenidən dəyərləndirmək və onun yeni reallıqlara uyğun modellərini işləyib hazırlamaq baxımından mühüm nəzəri baza yaradır.

Məqalənin əhəmiyyəti ondan ibarətdir ki, o, qlobal qeyri-sabitliyin iqtisadi idarəetmə sisteminə təsirini çoxşaxəli şəkildə təhlil edir. Qeyri-sabitliyin artması dövlətlərin fiskal, monetar, sənaye, sosial və xarici ticarət siyasətlərini daha çevik və adaptiv model əsasında qurmasını tələb edir. Bu baxımdan milli iqtisadi təhlükəsizliyin idarə edilməsini yalnız risklərin monitorinqi kimi deyil, həm də qabaqlayıcı idarəetmə, çevik qərarvermə, rəqəmsal analitik alətlərin istifadəsi, institusional koordinasiya və milli resurslardan optimal istifadənin təmin edilməsi kimi sistemli proseslərdən ibarət olduğunu ortaya qoyur. Məqalə həmçinin göstərir ki, makroiqtisadi sabitlik – maliyyə dayanıqlığı, qiymət sabitliyi, büdcə intizamı – qlobal şokların təsirini azaltmaq üçün əsas sütunlardır.

Mövzunun aktuallığı iqtisadi təhlükəsizliyin sosial komponentləri ilə əlaqəsinin güclənməsindən qaynaqlanır. Qlobal qeyri-sabitlik şəraitində əhali gəlirlərinin azalması, işsizlik riski, sosial müdafiə sisteminin yükünün artması, ərzaq və enerji qiymətlərinin dəyişkənliyi kimi faktorlar iqtisadi təhlükəsizliyi yalnız makroiqtisadi çərçivədə deyil, sosial dayanıqlıq kontekstində də təhlil etməyi tələb edir. Bu məqalə sosial-iqtisadi stabilliyin dövlət təhlükəsizliyində oynadığı rolu sistemli şəkildə izah edir və göstərir ki, iqtisadi təhlükəsizlik yalnız statistik göstəricilərdən ibarət deyil – o, birbaşa cəmiyyətin rifahı, əhalinin həyat keyfiyyəti və sosial harmoniyası ilə bağlıdır.

Elmi işin əhəmiyyətli tərəfi ondan ibarətdir ki, məqalə idarəetmə mexanizmlərinin modernləşdirilməsi istiqamətlərini müəyyənləşdirir. Qlobal iqtisadi sistemdə baş verən dəyişikliklər dövlətləri yeni idarəetmə modelləri tətbiq etməyə məcbur edir. Xüsusilə rəqəmsal hökumət, süni intellekt əsasında risk analitikası, "big data" ilə monitorinq, strateji proqnozlaşdırma, təchizat zəncirlərinin rəqəmsal idarəedilməsi və innovativ fiskal həllər milli iqtisadi təhlükəsizliyin idarəetmə mexanizmlərinin ayrılmaz hissəsinə çevrilir. Buna görə məqalə yalnız mövcud mexanizmləri izah etmir, eyni zamanda onları təkmilləşdirən yeni yanaşmalar irəli sürür. Bu isə həm dövlət idarəçiliyi, həm də iqtisadi siyasət mütəxəssisləri üçün praktiki töhfə verir.

Belə bir məqalə regional və beynəlxalq əməkdaşlığın iqtisadi təhlükəsizlikdə rolunu da dəyərləndirir ki, bu da müasir dünya siyasətinin əsas çağırışları ilə birbaşa bağlıdır. Qlobal qeyri-sabitlik şəraitində dövlətlərin təkbaşına bütün risklərə qarşı durması mümkün deyil. Enerji təhlükəsizliyi,

nəqliyyat-logistika təhlükəsizliyi, iqlim dəyişikliklərinin yaratdığı iqtisadi itkilər, qlobal maliyyə sisteminin qeyri-sabitliyi kimi problemlər kollektiv yanaşma tələb edir. Məqalə məhz bu kontekstdə beynəlxalq maliyyə təşkilatları, regional iqtisadi bloklar, çoxşaxəli ticarət platformaları və strateji tərəfdaşlıqların milli iqtisadi təhlükəsizliyə verdiyi üstünlükləri göstərir. Bu isə siyasi və iqtisadi qərarvericilər üçün dəyərli analitik baza rolunu oynayır (Vəliyeva L. 2024).

Məqalə milli iqtisadiyyatın dayanıqlılıq potensialını gücləndirmək üçün strateji istiqamətləri müəyyənləşdirir. Qlobal qeyri-sabitlik şəraitində iqtisadi dayanıqlığın əsas meyarları arasında diversifikasiya, innovasiya ekosisteminin gücləndirilməsi, enerji keçidi, rəqəmsal iqtisadiyyat, istehsal güclərinin modernizasiyası, ixrac bazarlarının genişləndirilməsi, maliyyə təhlükəsizliyinin möhkəmləndirilməsi və insan kapitalının inkişafı xüsusi yer tutur. Bu istiqamətlərin hər biri milli iqtisadi təhlükəsizlik strategiyasının formalaşması üçün əhəmiyyətli rol oynayır və məqalə bu istiqamətlərin elmi əsaslarını təqdim edir.

Elmi araşdırmanın dəyəri ondan ibarətdir ki, o, qlobal iqtisadi mühitdə baş verən dəyişikliklərin milli təhlükəsizlik sistemini hansı dərəcədə transformasiya etdiyini göstərir. Artıq iqtisadi təhlükəsizlik yalnız iqtisadi qərarların nəticəsi deyil, eyni zamanda siyasi, hərbi, ekoloji və texnoloji faktorların kəsişdiyi mürəkkəb sferadır. Bu baxımdan məqalə iqtisadi təhlükəsizliyin təkcə iqtisadçıların deyil, bütün dövlət idarəetmə strukturlarının ortaq məsuliyyəti olduğunu elmi şəkildə əsaslandırır.

MATERİALLAR VƏ METODLAR

Məqalənin əhəmiyyəti onun tətbiqi nəticələrində özünü daha aydın göstərir. Burada irəli sürülən idarəetmə mexanizmləri milli iqtisadi siyasətin formalaşmasına, dövlət proqramlarının hazırlanmasına, böhranlara qarşı davamlılığın artırılmasına və risklərin minimallaşdırılmasına real töhfə verə bilər. Qlobal iqtisadi qeyri-sabitlik dərinləşdikcə dövlətlərin idarəetmə modeli daha çox proaktiv, innovativ və çevik yanaşmalara əsaslanmalıdır. Bu baxımdan məqalə belə bir idarəetmə sisteminin nəzəri çərçivəsini yaradır.

Eyni zamanda, bu mövzu üzrə aparılan araşdırma ölkələrin uzunmüddətli inkişaf strategiyalarında iqtisadi təhlükəsizliyin rolunu ön plana çıxarır. İqtisadi təhlükəsizlik olmadan nə sosial sabitlik, nə institusional davamlılıq, nə də iqtisadi inkişafın dayanıqlılığı təmin edilə bilər. Bu səbəbdən məqalə yalnız akademik dairələr üçün deyil, həm də dövlət qurumları, iqtisadi tənzimləyici strukturlar, sənaye və maliyyə sektoru üçün vacib elmi-metodoloji materialdır. O, həm konseptual yanaşmaları, həm də praktik alətləri özündə birləşdirərək ölkələrin qlobal rəqabətədavamlılığının artırılmasına xidmət edir.

Azərbaycan Respublikasının təcrübəsi göstərir ki, qlobal qeyri-sabitlik dövrlərində milli iqtisadi təhlükəsizliyin qorunması məqsədilə həyata keçirilən siyasət çoxvektorlu olmalıdır. 2015–2024-cü illər ərzində baş verən neft qiymətlərinin kəskin dəyişməsi, pandemiya dövründə təchizat zəncirlərinin pozulması və regional geosiyasi gərginliklər iqtisadi təhlükəsizliyin idarəetmə mexanizmlərinin çevikliyini zəruri etmişdir. Dövlətin "Azərbaycan 2030: Sosial-iqtisadi inkişafa dair Milli Prioritetlər" sənədində iqtisadi təhlükəsizliyin enerji, ərzaq, maliyyə və rəqəmsal komponentlərinin ayrıca istiqamətlər kimi müəyyən edilməsi bu konsepsiyanın strateji əhəmiyyətini təsdiq edir. Bu baxımdan iqtisadi təhlükəsizliyin idarə olunmasında institusional koordinasiya, hüquqi tənzimləmə, risk proqnozlaşdırılması və sosial dayanıqlıq mexanizmləri qarşılıqlı şəkildə işləməlidir (Məmmədli S. 2022).

İqtisadi təhlükəsizlik mexanizmlərinin effektivliyi bir neçə əsas metodlarla müəyyən olunur:

makroiqtisadi siyasətin sabitliyi və şəffaflığı;

dövlət maliyyə idarəçiliyinin proqnozlaşdırma gücü;

xarici borc və valyuta siyasətinin riskə adaptivliyi;

sosial və regional bərabərliyin qorunması;

rəqəmsal iqtisadiyyatın inkişaf səviyyəsi.

Bu faktorların hər biri iqtisadi təhlükəsizlik sisteminin altmərhələlərini formalaşdırır və ümumi dayanıqlıq səviyyəsinə birbaşa təsir göstərir. Azərbaycan Respublikasında həyata keçirilən fiskal intizam siyasəti, Dövlət Neft Fondunun şəffaf idarə olunması, qeyri-neft sektorunun genişləndirilməsi və ixracın diversifikasiyası kimi tədbirlər milli iqtisadi təhlükəsizliyin davamlı təmininə xidmət edir.

Eyni zamanda, qlobal çağırışların çoxölçülü xarakteri idarəetmə mexanizmlərinin daimi yenilənməsini tələb edir. Dünya maliyyə sistemində faiz dərəcələrinin dəyişməsi, beynəlxalq kapital axınlarının istiqamətlənməsi, süni intellekt və rəqəmsal texnologiyaların iqtisadi fəaliyyətə nüfuzu kimi amillər ənənəvi iqtisadi təhlükəsizlik modellərini yenidən düşünməyi zəruri edir. Buna görə də iqtisadi təhlükəsizlik siyasəti təkcə qoruyucu deyil, həm də inkişaf yönümlü xarakter daşımalıdır. Bu çərçivədə innovativ texnologiyaların tətbiqi, rəqəmsal idarəetmənin genişləndirilməsi, dövlət-özəl tərəfdaşlıqların möhkəmləndirilməsi və risklərin qabaqlayıcı şəkildə idarə olunması əsas istiqamətlər kimi formalaşır.

ƏLAVƏ MƏLUMATLAR

Məqalədə iqtisadi təhlükəsizlik mexanizmlərinin sistemləşdirilməsi üçün konseptual model hazırlanmışdır. Model beş əsas istiqaməti əhatə edir: makroiqtisadi sabitlik, maliyyə təhlükəsizliyi, enerji dayanıqlığı, sosial-iqtisadi balans və rəqəmsal-institusional mühitin səmərəliliyi. Hər bir istiqamət üzrə təhlil aparılaraq onların qarşılıqlı təsir əlaqələri müəyyən edilmişdir. Məsələn, fiskal sabitliyin pozulması maliyyə təhlükəsizliyinə, sosial bərabərliyin zəifləməsi isə iqtisadi sabitliyə mənfi təsir göstərir. Buna görə də idarəetmə mexanizmləri kompleks və qarşılıqlı əlaqəli şəkildə işləməlidir.

Cədvəl 1. Modelin cədvəl forması

Komponent	Tərkib	Təsir	Elaqə
Makro sabitlik	İnflyasiya, UDM, büdcə	Sabitlik pozularsa digər sahələr zəifləyir	Maliyyə təhlükəsizliyi
Maliyyə təhlükəsizliyi	Bank sektoru, borc	Şoklar sosial balansı pozur	Makro sabitlik
Enerji dayanıqlığı	Enerji istehsalı, qiymət	Volatillik büdcəyə təsir edir	Makro sabitlik
Sosial balans	Gəlir, məşğulluq	Gərginlik sabitliyi azaldır	Maliyyə sistemi
Rəqəmsal-institusional	E-hökumət, huquqi baza	Zəif institutlar risk yaradır	Bütün komponentlər

İqtisadi təhlükəsizliyin idarə olunmasında proqnozlaşdırma sistemlərinin təkmilləşdirilməsi, risk xəritələrinin hazırlanması və milli təhlükəsizlik strategiyasına inteqrasiya vacibdir. Dövlətin institusional strukturunda İqtisadi Təhlükəsizlik Monitorinq Mərkəzinin yaradılması, makroiqtisadi balansların real vaxt rejimində izlənməsi və süni intellekt texnologiyalarından istifadə bu istiqamətdə vacib addımlar ola bilər. Digər tərəfdən, iqtisadi təhlükəsizlik siyasətinin sosial ölçüsü də nəzərə alınmalıdır, çünki əhalinin rifah səviyyəsi və sosial sabitlik hər bir iqtisadi qərarın davamlılığını müəyyən edir.

Həmçinin, qlobal qeyri-sabitlik şəraitində iqtisadi təhlükəsizliyin idarəetmə mexanizmləri yalnız iqtisadi göstəricilərin qorunması ilə məhdudlaşmamalıdır. Bu mexanizmlər eyni zamanda sosial, texnoloji və institusional adaptasiya qabiliyyətinə malik olmalıdır. Azərbaycanın son illərdə formalaşdırdığı iqtisadi təhlükəsizlik siyasəti göstərir ki, çevik fiskal idarəetmə, rəqəmsal transformasiya və iqtisadi diversifikasiya uzunmüddətli dayanıqlığın əsasını təşkil edir. İrəliləyən

dövrdə isə beynəlxalq inteqrasiya, regional iqtisadi əməkdaşlıq və milli innovasiya potensialının artırılması iqtisadi təhlükəsizliyin davamlılığını təmin edən əsas istiqamətlərdən biri olacaq.

Müasir dövrdə dünya iqtisadiyyatında baş verən proseslər yüksək dəyişkənlik və qeyri-müəyyənliklə xarakterizə olunur. Qlobal miqyasda geosiyasi qarşıdurmaların genişlənməsi, ticarət müharibələrinin dərinləşməsi, məhdudlaşdırıcı sanksiyaların tətbiqi və enerji bazarlarında baş verən sərt dalğalanmalar ölkələrin iqtisadi mühitində əlavə risklər formalaşdırır. Bu proseslər təkcə beynəlxalq münasibətlərin strukturunu dəyişmir, eyni zamanda milli iqtisadiyyatların dayanıqlıq səviyyəsini ciddi şəkildə sınağa çəkir.

Qlobal qeyri-sabitliyin ən bariz təzahürlərindən biri beynəlxalq enerji və maliyyə bazarlarında müşahidə olunan kəskin qiymət dəyişmələridir. Xüsusilə enerji resurslarından asılı olan ölkələr üçün qiymət şokları büdcə sabitliyini pozur, valyuta gəlirlərində azalmaya səbəb olur və makroiqtisadi tarazlığı zədələyir. Bundan başqa, dünya maliyyə sistemində yaranan çalxalanmalar kapital axınlarında qeyri-sabitlik yaradır və xarici investisiyaların risklərini artırır. Bu cür proseslər milli bank sektorunun likvidliyinə, kreditləşmə dinamikasına və investisiya qərarlarına birbaşa təsir göstərir.

Digər mühüm məqam yeni tip təhlükələrin meydana çıxmasıdır. Rəqəmsal transformasiyanın sürətlənməsi ilə yanaşı, kiberhücumların artması, dövlət və özəl informasiya sistemlərinin sızmaya məruz qalması iqtisadiyyat üçün əlavə risklər yaradır. İctimai rəyin manipulyasiyası, məlumat müharibələri və sosial psixoloji gərginlik də bazarların davranışını dəyişdirərək qeyri-sabitliyi daha da gücləndirir. Pandemiya kimi qlobal sağlamlıq böhranları isə göstərdi ki, dünyada yaranan hər hansı fövqəladə vəziyyət sürətlə bütün iqtisadi sahələrə yayıla və uzunmüddətli təsirlər yarada bilər.

QLOBAL ÇAĞIRIŞLARIN MİLLİ İQTİSADİ TƏHLÜKƏSİZLİYƏ TƏSİRİ

Qlobal mühitdə baş verən dəyişikliklər tədarük zəncirləri üçün də ciddi çətinliklər yaradır. Münaqişələr, nəqliyyat yollarının bağlanması və logistika xərclərinin artması istehsal prosesini ləngidir və ölkələrin həm xammal, həm də hazır məhsul üzrə asılılığını dərinləşdirir. Ərzaq və dərman kimi strateji sahələrdə idxaldan asılılıq iqtisadi təhlükəsizliyi zəiflədən əsas amillərdən birinə çevrilir.

Bütün bu qlobal təsirlərə paralel olaraq, ölkələrin daxili struktur zəiflikləri də iqtisadi təhlükəsizliyi həssas vəziyyətə gətirir. Sənaye və ixrac strukturunda şaxələndirmənin kifayət qədər olmaması, strateji məhsullar üzrə istehsal potensialının məhdudluğu, bank sektorunun riskə məruz qalması və sosial sahədə həssaslığın yüksək olması xarici şoklara qarşı dayanıqlığı azaldır. Bu səbəbdən qlobal qeyri-sabitlik şəraitində ölkələrin iqtisadi təhlükəsizliyi yalnız kənar amillərin deyil, həm də daxili idarəetmə keyfiyyətinin, iqtisadi strukturun və institusional sabitliyin gücündən asılı olur.

Milli iqtisadi təhlükəsizlik anlayışı eyni zamanda cəmiyyətin və dövlətin sosial-iqtisadi davamlılığını təmin edən strateji kateqoriyadır. Bu təhlükəsizlik yalnız dövlətin iqtisadi maraqlarını qorumaqla məhdudlaşmır, həm də iqtisadi sistemin daxili sabitliyini, inkişaf potensialını, böhranlara qarşı dayanıqlığını və sosial rifahın qorunmasını özündə ehtiva edir. İqtisadi təhlükəsizliyin nəzəri bazası göstərir ki, hər bir ölkə öz iqtisadi sistemini həm xarici, həm də daxili təhdidlərdən müdafiə edə bilməli, iqtisadi resursların səmərəli istifadəsi və davamlı inkişaf üçün etibarlı mühit formalaşdırmalıdır.

Bu kontekstdə milli iqtisadi təhlükəsizlik müxtəlif komponentlərin qarşılıqlı əlaqəsi əsasında formalaşır. Makroiqtisadi sabitlik həmin strukturların əsasını təşkil edir və monetar sabitlik, inflyasiya səviyyəsi, fiskal yük, dövlət borcunun həcmi və valyuta ehtiyatları kimi indikatorlarla ölçülür. Bu göstəricilər iqtisadiyyatın zərbələrə qarşı dayanıqlılığını müəyyən edir, çünki makrobalansda yaranan hər hansı pozuntu zəncirvari şəkildə bütün sahələrə təsir edir.

Eyni zamanda iqtisadi təhlükəsizliyin sektorlar üzrə strukturu da mühüm əhəmiyyət kəsb edir. Enerji təhlükəsizliyi, ərzaq təminatı, maliyyə sisteminin sabitliyi, sənaye istehsalının davamlılığı, informasiya və kiber təhlükəsizlik müasir iqtisadiyyatın ayrılmaz elementləridir. Məsələn, enerji və ərzaq

təhlükəsizliyi strateji xarakter daşıdığı üçün onların hər hansı pozulması təkcə iqtisadi deyil, sosial sabitliyi də risk altına sala bilər. Maliyyə sisteminin sabitliyi isə bank sektorunun dayanıqlığı, kapitalın adekvatlığı və maliyyə axınlarının şəffaf idarə edilməsi ilə ölçülür(Yıldırım M. 2023).

İqtisadi təhlükəsizlik yalnız iqtisadi parametrlərlə deyil, institusional mühitlə də sıx bağlıdır. Hüquqi çərçivənin dayanıqlılığı, biznes mühitinin şəffaflığı, sahibkarlıq fəaliyyətinin müdafiəsi və dövlət idarəetmə sisteminin keyfiyyəti iqtisadi təhlükəsizlik strukturunun mühüm dayaqlarıdır. Bu institusional baza nə qədər güclü olarsa, iqtisadiyyat xarici və daxili risklərdən bir o qədər az təsirlənir və uzunmüddətli inkişaf daha proqnozlaşdırıla bilən olur(Almasi.A., & O'Reilly. M. 2023).

Nəhayət, milli iqtisadi təhlükəsizlik konsepsiyası yalnız müdafiə yönümlü deyil, həm də inkişaf yönümlü yanaşmanı əhatə edir. Yəni ölkə yalnız mövcud risklərdən qorunmaqla kifayətlənməməli, eyni zamanda yeni iqtisadi imkanları qiymətləndirərək rəqabətqabiliyyətini artırmalıdır. Bu baxımdan iqtisadi təhlükəsizliklə iqtisadi inkişaf bir-birini tamamlayan və gücləndirən iki strateji xətt kimi çıxış edir.

QLOBAL QEYRİ-SABİTLİK DÖVRÜNDƏ MİLLİ İQTİSADİ TƏHLÜKƏSİZLİYİN STRATEJİ ƏSASLARI VƏ RİSKLƏRİN İDARƏETMƏ MEXANİZMLƏRİ

Qlobal qeyri-sabitlik dövründə risklərin idarə olunması milli iqtisadi təhlükəsizliyin təmin edilməsində əsas strateji istiqamətlərdən birinə çevrilmişdir. Müasir iqtisadi sistemlər çoxşaxəli xarici təsirlərə məruz qaldığı üçün risklərin yalnız müəyyən edilməsi deyil, onların dərin təhlili, təsnifatı və idarə olunması mexanizmlərinin qabaqcadan işlənməsi xüsusi əhəmiyyət kəsb edir. Risklərin idarə olunması prosesində ilk mərhələ onların mənbəyini və təsir dərəcəsini müəyyən etməkdir. Bu mərhələ qlobal iqtisadi dinamikanın, enerji və maliyyə bazarlarının, geosiyasi proseslərin və rəqəmsal təhlükələrin sistemli analizini tələb edir.

Təhlilin növbəti mərhələsi risklərin iqtisadiyyatın hansı sahələrinə daha çox təsir göstərdiyini qiymətləndirməkdir. Məsələn, enerji qiymətlərindəki dəyişiklik birbaşa fiskal sabitliyə və valyuta gəlirlərinə təsir edir, maliyyə bazarlarındakı çalxalanmalar bank sektorunu zəiflədir, tədarük zəncirindəki qırılmalar isə sənaye və istehsal proseslərini ləngidir. Belə şəraitdə risklərin ssenari modelləşdirilməsi, stress-testlərin keçirilməsi və proqnoz alqoritmlərinin tətbiqi dövlət idarəçiliyinin əsas funksiyalarından birinə çevrilir.

Risklərin idarə edilməsində həm dövlət, həm də özəl sektor səviyyəsində institusional koordinasiya tələb olunur. Dövlət makroiqtisadi sabitliyə cavabdeh olmaqla yanaşı, həm də fövqəladə vəziyyətlərdə iqtisadi tampon mexanizmlərini işə salmaqla şokların sosial-iqtisadi təsirlərini yumşaldır. Özəl sektor isə istehsal və maliyyə fəaliyyətində dayanıqlığı artırmaq üçün sığorta, diversifikasiya və rəqəmsal təhlükəsizlik vasitələrindən geniş istifadə edir. Qeyri-sabitlik şəraitində risklərin qabaqlayıcı idarə olunması iqtisadiyyatın ümumi davamlılığını təmin edən əsas amillərdən birinə çevrilir(Zelenko I., Markov P., & Stefanyuk L. 2022).

Aşağıdakı cədvəl risklərin növlərini və onların idarə olunmasında istifadə edilən əsas mexanizmləri ümumiləşdirir:

Cədvəl 2. Qlobal Qeyri-Sabitlik Şəraitində risk növləri və idarəetmə mexanizmləri

Risk növü	Təsir sahəsi	İdarəetmə mexanizmləri
Enerji qiymətləri riski	Büdcə gəlirləri, valyuta sabitliyi	Hedcinq alətləri, strateji ehtiyatların artırılması, enerji diversifikasiyası

Maliyyə riskləri	Bank sektoru, kapital axınları	Stress-testlər, prudensial nəzarət, bank kapitalının gücləndirilməsi
Tədarük zənciri riski		
Sənaye və istehsal	Yerli istehsalın genişləndirilməsi, logistik şaxələndirmə	
Kiber təhlükələr	İT infrastrukturu, maliyyə əməliyyatları	
Kiber müdafiə sistemləri, məlumat təhlükəsizliyi standartları		
Geosiyasi risklər	Ticarət, nəqliyyat, investisiya	Alternativ ticarət səhmləri, regional əməkdaşlıq platformaları

Milli iqtisadi təhlükəsizliyin təmin olunması qlobal qeyri-sabitlik şəraitində dövlətin ən prioritet strateji hədəflərindən biridir. Müasir iqtisadi sistemlər xarici şoklara yüksək dərəcədə həssas olduğundan, milli səviyyədə idarəetmə tədbirlərinin düzgün seçilməsi və vaxtında tətbiqi iqtisadiyyatın davamlılığının əsas təminatçısına çevrilir. Bu tədbirlərin mərkəzində ilk növbədə makroiqtisadi sabitliyin qorunması dayanır. Bunun üçün dövlət fiskal siyasəti çevik şəkildə tənzimləyir, büdcə xərclərinin strukturunu optimallaşdırır, borc idarəçiliyinin məsuliyyət çərçivələrini gücləndirir. Monetar siyasət isə inflyasiyanın idarə olunması, faiz dərəcələrinin sabitliyi və bank sektorunun dayanıqlılığı istiqamətində əsas alət kimi çıxış edir.

İqtisadi təhlükəsizliyin təminində mühüm istiqamətlərdən biri də iqtisadiyyatın struktur dayanıqlığının gücləndirilməsidir. Enerji, sənaye və kənd təsərrüfatı kimi strateji sahələrdə diversifikasiya siyasəti dövlətin uzunmüddətli sabitliyini şərtləndirir. Enerji təhlükəsizliyi baxımından alternativ enerji mənbələrinin genişləndirilməsi, emal sahələrinin inkişaf etdirilməsi və enerji səmərəliliyinin artırılması yalnız iqtisadi fayda yaratmır, həm də qlobal enerji risklərinin təsirini azaltmağa yardım edir. Sənaye sektorunda rəqabətqabiliyyətli məhsul istehsalının təşkili, yerli xammal bazalarının gücləndirilməsi və ixrac yönümlü istehsal modelləri iqtisadi təhlükəsizliyin mühüm dayaqlarıdır.

Ərzaq təhlükəsizliyi sahəsində milli səviyyədə görülən tədbirlər xüsusi əhəmiyyət daşıyır. Pandemiya və qlobal tədarük zəncirləri böhranı göstərdi ki, idxaldan yüksək asılılıq iqtisadiyyat üçün ciddi risk yaradır. Buna görə kənd təsərrüfatında innovativ texnologiyaların tətbiqi, məhsuldarlığın artırılması, daxili istehsalın genişləndirilməsi və strateji ərzaq ehtiyatlarının formalaşdırılması həm sosial sabitlik, həm də iqtisadi davamlılıq üçün vacibdir.

QLOBAL QEYRİ-SABİTLİK DÖVRÜNDƏ REGİONAL VƏ BEYNƏLXALQ ƏMƏKDAŞLIĞIN MİLLİ İQTİSADİ TƏHLÜKƏSİZLİYİN GÜCLƏNDİRİLMƏSİNDƏ ROLU

Müasir dövrdə iqtisadi təhlükəsizliyin mühüm elementlərindən biri də rəqəmsal müdafiə və informasiya təhlükəsizliyidir. Rəqəmsal iqtisadiyyatın genişlənməsi ilə yanaşı, kiberhücumlar, məlumat oğurluğu və elektron sistemlərin sıradan çıxması kimi risklər də artır. Bu səbəbdən dövlət səviyyəsində kiber müdafiə infrastrukturunun gücləndirilməsi, məlumat təhlükəsizliyi standartlarının tətbiqi və rəqəmsal hökumət sistemlərinin dayanıqlığının artırılması iqtisadi idarəetmənin əsas komponentinə çevrilmişdir.

Həmçinin sosial müdafiənin gücləndirilməsi, məşğulluq proqramlarının genişləndirilməsi və əhalinin həssas qruplarına dəstək iqtisadi təhlükəsizlik tədbirlərinin ayrılmaz hissəsidir. Sosial sabitliyi təmin etməyən heç bir iqtisadi model davamlı ola bilməz və iqtisadi təhlükəsizlik yalnız iqtisadi göstəricilər deyil, həm də sosial rifahla tamamlanır.

Milli iqtisadi təhlükəsizliyin təmin edilməsində regional və beynəlxalq əməkdaşlıq mexanizmləri xüsusi strateji əhəmiyyət kəsb edir. Qlobal qeyri-sabitlik dövründə heç bir ölkə iqtisadi risklərdən tam təcrid oluna bilmədiyi üçün, təhlükəsizlik yalnız daxili tədbirlərlə deyil, həm də xarici tərəfdaşlarla qarşılıqlı inteqrasiyanın gücü ilə möhkəmləndirilir. Regional iqtisadi birliklərdə iştirak, ticarət tərəfdaşlığının genişləndirilməsi və transsərhəd layihələr milli iqtisadiyyatların risklərə qarşı davamlılığını artıran əsas vasitələrdən biridir. Bu əməkdaşlıq yalnız iqtisadi deyil, həm də institusional və texnoloji güclənmə proseslərinə dinamizm gətirir.

Regional əməkdaşlıq mexanizmləri milli iqtisadi təhlükəsizliyin təmin edilməsində bəzən daxili resurslardan daha güclü bir dayağa çevrilir. Ölkələr arasında coğrafi yaxınlıq, iqtisadi asılılıqlar, nəqliyyat marşrutları və enerji resurslarının paylaşılması onları təcrid olunmuş iqtisadi vahidlər kimi deyil, qarşılıqlı taleyi bir-birindən asılı olan sistemlər kimi formalaşdırır. Bu sistem daxilində iqtisadi sabitlik yalnız milli səviyyədə aparılan tədbirlərlə deyil, həm də qonşu ölkələrlə razılaşdırılmış ortaq mexanizmlərlə mümkün olur. Məhz buna görə regional iqtisadi əməkdaşlıq son illərdə təhlükəsizlik strategiyalarının ən fəal işlənən sahələrindən birinə çevrilmişdir(Nikiforov S. 2022).

Regional əməkdaşlıq, ilk növbədə, sərhədləri keçən iqtisadi maraqların harmoniyasına əsaslanır. Bir ölkənin enerji ehtiyatları digərinin sənaye istehsalını bəsləyir, birinin tranzit yolları digərinin bazarlara çıxışını təmin edir, aqrar məhsulların istehsal və mübadilə imkanları region daxilində sabit ərzaq təklifinin formalaşmasına yol açır. Bu qarşılıqlı asılılıq onsuz da bir-birinə bağlı olan ölkələri daha sistemli şəkildə əməkdaşlığa sövq edir. Regional inteqrasiya nə qədər güclü olursa, iqtisadi şokların təsiri də bir o qədər zəifləyir; çünki ölkələrin hər biri çətinlik zamanı təkbaşına deyil, daha geniş iqtisadi mühitin dəstəyi ilə davranır.

Regional əməkdaşlığın ən real hiss olunduğu sahələrdən biri enerji təhlükəsizliyidir. Enerji resurslarının bir ölkədə cəmlənməsi, digərlərində isə yüksək tələbatın olması təbii olaraq genişmiqyaslı enerji dəhlizlərinin yaranmasına səbəb olur. Transsərhəd boru kəmərləri, elektrik şəbəkələrinin sinxronlaşdırılması və enerji ticarəti region daxilində həm iqtisadi dözümlülüyü artırır, həm də risklərin bölüşdürülməsinə şərait yaradır. Bir ölkədə yaşanan enerji böhranı digər ölkələrin ehtiyat gücü ilə kompensasiya oluna bilir. Bu isə zəncirvari təsirlərin qarşısını almaq və kritik infrastrukturu davamlı saxlamaq baxımından olduqca əhəmiyyətlidir.

Eyni məqsədi daşıyan başqa bir istiqamət nəqliyyat və logistika əməkdaşlığıdır. Regional dəhlizlərin inkişafı yalnız ticarət dövriyyəsini artırmır, həm də təchizat zəncirinin qırılma ehtimalını minimuma endirir. Əgər bir marşrut bağlanarsa, region daxilində alternativ yol açılır və iqtisadi fəaliyyət dayanmaq əvəzinə istiqamətini dəyişir. Beləliklə, region ölkələri üçün dayanıqlı nəqliyyat şəbəkəsi təkcə infrastruktur deyil, həm də təhlükəsizlik alətinə çevrilir. Qlobal qeyri-sabitlik dövründə bu amil xüsusilə dəyərlidir.

Regional əməkdaşlıq həm də ərzaq təhlükəsizliyi sahəsində mühüm rol oynayır. İqlim dəyişikliyi, quraqlıq, zəlzələ və digər təbii risklər bəzən ölkələrin daxili ərzaq istehsalını azaldır. Bu zaman region daxilində əmtəə mübadiləsi, strateji ehtiyatların koordinasiyası və su resurslarının birgə idarə olunması ölkələri ciddi qıtlıqdan qoruyur. Bu əməkdaşlıq olmasa, lokal risklər qısa müddətdə böyük ərzaq böhranlarına çevrilə bilər. Region daxilində qurulan aqrar-tədarük mexanizmləri isə belə vəziyyətlərdə tampon rolunu oynayır.

Regional səviyyədə maliyyə sabitliyinin qorunması da iqtisadi təhlükəsizlik baxımından əhəmiyyətlidir. Valyuta svop xətləri, fövqəladə maliyyə dəstəyi mexanizmləri, bank sektorunda tənzimləyici standartların uyğunlaşdırılması ölkələr arasında maliyyə təhlükələrinin yayılmasının qarşısını alır. Bir ölkədə yaşanan bank böhranı, makroiqtisadi disbalans və ya valyuta şoku regiona domino effekti ilə keçmədən idarə oluna bilir. Bu isə milli iqtisadiyyatlar üçün sabitlik zonası yaradır.

Regional əməkdaşlığın yaratdığı bu sabitlik təbii olaraq beynəlxalq əməkdaşlıq mexanizmlərinə bağlanır. Qlobal iqtisadi sistem bir-biri ilə sıx işləklik içindədir və tək bir regionun öz daxilində yaratdığı

təhlükəsizlik tam təminat sayıla bilməz. Buna görə beynəlxalq əməkdaşlıq mexanizmləri regional səviyyədə formalaşmış sabitliyi qlobal səhnədə tamamlayır və genişləndirir. Beynəlxalq təşkilatlar, inkişaf bankları, ticarət ittifaqları və çoxtərəfli təhlükəsizlik platformaları ölkələrin iqtisadi siyasətlərinə əlavə dayaq rolunu oynayır.

Beynəlxalq əməkdaşlıq ölkələrə maliyyə böhranları zamanı operativ dəstək, makroiqtisadi idarəetmədə tövsiyələr, böyük infrastruktur layihələri üçün uzunmüddətli resurslar təqdim edir. Dünya Ticarət Təşkilatının yaratdığı vahid ticarət qaydaları proteksionizmi azaldır, qlobal maliyyə qurumlarının nəzarət mexanizmləri isə maliyyə sisteminin şəffaflığını artırır. Bu əməkdaşlığın ən mühüm funksiyası ölkələri qlobal şokların təsirindən qorumaqdır. Pandemiya, qlobal inflyasiya dalğası, enerji böhranı və geosiyasi gərginliklər dövründə beynəlxalq əməkdaşlığın bu rolu çox aydın görünmüşdür.

Qlobal səviyyədə həmçinin enerji və ərzaq təhlükəsizliyi ilə bağlı institutlar fəaliyyət göstərir. Bu təşkilatlar ölkələrə istehsal, tədarük, ehtiyat və qiymət sabitliyi məsələlərində dəstək göstərir. Ölkələr beynəlxalq səviyyədə qəbul edilmiş standartlara uyğunlaşdıqca daxili bazarların davamlılığı güclənir. Beynəlxalq əməkdaşlığın daha bir mühüm istiqaməti kibertəhlükəsizlik və informasiya mübadiləsidir. Rəqəmsal iqtisadiyyatın sürətlə genişləndiyi bir dövrdə texnoloji təhlükələrə qarşı mübarizə yalnız milli səviyyədə aparıla bilməz; informasiya axınının, hücumların və təhlükələrin sərhədləri yoxdur. Bu səbəbdən beynəlxalq kibertəhlükəsizlik əməkdaşlığı milli iqtisadi sistemləri qlobal təhdidlərdən qorumaqda vacib rol oynayır(Çavuşoğlu E. 2022).

Beynəlxalq səviyyədə iqtisadi əməkdaşlıq müxtəlif maliyyə institutları ilə münasibətləri də özündə birləşdirir. Dünya Bankı, Asiya İnkişaf Bankı və digər strukturlar çərçivəsində həyata keçirilən layihələr iqtisadi islahatların maliyyə təminatını gücləndirir, eləcə də texniki dəstək və risklərin idarə olunması üzrə metodoloji imkanlar yaradır. Bu münasibətlər ölkələrin iqtisadi sistemlərinin modernləşməsi və institusional transformasiyası üçün əhəmiyyətli resurs bazası formalaşdırır.

Beynəlxalq əməkdaşlığın iqtisadi təhlükəsizlik baxımından ən mühüm nəticəsi isə alternativ iqtisadi istiqamətlərin formalaşmasıdır. İxrac bazarlarının şaxələndirilməsi, yeni investisiya tərəfdaşlarının cəlb edilməsi və regional logistika imkanlarının genişləndirilməsi ölkənin qlobal şoklara qarşı dayanıqlığını artırır. Ticarət tərəfdaşlığının yalnız bir regiona deyil, çoxsaylı iqtisadi bloklara yönəldilməsi iqtisadiyyatın daha sabit və proqnozlaşdırıla bilən inkişafına şərait yaradır.

Nəticədə belə bir mənzərə yaranır: regional əməkdaşlıq ölkələri lokal və regional risklərdən qoruyan elastik, çevik və qarşılıqlı dəstəyə əsaslanan iqtisadi mühit yaradır; beynəlxalq əməkdaşlıq isə bu mühiti daha geniş təhlükəsizlik çərçivəsinə bağlayaraq qlobal səviyyədə stabillik təmin edir. Hər iki səviyyə bir-birini tamamlayır, birinin zəifliyi digərinin səmərəliliyini azalda bilir. Bu səbəbdən milli iqtisadi təhlükəsizlik konsepsiyası həm regional, həm də beynəlxalq əməkdaşlığı bir-birindən ayrılmaz komponentlər kimi nəzərdə tutur. Ölkələrin müasir dünyada dayanıqlı inkişaf modelini qoruması məhz bu iki səviyyəli əməkdaşlığın ahəngindən keçir və iqtisadi təhlükəsizlik strategiyalarının əsas dayağını formalaşdırır.

DİSKUSSİYA VƏ NƏTİCƏ

Müasir qlobal iqtisadi sistemdə baş verən proseslər göstərir ki, milli iqtisadi təhlükəsizlik konsepsiyası artıq yalnız iqtisadiyyatın ayrı-ayrı sahələrinin sabitliyini təmin etməklə məhdudlaşmır, həm də dövlətin sosial, institusional, texnoloji və regional maraqlarının kompleks şəkildə qorunmasını ifadə edir. Qlobal qeyri-sabitliyin artdığı bir dövrdə iqtisadi təhlükəsizliyin mahiyyəti daha da genişlənmiş, risklərin xarakteri çoxölçülü olmuş, idarəetmə mexanizmlərinin çevikliyi və funksional dərinliyi isə əsas strateji tələblərə çevrilmişdir. Bu tədqiqatın nəticələri göstərir ki, iqtisadi təhlükəsizliyin təmin olunması yalnız iqtisadi siyasətin texniki funksiyası deyil, həm də dövlət idarəetməsinin fundamental strateji xəttidir. Ona görə də iqtisadi təhlükəsizlik həm makroiqtisadi

sabitliyin qorunmasını, həm sektorlar üzrə risklərin qarşısının alınmasını, həm də institusional və sosial dayanıqlığın gücləndirilməsini zəruri edir.

Aparılan geniş təhlil göstərir ki, Azərbaycanın son onillikdə formalaşdırdığı iqtisadi təhlükəsizlik modeli qlobal qeyri-sabitlik şəraitində adaptiv və çevik idarəetmə yanaşmasına əsaslanır. 2015–2024-cü illər ərzində neft qiymətlərinin kəskin enişyoxuşları, pandemiya şoku, tədarük zəncirlərində qırılmalar, beynəlxalq maliyyə bazarlarında qeyri-müəyyənlik və regional geosiyasi gərginliklər iqtisadi təhlükəsizliyə yeni tip təhdidlər yaratmışdır. Bu dövrdə Azərbaycanın iqtisadi idarəetmə mexanizmlərində həyata keçirilmiş struktur islahatları, fiskal intizamın gücləndirilməsi, milli valyutanın qorunması, valyuta ehtiyatlarının artırılması, qeyri-neft sektorunun genişləndirilməsi və institusional modernizasiya tədbirləri milli təhlükəsizlik baxımından kritik əhəmiyyət daşımışdır. Xüsusilə "Azərbaycan 2030: Sosial-iqtisadi inkişafa dair Milli Prioritetlər" sənədində iqtisadi təhlükəsizliyin enerji, ərzaq, maliyyə və rəqəmsal komponentlərinin ayrıca prioritet kimi müəyyən olunması göstərir ki, bu anlayış artıq dövlət siyasətinin mərkəzi istiqamətinə çevrilmişdir.

Tədqiqatın mühüm nəticələrindən biri ondan ibarətdir ki, milli iqtisadi təhlükəsizlik yalnız makroiqtisadi və fiskal sabitlik elementləri ilə məhdudlaşmır. Əksinə, iqtisadiyyatın struktur dayanıqlığı, istehsal və ixracın diversifikasiyası, sosial sabitlik, rəqəmsal transformasiya, informasiya təhlükəsizliyi, enerji davamlılığı, logistika imkanlarının genişliyi və institusional idarəçiliyin effektivliyi bu konsepsiyanın ayrılmaz tərkib hissələridir. Bu göstəricilərdən hər hansı birinin zəifləməsi iqtisadi təhlükəsizliyin ümumi səviyyəsinə birbaşa təsir göstərir. Məsələn, fiskal sabitliyin pozulması maliyyə təhlükəsizliyini zəiflədir, sosial balansın pozulması makroiqtisadi sabitliyə mənfi təsir göstərir, rəqəmsal müdafiədəki boşluqlar maliyyə sistemini və dövlət idarəetməsini risk altında qoyur. Buna görə də iqtisadi təhlükəsizlik çoxşaxəli və qarşılıqlı asılılıqlara əsaslanan sistem kimi qiymətləndirilməlidir.

Bu tədqiqat çərçivəsində hazırlanan beşkomponentli konseptual model (makroiqtisadi sabitlik, maliyyə təhlükəsizliyi, enerji dayanıqlığı, sosial-iqtisadi balans və rəqəmsal-institusional səmərəlilik) iqtisadi təhlükəsizliyin idarə olunmasına kompleks yanaşma təqdim edir. Bu modelin analizi göstərir ki, iqtisadi təhlükəsizliyin hər bir komponenti ayrı funksiyaya malik olsa da, onların sinerjisi sistemin ümumi dayanıqlığını müəyyən edir. Məsələn, enerji təhlükəsizliyinin zəifləməsi fiskal gəlirlərin azalmasına və büdcə tarazlığının pozulmasına səbəb olur; maliyyə təhlükəsizliyi riskləri makroiqtisadi sabitliyi təhdid edir; rəqəmsal mühitdəki kiber risklər həm maliyyə əməliyyatlarına, həm də dövlətin idarəetmə sisteminə zərbə vurur; sosial gərginlik isə istehsal və investisiya mühitini zəiflədir. Bu səbəbdən iqtisadi təhlükəsizlik siyasəti sektoral yanaşmadan çıxaraq sistemli, inteqrasiyalı və qarşılıqlı əlaqəli model üzrə qurulmalıdır.

Nəticələr göstərir ki, qlobal qeyri-sabitlik dövründə risklərin idarə olunması milli iqtisadi təhlükəsizlik strategiyasının əsas tərkib hissəsinə çevrilmişdir. Qlobal proseslər artıq ənənəvi iqtisadi göstəricilərin hüdudlarını aşmış və yeni tip risklər yaratmışdır. Enerji qiymətlərinin dalğalanması büdcə gəlirlərində qeyri-stabillik yaradır; qlobal maliyyə sistemində faiz dərəcələrinin dəyişməsi ölkələrin borclanma xərclərini artırır; beynəlxalq kapital axınlarının istiqamətlənməsi valyuta sabitliyinə təsir göstərir; tədarük zəncirlərinin qırılması sənaye və ərzaq təhlükəsizliyi üçün kritik təhlükələr yaradır; kiberhücumların artması isə informasiya sistemlərinin müdafiəsini zəruri edir. Bu risklərin çoxşaxəli və dinamik xarakter daşıması onların yalnız iqtisadi alətlərlə deyil, həm də institusional və texnoloji mexanizmlərlə idarə olunmasını tələb edir(Kalyoncu H., & Demirtaş B. 2021).

Tədqiqatın mühüm tapıntılarından biri də budur ki, iqtisadi təhlükəsizliyin təmin olunmasında sosial müdafiə sistemi kritik rol oynayır. Sosial sabitlik iqtisadi təhlükəsizliyin əsas şərtlərindən biridir, çünki sosial gərginlik, işsizlik, yoxsulluq və sosial bərabərsizlik iqtisadi sistemin davamlılığına birbaşa təsir göstərir. Buna görə sosial müdafiə tədbirlərinin gücləndirilməsi, əhalinin həssas qruplarına dəstək, məşğulluq proqramlarının genişləndirilməsi və əmək bazarının modernizasiyası iqtisadi təhlükəsizliyin vacib sütunları kimi çıxış edir. Bu siyasət iqtisadiyyatı yalnız xarici risklərdən deyil, daxili sosial təzyiqlərdən də qoruyur və uzunmüddətli rifahın təmin edilməsinə xidmət edir.

Tədqiqatın ən diqqət çəkən nəticələrindən biri regional və beynəlxalq əməkdaşlığın iqtisadi təhlükəsizlikdə oynadığı mühüm roldur. Qlobal qeyri-sabitlik dövründə heç bir ölkə iqtisadi risklərdən tam təcrid oluna bilməz. Dövlətlərin iqtisadi mühitləri bir-biri ilə sıx bağlı olduğundan, enerji qiymətləri, ərzaq təklifi, maliyyə axınları, tranzit yolları və texnoloji sistemlər üzrə yaranan risklər regional iqtisadi məkanlarda zəncirvari təsir yaradır. Bu səbəbdən iqtisadi təhlükəsizliyin təmin olunması yalnız daxili siyasətlə deyil, həm də regional iqtisadi inteqrasiya və beynəlxalq əməkdaşlıq çərçivəsində həyata keçirilən tədbirlərlə bağlıdır. Xüsusilə enerji təhlükəsizliyində transsərhəd boru kəmərləri, elektrik şəbəkələrinin sinxronlaşdırılması, regional enerji ticarəti, su ehtiyatlarının birgə idarə olunması və alternativ enerji layihələri ölkələrin qarşılıqlı təhlükəsizliyini gücləndirir.

Eyni dərəcədə əhəmiyyətli olan digər bir istiqamət regional logistika əməkdaşlığıdır. Qlobal geosiyasi gərginliklər və tədarük zəncirlərində baş verən qırılmalar göstərir ki, dayanıqlı nəqliyyat şəbəkələri iqtisadi təhlükəsizliyin vacib komponentidir. Region ölkələri arasında alternativ logistika marşrutlarının qurulması, ticarət koridorlarının genişləndirilməsi və nəqliyyat sistemlərinin inteqrasiyası həm regional sabitliyi artırır, həm də milli iqtisadiyyatları xarici təchizat risklərindən qoruyur. Bu inteqrasiya olmadan ölkələr bir marşrutun bağlanması ilə kritik vəziyyətə düşə bilərlər.

Regional əməkdaşlığın tamamlayıcı mexanizmi beynəlxalq iqtisadi əməkdaşlıqdır. Beynəlxalq təşkilatlar (Dünya Bankı, Asiya İnkişaf Bankı, Dünya Ticarət Təşkilatı və s.), çoxtərəfli tərəfdaşlıq platformaları, təhlükəsizlik ittifaqları və inkişaf banklarının təqdim etdiyi maliyyə dəstəyi, texniki yardım və metodoloji məsləhətlər ölkələrin iqtisadi təhlükəsizlik sistemlərinin gücləndirilməsinə mühüm töhfə verir. Bu əməkdaşlıq həm də qlobal şokların təsirinin azaldılmasına xidmət edir. Pandemiya və enerji böhranı dövrlərində beynəlxalq əməkdaşlığın bu funksiyası xüsusi aydınlıqla üzə çıxmışdır.

Tədqiqatın ümumi nəticəsi budur ki, qlobal qeyri-sabitlik dövründə milli iqtisadi təhlükəsizlik siyasəti təkcə “təhlükələrin qarşısının alınmasına” deyil, həm də “inkişaf yönümlü transformasiyaya” əsaslanmalıdır. Yəni siyasət yalnız müdafiəedici rol oynamamalı, həm də yeni imkanların reallaşdırılması, iqtisadiyyatın rəqabətqabiliyyətinin artırılması, yeni texnologiyaların tətbiqi, rəqəmsal idarəetmənin genişləndirilməsi və institutların modernləşdirilməsi məqsədlərini daxil etməlidir. Bu, iqtisadi təhlükəsizliyi passiv müdafiə mexanizmindən çıxarıb aktiv inkişaf strategiyasının bir hissəsinə çevirir.

Nəticə olaraq qeyd etmək olar ki, milli iqtisadi təhlükəsizliyin təmin edilməsi çoxşaxəli, kompleks və inteqrativ yanaşma tələb edən bir prosesdir. Bu proses aşağıdakı əsas elementlərin sinerjisinə əsaslanır:

1. Makroiqtisadi sabitlik – fiskal intizam, inflyasiya nəzarəti, valyuta ehtiyatları, borc idarəçiliyi.
2. Maliyyə təhlükəsizliyi – bank sektorunun dayanıqlığı, kapital bazarlarının inkişafı, şəffaflıq.
3. Enerji və ərzaq təhlükəsizliyi – enerji diversifikasiyası, alternativ mənbələr, strateji ehtiyatlar.
4. Sosial-iqtisadi dayanıqlıq – sosial müdafiə, məşğulluq, rifah.
5. Rəqəmsal və informasiya təhlükəsizliyi – kiber müdafiə, rəqəmsal hökumət, məlumat mühafizəsi.
6. Regional əməkdaşlıq – enerji, logistika, ərzaq və maliyyə inteqrasiyası.
7. Beynəlxalq əməkdaşlıq – maliyyə institutları, ticarət platformaları, texnoloji tərəfdaşlıqlar.

Bu komponentlərin hər birinin koordinasiyalı şəkildə işləməsi milli iqtisadiyyatların qlobal şoklara qarşı dayanıqlığını artırır və uzunmüddətli sabit inkişafın təminatına çevrilir.

Beləliklə, qlobal qeyri-sabitlik şəraitində milli iqtisadi təhlükəsizliyin təmin olunması yalnız iqtisadi siyasətin düzgün qurulması ilə deyil, həm də sosial, institusional, regional və beynəlxalq

sahələrdə kompleks koordinasiya ilə mümkündür. Azərbaycan Respublikasının son illərdə apardığı siyasət göstərir ki, çevik iqtisadi idarəetmə, diversifikasiya, rəqəmsal transformasiya və geniş əməkdaşlıq platformaları üzərində qurulan iqtisadi təhlükəsizlik strategiyası ölkənin qarşıdakı dövr üçün dayanıqlı inkişaf modelini formalaşdırır.

Beləliklə, tövsiyə xarakterli təklifləri ümumiləşdirə bilərik:

1. Makroiqtisadi sabitliyin möhkəmləndirilməsi üçün fiskal intizam gücləndirilməli, büdcə gəlirlərinin strukturunda qeyri-neft sektorunun payı artırılmalı və dövlət borcu idarəetməsi risk əsaslı strategiya üzrə həyata keçirilməlidir.

2. İnflyasiya hədəflənməsi rejiminin effektivliyi artırılmalı, monetar və fiskal siyasət arasında koordinasiya gücləndirilməli, valyuta ehtiyatları qlobal şoklara qarşı tampon mexanizmi kimi genişləndirilməlidir.

3. Bank sektorunda prudensial nəzarət dərinləşdirilməli, stress-testlər mütəmadi keçirilməli, kapital adekvatlığı tələbləri sərtləşdirilməli və maliyyə axınlarında şəffaflıq artırılmalıdır.

4. Kapital bazarlarının inkişafı üçün yeni maliyyə alətləri (yaşıl istiqrazlar, layihə istiqrazları, rəqəmsal qiymətli kağızlar) dövriyyəyə buraxılmalı və uzunmüddətli investisiyalara çıxış imkanları genişləndirilməlidir.

5. Enerji təhlükəsizliyinin gücləndirilməsi məqsədilə alternativ enerji mənbələrinin inkişafı sürətləndirilməli, enerji səmərəliliyi yüksəldilməli və strateji enerji ehtiyatlarının idarə olunması təkmilləşdirilməlidir.

6. Ərzaq təhlükəsizliyinin təmin edilməsi üçün daxili istehsal gücü artırılmalı, kənd təsərrüfatında rəqəmsal texnologiyalar tətbiq olunmalı və strateji ərzaq ehtiyatları qlobal böhran ssenarilərinə uyğunlaşdırılmalıdır.

7. Tədarük zəncirlərinin davamlılığını qorumaq üçün alternativ nəqliyyat-logistika marşrutları genişləndirilməli, regional tranzit dəhlizləri (Zəngəzur, Orta Dəhliz və s.) institusional cəhətdən gücləndirilməlidir.

8.Sənaye dayanıqlığını artırmaq üçün rəqabətqabiliyyətli istehsal klasterləri yaradılmalı, yerli xammal bazaları genişləndirilməli və yüksək əlavə dəyərli məhsul istehsalına keçid sürətləndirilməlidir.

9. Rəqəmsal təhlükəsizlik sahəsində milli kiber müdafiə çərçivəsi yenilənməli, dövlət və özəl sektorda məlumat təhlükəsizliyi standartları sərtləşdirilməli və kritik infrastruktur üçün kiber risklərin monitorinq sistemi qurulmalıdır.

10. E-hökumət platformalarının dayanıqlığı artırılmalı, rəqəmsal dövlət xidmətlərində təhlükəsizlik protokolları gücləndirilməli və rəqəmsal transformasiya üzrə insan kapitalının hazırlığı genişləndirilməlidir.

11. Sosial müdafiə sisteminin adaptivliyi artırılmalı, həssas qruplar üçün operativ dəstək mexanizmləri yaradılmalı və məşğulluq proqramları qlobal iqtisadi dəyişikliklərə uyğun şəkildə genişləndirilməlidir.

12. Regionlar arasında sosial-iqtisadi fərqlərin azaldılması üçün inkişaf proqramları gücləndirilməli, infrastruktur və xidmətlərə bərabər çıxış təmin edilməlidir.

13. Qlobal risklərə qarşı qabaqlayıcı idarəetmə üçün milli risk xəritələri hazırlanmalı, dövlət qurumları arasında real vaxt rejimində məlumat mübadiləsi mexanizmi qurulmalı və böhran ssenariləri üzrə operativ qərarvermə sistemi tətbiq edilməlidir.

14. İqtisadi Təhlükəsizlik Monitorinq Mərkəzi yaradılmalı və iqtisadi təhlükəsizlik indikatorlarının vahid platformada analitik izlənməsi təmin edilməlidir.

15. Regional iqtisadi əməkdaşlıq dərinləşdirilməli, enerji, ticarət və nəqliyyat sahələrində inteqrasiya gücləndirilməli və qarşılıqlı risklərin bölüşdürülməsi mexanizmləri yaradılmalıdır.

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YAŞIL MALİYYƏ ALƏTLƏRİ VƏ KAPİTAL BAZARLARINDA DAYANIQLI İNVESTİSİYA MODELLƏRİ

Rəsulova RƏSULOVA
İqtisad üzrə fəlsəfə doktoru, Bakı Biznes Universiteti
E-mail: gunayxrasulova@mail.ru
ORCID ID:0000-0001-9372-5155

Xülasə

Müasir dövrdə iqlim dəyişiklikləri, ekoloji risklərin artması və dayanıqlı inkişaf tələbləri maliyyə sistemində yeni yanaşmaların formalaşmasını zəruri etmişdir. Bu baxımdan yaşıl maliyyə alətləri kapital bazarlarında dayanıqlı investisiya modellərinin inkişafında mühüm rol oynayır. Məqalədə yaşıl istiqrazlar, yaşıl kreditlər, ESG əsaslı investisiya portfelləri, karbon bazarları və sosial istiqrazlar kimi yaşıl maliyyə alətlərinin kapital bazarlarına təsiri araşdırılmışdır. Tədqiqat çərçivəsində beynəlxalq təcrübə və nəzəri yanaşmalar müqayisəli şəkildə təhlil edilmiş, yaşıl maliyyə mexanizmlərinin maliyyə sabitliyinə və risklərin idarə olunmasına təsiri qiymətləndirilmişdir. Araşdırmanın nəticələri göstərir ki, yaşıl maliyyə alətləri uzunmüddətli investisiya davranışının formalaşmasına, kapital axınlarının məsuliyyətli istiqamətlərə yönəldilməsinə və dayanıqlı iqtisadi inkişafın təmin olunmasına əhəmiyyətli töhfə verir. Eyni zamanda, məqalədə Azərbaycanın yaşıl maliyyə potensialı və bu sahədə mövcud institusional imkanlar ümumiləşdirilmişdir.

Açar sözlər: yaşıl maliyyə, kapital bazarları, dayanıqlı investisiya, ESG standartları, yaşıl istiqrazlar

GİRİŞ

Müasir dövrdə qlobal iqtisadi inkişaf prosesləri ekoloji risklərin artması, iqlim dəyişikliklərinin dərinləşməsi və sosial məsuliyyət tələblərinin güclənməsi ilə müşayiət olunur. Uzun müddət ərzində iqtisadi artım əsasən qısamüddətli maliyyə gəlirliliyi prinsipləri üzərində qurulsa da, bu yanaşma təbii resursların tükənməsinə və ekoloji tarazlığın pozulmasına səbəb olmuşdur. Nəticədə dayanıqlı inkişaf konsepsiyası maliyyə və iqtisadi siyasətin əsas istiqamətlərindən birinə çevrilmişdir.

Bu kontekstdə maliyyə sisteminin rolu xüsusi əhəmiyyət kəsb edir. Maliyyə bazarları vasitəsilə kapitalın hansı sahələrə və hansı məqsədlərlə yönəldilməsi iqtisadiyyatın uzunmüddətli inkişaf trayektoriyasını müəyyən edir. Əgər investisiya qərarları ekoloji və sosial riskləri nəzərə almadan qəbul edilərsə, bu, gələcəkdə həm maliyyə sabitliyi, həm də iqtisadi təhlükəsizlik üçün ciddi problemlər yarada bilər. Buna görə də kapital bazarlarında məsuliyyətli və dayanıqlı investisiya modellərinin formalaşdırılması zəruri hesab olunur.

Yaşıl maliyyə anlayışı məhz bu ehtiyacdan irəli gələrək maliyyə resurslarının ekoloji təhlükəsiz, sosial cəhətdən faydalı və uzunmüddətli iqtisadi dəyər yaradan layihələrə yönəldilməsini nəzərdə tutur. Yaşıl istiqrazlar, yaşıl kreditlər, ESG əsaslı investisiya portfelləri, karbon bazarları və sosial istiqrazlar bu yanaşmanın əsas maliyyə alətləri kimi çıxış edir. Bu alətlər investorlar üçün risklərin azaldılmasına, şəffaflığın artırılmasına və uzunmüddətli maliyyə sabitliyinin təmin olunmasına imkan yaradır.

Kapital bazarlarında yaşıl maliyyə alətlərinin tətbiqi investisiya davranışlarında keyfiyyət dəyişikliyinə səbəb olur. Investorlar artıq yalnız maliyyə gəlirliliyini deyil, eyni zamanda layihələrin ekoloji təsirini, sosial faydasını və institusional idarəetmə keyfiyyətini də qiymətləndirirlər. Bu isə bazar mexanizmlərinin daha balanslı və davamlı şəkildə fəaliyyət göstərməsinə şərait yaradır.

Azərbaycan üçün yaşıl maliyyə və dayanıqlı investisiya modellərinin inkişafı xüsusi aktuallıq daşıyır. Ölkənin iqtisadi siyasətində qeyri-neft sektorunun genişləndirilməsi, bərpa olunan enerji mənbələrinin təşviqi və ekoloji tarazlığın qorunması əsas prioritetlər sırasında yer alır. Bu baxımdan yaşıl maliyyə

alətlərinin kapital bazarlarına inteqrasiyası həm milli iqtisadi inkişaf məqsədlərinə, həm də beynəlxalq dayanıqlı inkişaf təşəbbüslərinə uyğun hesab olunur.

Bu məqalənin məqsədi yaşıl maliyyə alətlərinin kapital bazarlarında dayanıqlı investisiya modellərinin formalaşmasına təsirini təhlil etmək, beynəlxalq təcrübəni ümumiləşdirmək və Azərbaycanın mövcud iqtisadi şəraiti baxımından bu alətlərin tətbiq imkanlarını qiymətləndirməkdən ibarətdir.

MATERİALLAR VƏ METODLAR

Bu tədqiqat yaşıl maliyyə alətlərinin kapital bazarlarında dayanıqlı investisiya modellərinin formalaşmasına təsirinin araşdırılmasına həsr edilmişdir. Tədqiqatın metodoloji əsasını dayanıqlı inkişaf konsepsiyası, yaşıl iqtisadiyyat yanaşmaları və müasir maliyyə nəzəriyyələri təşkil edir. Mövzunun kompleks xarakterini nəzərə alaraq araşdırmada həm nəzəri, həm də analitik tədqiqat metodlarından istifadə olunmuşdur.

Tədqiqat prosesində istifadə olunan materiallar yaşıl maliyyə, ESG standartları, dayanıqlı investisiya və kapital bazarlarının inkişafı üzrə elmi məqalələr, beynəlxalq maliyyə institutlarının hesabatları, eləcə də normativ-hüquqi sənədlərdən ibarətdir. Bundan əlavə, müxtəlif ölkələrin yaşıl maliyyə alətlərinin tətbiqi üzrə təcrübələri araşdırılaraq müqayisəli təhlilə cəlb edilmişdir. Bu yanaşma yaşıl maliyyə mexanizmlərinin effektivliyinin daha obyektiv qiymətləndirilməsinə imkan vermişdir **(Aliyev L. 2021).**

Metodoloji baxımdan tədqiqatda müqayisəli təhlil metodu əsas yer tutur. Bu metod vasitəsilə yaşıl istiqrazlar, yaşıl kreditlər, ESG əsaslı investisiya portfelləri, karbon bazarları və sosial istiqrazlar kimi yaşıl maliyyə alətlərinin funksional xüsusiyyətləri, tətbiq sahələri və kapital bazarlarına təsir istiqamətləri müqayisəli şəkildə araşdırılmışdır. Müxtəlif iqtisadi mühitlərdə bu alətlərin fəaliyyəti təhlil edilərək onların üstün və məhdud cəhətləri müəyyən edilmişdir.

Araşdırmada məzmun analizi metodundan da istifadə olunmuşdur. Bu metod çərçivəsində elmi ədəbiyyat və analitik hesabatlarda yaşıl maliyyə anlayışının şərhi, əsas inkişaf tendensiyaları və mövcud problemlər sistemləşdirilmişdir. Məzmun analizi nəticəsində yaşıl maliyyə alətlərinin maliyyə sabitliyinə, risklərin idarə olunmasına və investisiya davranışlarına təsiri ilə bağlı ümumi qanunauyğunluqlar müəyyən edilmişdir **(Babayev E. 2020; Həsənov F. 2022).**

Bununla yanaşı, sistemli yanaşma metodu tətbiq edilərək yaşıl maliyyə alətləri kapital bazarlarının ayrı-ayrı elementləri kimi deyil, bütöv maliyyə sisteminin tərkib hissəsi kimi qiymətləndirilmişdir. Bu yanaşma yaşıl maliyyə mexanizmləri ilə makroiqtisadi sabitlik, maliyyə bazarlarının dərinliyi və uzunmüddətli iqtisadi inkişaf arasında qarşılıqlı əlaqələrin təhlilinə imkan yaratmışdır.

Tədqiqatın yekun mərhələsində əldə olunan nəticələr analitik ümumiləşdirmə və induktiv nəticə çıxarma metodları əsasında sistemləşdirilmişdir. Beynəlxalq təcrübənin Azərbaycan iqtisadiyyatının xüsusiyyətləri ilə uzlaşdırılması yolu ilə yaşıl maliyyə alətlərinin ölkə üçün tətbiq imkanları və perspektivləri qiymətləndirilmişdir.

ƏLAVƏ MƏLUMATLAR

Aparılmış tədqiqatın nəticələri göstərir ki, yaşıl maliyyə alətləri kapital bazarlarında dayanıqlı investisiya modellərinin formalaşmasına əhəmiyyətli dərəcədə təsir göstərir. Müqayisəli və sistemli təhlil əsasında müəyyən edilmişdir ki, bu alətlərin tətbiqi maliyyə bazarlarında uzunmüddətli investisiya davranışını gücləndirir, risklərin idarə olunmasını təkmilləşdirir və kapital axınlarının daha məsuliyyətli istiqamətlərə yönəldilməsinə şərait yaradır.

Tədqiqat nəticələrinə əsasən, yaşıl istiqrazlar kapital bazarlarında ekoloji yönümlü layihələrin maliyyələşdirilməsi üçün ən effektiv alətlərdən biri kimi çıxış edir. Bu alətlər vasitəsilə cəlb olunan maliyyə resursları uzunmüddətli və sabit investisiya mənbəyi formalaşdırır, investorlar üçün şəffaflıq

və etibarlılıq səviyyəsini artırır. Nəticədə yaşıl istiqrazlar kapital bazarlarının dərinləşməsinə və maliyyə sabitliyinin möhkəmləndirilməsinə müsbət təsir göstərir.

Araşdırma yaşıl kreditlərin bank sektorunda risklərin azaldılması baxımından mühüm rol oynadığını ortaya qoyur. Yaşıl kreditlər enerji səmərəliliyi və bərpa olunan enerji layihələrinin maliyyələşdirilməsinə yönəldildiyindən kredit portfellərinin strukturunu daha dayanıqlı hala gətirir və uzunmüddətli perspektivdə maliyyə institutlarının risk profilini yaxşılaşdırır **(Azərbaycan Respublikasının Mərkəzi Bankı 2022).**

ESG əsaslı investisiya portfellərinin təhlili göstərir ki, bu portfellər bazar dəyişkənliyinə qarşı daha davamlıdır. ESG meyarlarının tətbiqi nəticəsində şirkətlərin korporativ idarəetmə səviyyəsi yüksəlir, informasiya açıqlığı genişlənir və investisiya qərarlarının keyfiyyəti artır. Bu amillər kapital bazarlarında dayanıqlı investisiya mühitinin formalaşmasına xidmət edir.

Karbon bazarlarının nəticələri göstərir ki, emissiya ticarəti mexanizmləri ekoloji risklərin maliyyə dəyəri ilə ifadə olunmasına imkan yaradır. Bu mexanizm bazar iştirakçılarını emissiyaların azaldılmasına təşviq edir və ekoloji məsuliyyətin iqtisadi mexanizmlərlə tənzimlənməsini təmin edir. Sosial istiqrazlar isə kapital bazarlarında inklüziv investisiya mühitinin formalaşmasına töhfə verərək yaşıl maliyyə ekosistemini tamamlayır.

Cədvəl 1. Yaşıl maliyyə alətlərinin kapital bazarlarına təsiri

Yaşıl maliyyə aləti	Əsas məqsəd	Kapital bazarına təsiri	Dayanıqlılıq səviyyəsi
Yaşıl istiqrazlar	Ekoloji layihələrin maliyyələşdirilməsi	Uzunmüddətli investorların cəlbi	Yüksək
Yaşıl kreditlər	Enerji səmərəliliyi və RES	Kredit risklərinin azalması	Orta
ESG portfelləri	Risklərin optimallaşdırılması	Bazar sabitliyinin güclənməsi	Yüksək
Karbon bazarları	Emissiyaların azaldılması	Qiymət siqnallarının formalaşması	Orta–yüksək
Sosial istiqrazlar	Sosial layihələrin dəstəklənməsi	İnklüziv investisiya mühiti	Orta

Ümumilikdə, əldə olunan nəticələr sübut edir ki, yaşıl maliyyə alətlərinin kapital bazarlarına inteqrasiyası maliyyə sabitliyinin möhkəmləndirilməsi və uzunmüddətli dayanıqlı iqtisadi inkişafın təmin olunması baxımından strateji əhəmiyyət daşıyır.

Yaşıl maliyyənin nəzəri əsasları və formalaşma mexanizmləri

Yaşıl maliyyə müasir iqtisadi düşüncənin ən dinamik və strateji istiqamətlərindən biri kimi formalaşaraq qlobal kapital axınlarının strukturunu köklü şəkildə dəyişdirmişdir. Ənənəvi maliyyə yanaşması kapitalın hərəkətini əsasən gəlirlilik, likvidlik və risk meyarları ilə ölçürdüsə, yaşıl maliyyə bu çərçivəni genişləndirərək ekoloji təhlükəsizlik, sosial rifah və uzunmüddətli dayanıqlıq kimi kriteriyaları qərar qəbuletmənin ayrılmaz hissəsinə çevirmişdir. Başqa sözlə, yaşıl maliyyə iqtisadi artımın yalnız kvant deyil, həm də keyfiyyət göstəricilərinə əsaslanan yeni mərhələyə keçidini təmin edir.

Bu yanaşmanın nüvəsində iqtisadi fəaliyyətin ekosistemlərə, iqlimə və cəmiyyətin sosial strukturuna təsirinin nəzərə alınması dayanır. İqlim dəyişmələri, ekstremal hava hadisələri, təbii resursların tükənməsi və sosial bərabərsizliyin artması klassik maliyyə nəzəriyyəsinin çatışmazlıqlarını üzə çıxarmış və iqtisadi artımın ekoloji dayanıqlıqdan ayrılmaz olduğunu göstərmişdir **(Scholtens B. 2017;**

UNEP 2021). Nəticədə, yaşıl maliyyə qlobal miqyasda yeni maliyyə mədəniyyəti formalaşdırır: burada kapitalın hərəkəti təkcə qısamüddətli mənfəətə deyil, həm də uzunmüddətli ekoloji və sosial dəyərlərə əsaslanır.

Yaşıl maliyyənin nəzəri əsası dünya iqtisadiyyatında baş verən struktur dəyişikliklərin nəticəsi olaraq formalaşmışdır və üç əsas strateji sütun üzərində qurulur. Bu sütunlar yalnız ekoloji və sosial məqsədləri deyil, həm də iqtisadi sabitlik və uzunmüddətli davamlılıq kimi fundamental dəyərləri özündə birləşdirir. Müasir iqtisadi sistemlərin transformasiyası göstərir ki, yaşıllığa əsaslanmayan maliyyə modeli gələcəkdə həm iqtisadi, həm də ekoloji baxımdan dayanıqlı deyil. Odur ki, yaşıl maliyyənin nəzəri bazası həm siyasətçilər, həm investorlar, həm də akademik mütəxəssislər üçün yol xəritəsi rolunu oynayır.

Birinci sütun – Ekoloji məsuliyyət

Ekoloji məsuliyyət yaşıl maliyyənin mərkəzi və ayrıla bilməz elementidir. Bu prinsipə görə, investisiya layihələri ekosistemlərə mənfi təsiri minimuma endirməli, ətraf mühitin qorunmasını təmin etməli və iqlim dəyişikliklərinə qarşı mübarizəyə töhfə verməlidir. Burada əsas diqqət karbon emissiyalarının azaldılmasına, enerji səmərəliliyinin artırılmasına, alternativ və bərpa olunan enerji mənbələrindən istifadənin genişləndirilməsinə, təbii resursların mühafizəsinə və ekoloji həssas sahələrin qorunmasına yönəlir.

Ekoloji məsuliyyət yalnız bir ekoloji məqsəd kimi deyil, eyni zamanda iqtisadi rasional seçim kimi qəbul edilir. Aşağı karbon iqtisadiyyatına keçid edən şirkətlər gələcəkdə sərtləşdirilmiş ekoloji tənzimləmələrdən, karbon vergilərindən və beynəlxalq bazarların ekoloji standartlarından asılı riskləri azaldırlar. Bu isə həmin şirkətlərin maliyyə sabitliyini gücləndirir və qlobal rəqabətdə üstün mövqeyə çıxmalarını təmin edir. Bir çox beynəlxalq bazarlarda ekoloji kriteriyalara cavab verməyən şirkətlər üçün ixrac, maliyyələşmə və investor cəlbi imkanları məhdudlaşır. Buna görə də ekoloji məsuliyyət yaşıl maliyyənin yalnız nəzəri prinsipi deyil, həm də iqtisadiyyatın real rəqabət strategiyasına çevrilmişdir.

İkinci sütun – Sosial fayda

Yaşıl maliyyə modeli sosial komponenti nəzərə almadan tam ola bilməz. Sosial fayda prinsipinə görə, maliyyələşdirilən layihələr yalnız ekoloji təsir yaratmaqla kifayətlənməməli, həm də insanların həyat səviyyəsinin yaxşılaşdırılmasına, sosial rifahın yüksəldilməsinə, məşğulluğun artırılmasına və sosial inklüzivliyin təmin edilməsinə xidmət etməlidir. Bu konsepsiya BMT-nin Dayanıqlı İnkişaf Məqsədlərinin sosial istiqamətləri ilə sıx bağlıdır.

Sosial fayda güclü olan layihələr daha yüksək ictimai dəstək qazanır, regionların sosial inkişafına töhfə verir və sosial riskləri azaldır. Məsələn, ekoloji nəqliyyat sistemlərinin qurulması həm emissiyaları azaldır, həm də əhalinin rahatlığını artırır; enerji səmərəliliyi layihələri təkcə ekoloji yükü azaltmır, həm də ailələrin enerji xərclərini aşağı salır; bərpa olunan enerji sahəsində yaradılan yeni iş yerləri isə regional iqtisadi inkişafı dəstəkləyir.

Sosial komponent gücləndikcə layihələrin davamlılığı və uzunmüddətli uğur ehtimalı artır. Bu səbəbdən artıq beynəlxalq maliyyə institutları layihələrin təsdiqi zamanı yalnız iqtisadi göstəricilərə deyil, həm də sosial təsirlərə xüsusi diqqət ayırır. Beləliklə, sosial fayda yaşıl maliyyənin ayrılmaz və strateji elementidir **(Scholtens B. 2017).**

Üçüncü sütun – İqtisadi dayanıqlıq

Yaşıl maliyyənin üçüncü və məzmun baxımından həlledici istiqaməti iqtisadi dayanıqlıqdır. İqtisadi dayanıqlıq yalnız iqtisadi artımın təmin edilməsini deyil, həm də bu artımın uzunmüddətli, riskə davamlı və resurs səmərəli şəkildə həyata keçirilməsini nəzərdə tutur. Yaşıl maliyyə iqtisadi sistemləri qlobal

şoklara, enerji qiymətlərində dəyişikliklərə, iqlim təsirlərinə, geopolitik risklərə və bazar qeyri-müəyyənliklərinə qarşı daha dözümlü edir **(Dünya Bankı 2020)**.

Yaşıl texnologiyalara yönələn investisiyalar iqtisadiyyatın innovasiya potensialını artırır, yeni istehsal sahələri yaradır, enerji asılılığını azaldır və qeyri-neft sektorunun diversifikasiyasına töhfə verir. Bir çox ölkələrdə yaşıl iqtisadiyyat yeni iş yerlərinin yaradılması, yüksək texnologiyalı istehsal sahələrinin inkişafı və ixrac potensialının artırılması baxımından əsas iqtisadi prioritetə çevrilmişdir. Bu, yaşıl maliyyənin təkcə ekoloji konsepsiya deyil, həm də uzunmüddətli rəqabətqabiliyyətli iqtisadi model olduğunu göstərir.

Eyni zamanda iqtisadi dayanıqlıq maliyyə sabitliyinin qorunmasını, risklərin mənbədən idarə olunmasını və kapitalın optimal şəkildə bölüşdürülməsini nəzərdə tutur. Bu modeldə iqtisadiyyat ani mənfəət naminə deyil, uzunmüddətli sabitlik, davamlı gəlirlilik və geniş sosial fayda əsasında idarə olunur.

Beləliklə, yaşıl maliyyənin nəzəri çərçivəsini təşkil edən bu üç əsas sütun — **ekoloji məsuliyyət**, **sosial fayda** və **iqtisadi dayanıqlıq** — birlikdə dayanıqlı maliyyənin qlobal konseptual əsasını yaradır. Bu model təkcə ekoloji layihələrin maliyyələşdirilməsi ilə məhdudlaşmır; o, müasir iqtisadi sistemlərin struktur transformasiyasını təmin edən çoxölçülü və kompleks inkişaf fəlsəfəsidir. Yaşıl maliyyə gələcək iqtisadi strategiyaların formalaşdırılmasında həlledici rol oynayacaq və dövlətlərin, şirkətlərin, investorların davranış modelini köklü şəkildə dəyişdirəcək.

Ekoloji dəyərlərin maliyyə qərarlarına inteqrasiyası müasir iqtisadi sistemin transformasiyasının mərkəzi komponentlərindən birinə çevrilmişdir. Qlobal iqlim dəyişikliyi nəticəsində artan ekstremal hava hadisələri, kurqaqlaşma və səhralaşma, su ehtiyatlarının azalması, atmosfer çirklənməsinin güclənməsi, dəniz səviyyəsinin qalxması kimi proseslər iqtisadiyyatın bütün sektorlarına təsir edən fundamental risklərin meydana çıxmasına səbəb olmuşdur. Bu dəyişikliklər təkcə ekoloji deyil, həm də maliyyə və makroiqtisadi sabitlik üçün ciddi təhdidlər yaradır. Belə şəraitdə maliyyə qərarlarının yalnız mənfəətlilik və risk–gəlir balansı əsasında deyil, həm də ekoloji nəticələr əsasında formalaşdırılması qaçılmaz tələbə çevrilmişdir. Bu yanaşma yaşıl maliyyə sisteminin əsas dayaqlarından biri olmaqla qlobal investisiya davranışlarını, dövlət tənzimləmələrini və korporativ idarəetmə modellərini köklü şəkildə dəyişdirir.

Ekoloji risklərin maliyyə nəticələrinin artması investorların qərarvermə mexanizmini də əsaslı şəkildə dəyişmişdir. Əvvəllər investor davranışı əsasən gəlirlik və likvidlik kimi parametrlərə əsaslanırdısa, indi karbon emissiyası, enerji səmərəliliyi, su istifadəsi, resursların tükənməsi riski, ekosistemlərin məhvi və təchizat zəncirində ekoloji zərərlərin yaratdığı maliyyə itkiləri də nəzərə alınır. Məsələn, karbon emissiyası yüksək olan müəssisələr yaxın illərdə karbon vergilərinin tətbiqi, emissiya limitlərinin sərtləşdirilməsi və kvota qiymətlərinin yüksəlməsi səbəbindən daha çox maliyyə yükü ilə qarşılaşa bilər. Bu isə belə sahələrə yatırılan kapitalın gələcək gəlirliliyini azaldır və riskləri artırır. Nəticədə investorlar daha aşağı karbon izi ilə fəaliyyət göstərən, resurslardan qənaətli istifadə edən və ekoloji standartlara cavab verən şirkətləri daha etibarlı aktiv kimi qiymətləndirirlər.

Bundan əlavə, ekoloji dəyərlərin maliyyə sisteminə inteqrasiyası makroiqtisadi səviyyədə iqtisadi siyasətin yeni istiqamətlərini müəyyən edir. Dövlətlər ekoloji vergi islahatları, karbon qiymətlandırılması, yaşıl subsidiyalar və davamlı investisiyaların stimullaşdırılması kimi mexanizmlər vasitəsilə bazarın davranışlarını yönləndirir. Bu tənzimləmələr həm ekoloji məqsədlərə nail olmağa, həm də iqtisadiyyatın struktur dəyişikliklərini sürətləndirməyə xidmət edir. Beləliklə, maliyyə sistemi ekoloji təhlükələrin idarə olunmasında əsas strateji alətə çevrilir.

Nəticə olaraq, ekoloji dəyərlərin maliyyə qərarlarına inteqrasiyası qlobal iqtisadi sistemdə dönüş nöqtəsi yaratmışdır. Bu proses kapitalın təhlükəli sahələrdən dayanıqlı sektorlara keçidini sürətləndirir, şirkətlərin idarəetmə və istehsal modellərini yeniləyir, maliyyə bazarlarında daha şəffaf və məsuliyyətli mühit formalaşdırır. Ekoloji meyarların maliyyə sisteminə daxil edilməsi həm iqtisadi artımın

keyfiyyətini yüksəldir, həm də planetin ekoloji təhlükəsizliyinin qorunmasına xidmət edir. Bu inteqrasiya gələcək onilliklərdə maliyyə sisteminin əsas meyarlarından biri olaraq qalacaq və dünya iqtisadiyyatının yeni inkişaf paradigmasını formalaşdıracaq **(UNEP 2021).**

Yaşıl maliyyə alətlərinin növləri müasir kapital bazarlarında dayanıqlı inkişafın təmin olunması üçün əsas mexanizmlərdən birinə çevrilmişdir. Qlobal iqtisadi sistemdə ekoloji risklərin kəskinləşməsi, təbii sərvətlərin sürətlə azalması, enerji təhlükəsizliyi ilə bağlı qarşıya çıxan yeni çağırışlar və sosial bərabərsizliyin dərinləşməsi ənənəvi maliyyə yanaşmalarının kifayət etmədiyini göstərmişdir. Bu səbəbdən kapitalın yalnız iqtisadi səmərəlilik meyarları əsasında idarə olunması modeli öz aktuallığını itirmiş, onun yerini ekoloji və sosial təsiri nəzərə alan dayanıqlı maliyyə mexanizmləri tutmuşdur. Bu kontekstdə yaşıl maliyyə alətləri iqtisadi qərarların formalaşdırılmasında həlledici rol oynayır və yeni maliyyə arxitekturasının ayrılmaz hissəsinə çevrilir.

Yaşıl maliyyə alətləri dövlətlərin iqlim siyasətinin həyata keçirilməsində də mühüm rol oynayır. Paris Sazişi çərçivəsində ölkələrin üzərinə götürdüyü emissiyaların azaldılması öhdəlikləri yaşıl maliyyə mexanizmlərinin tətbiqini zəruri edir. Dövlətlər vergi güzəştləri, subsidiyalar, normativ tənzimləmələr və yaşıl təsnifat sistemləri vasitəsilə yaşıl investisiya mühitini təşviq edir. Bunun nəticəsində yaşıl maliyyə alətləri həm iqtisadiyyatın dekarbonizasiya prosesini sürətləndirir, həm də qlobal iqlim hədəflərinə nail olunmasına töhfə verir.

Eyni zamanda, yaşıl maliyyə alətləri beynəlxalq təşkilatlar tərəfindən də geniş dəstəklənir. Dünya Bankı, Avropa Yenidənqurma və İnkişaf Bankı, Asiya İnkişaf Bankı, Beynəlxalq Maliyyə Korporasiyası və digər qurumlar ölkələrə yaşıl maliyyə mexanizmlərinin tətbiqi üçün həm maliyyə vəsaiti, həm texniki yardım, həm də institusional dəstək göstərirlər. Bu qurumlar yaşıl istiqrazların emissiyası, karbon bazarlarının yaradılması, ekoloji kredit xətlərinin açılması və ESG standartlarının tətbiqi kimi proseslərdə mühüm rol oynayır **(Beynəlxalq Kapital Bazarları Assosiasiyası 2022).**

Özəl sektor da yaşıl maliyyə alətlərindən geniş istifadə edir. Korporativ şirkətlər yaşıl istiqrazlar buraxmaqla yeni maliyyə resursları cəlb edir, banklar yaşıl kredit məhsullarını genişləndirir, investisiya fondları ESG portfellərini formalaşdırır, startaplar isə kütləvi maliyyələşdirmə platformaları vasitəsilə ekoloji innovasiya layihələrini maliyyələşdirirlər. Bu proses biznes sektorunda ekoloji məsuliyyətin yüksəlməsinə və idarəetmədə şəffaflığın artmasına gətirib çıxarır.

Beləliklə, yaşıl maliyyə alətləri müasir iqtisadiyyatın ən mühüm strateji elementlərindən birinə çevrilmişdir. Bu alətlər kapitalın məsuliyyətli istiqamətlərə yönəldilməsini təmin etməklə yanaşı, sosial rifahı dəstəkləyir, ekoloji sabitliyi gücləndirir və iqtisadiyyatın innovativ transformasiyasına şərait yaradır. Yaşıl maliyyə alətlərinin geniş tətbiqi qlobal iqtisadi sistemin daha balanslı, təhlükəsiz və dayanıqlı inkişafını təmin edən əsas mexanizmlərdən biri kimi çıxış edir.

Müasir yaşıl maliyyə alətlərinin başında yaşıl istiqrazlar durur və bu alət qlobal kapital bazarlarında dayanıqlı maliyyələşdirmənin ən geniş yayılmış forması kimi qəbul edilir. Yaşıl istiqrazların əsas üstünlüyü ondan ibarətdir ki, bu istiqrazlardan əldə edilən maliyyə vəsaiti yalnız ekoloji təsiri yüksək olan layihələrin icrasına yönəldilir. Başqa sözlə, yaşıl istiqrazlar həm kapitalın ekoloji dəyəri yüksək olan sahələrə cəlb edilməsinə şərait yaradır, həm də ekologiyaya zərər verməyən iqtisadi fəaliyyətlərin genişlənməsinə dəstək olur. Bu xüsusiyyətlər yaşıl istiqrazları yalnız maliyyə aləti deyil, həm də iqlim dəyişiklikləri ilə mübarizədə qlobal səviyyədə tətbiq olunan mühüm iqtisadi mexanizmə çevirir.

Yaşıl istiqrazlar vasitəsilə maliyyələşdirilən layihələr çoxşaxəli və strateji əhəmiyyətə malikdir. Bu layihələrə bərpa olunan enerji mənbələrinin qurulması, geniş miqyaslı günəş və külək stansiyalarının yaradılması, su infrastrukturunun modernləşdirilməsi və su itkilərinin azaldılması, tullantıların təkrar emalı və dairəvi iqtisadiyyat üzrə müəssisələrin inkişaf etdirilməsi, ekoloji nəqliyyat sistemlərinin genişləndirilməsi, "ağıllı şəhər" konsepsiyası çərçivəsində rəqəmsal enerji idarəetmə sistemlərinin qurulması, enerji səmərəliliyinə yönəlmiş proqramların həyata keçirilməsi və şəhər ekosistemlərinin bərpası kimi istiqamətlər daxildir. Bu layihələr yalnız ekoloji nəticə yaratmır, həm də uzunmüddətli

iqtisadi fayda formalaşdıraraq yeni iş yerlərinin açılmasına, texnoloji modernləşməyə və innovativ sənayelərin inkişafına töhfə verir.

Dünya üzrə yaşıl istiqraz bazarının həcminin artıq **3 trilyon dolları aşması** bu alətə olan marağın son illərdə nə qədər sürətlə artdığını göstərir. Həm inkişaf etmiş, həm də inkişaf etməkdə olan ölkələr yaşıl istiqraz emissiyasına xüsusi önəm verir və iqlim maliyyələşdirməsinin əsas hissəsi məhz bu alət hesabına təmin edilir. BMT-nin Dayanıqlı İnkişaf Məqsədlərinə (SDG) uyğun layihələrin maliyyələşdirilməsində də yaşıl istiqrazlar əsas rol oynayır; bu isə alətin yalnız maliyyə deyil, həm də qlobal inkişaf mexanizmi kimi əhəmiyyətini artırır.

İnvestorların yaşıl istiqrazlara marağının sürətlə artmasının əsas səbəblərindən biri bu alətin **gəlirlilik-risk balansının sabit olmasıdır**. Klassik maliyyə alətlərində risklər bazar dəyişkənliyi, faiz dərəcələri və iqtisadi dövrlərlə əlaqələndirilirdisə, yaşıl istiqrazlarda risklər daha aşağı olur. Çünki ekologiyaya uyğun layihələr gələcək tənzimləmə risklərinə daha az məruz qalır, karbon vergilərinin tətbiqi bu layihələrin maliyyə yükünü artırmır və ekoloji standartlara cavab verən şirkətlər daha yüksək reputasiya və daha stabil fəaliyyət mühiti əldə edir. Bu xüsusiyyətlər investorların uzunmüddətli perspektivdə daha yüksək sabitlik əldə etməsinə imkan yaradır.

Yaşıl istiqrazların populyarlığının digər mühüm səbəbi onların **ekoloji nüfuzunun yüksək olmasıdır**. İnvestorlar artıq təkcə maliyyə gəliri əldə etmək məqsədi güdmür; onlar yatırımlarının ətraf mühitə müsbət təsir göstərməsini də vacib hesab edirlər. Karbon emissiyasının azaldılması, enerji səmərəliliyinin artırılması və resurslardan qənaətli istifadə kimi göstəricilər yaşıl istiqrazları etik investisiya kateqoriyasına daxil edir. Bu xüsusiyyət xüsusilə ESG tələblərinə ciddi riayət edən qlobal fondlar və institusional investorlar üçün mühüm rol oynayır **(Qlobal Dayanıqlı İnvestisiya Alyansı 2022).**

Eyni zamanda yaşıl istiqrazlar dövlət büdcəsinin yükünü azaltmaq və iqtisadiyyatın yaşıl transformasiyasını sürətləndirmək baxımından vacib vasitədir. İnfrastruktur layihələrinin böyük maliyyə həcmi tələb etdiyi nəzərə alınarsa, yaşıl istiqrazlar dövlət və özəl sektor üçün alternativ, daha əlçatan və daha ucuz bir maliyyələşdirmə mənbəyi yaradır. Bu imkan həm inkişaf etmiş, həm də inkişaf etməkdə olan ölkələr üçün əhəmiyyətlidir.

Beləliklə, yaşıl istiqrazlar yalnız ekoloji layihələrin maliyyələşdirilməsi üçün istifadə edilən maliyyə aləti deyil, həm də qlobal iqtisadiyyatın yaşıl dayaqlar üzərində yenidən qurulmasına xidmət edən strateji mexanizmdir. Bu alət həm ekosistemlərə müsbət təsir yaradır, həm investorlar üçün stabil gəlir təmin edir, həm də dövlətlərin iqlim hədəflərinə çatmasını mümkün edir. Bu xüsusiyyətlər yaşıl istiqrazları gələcək maliyyə arxitekturasının əsas sütunlarından birinə çevirir.

Bank sektorunda geniş yayılan digər mühüm yaşıl maliyyə mexanizmi yaşıl kreditlərdir. Yaşıl kreditlər ənənəvi kredit məhsullarından məqsəd, şərt, risk yanaşması və qiymətləndirmə meyarlarına görə fərqlənən xüsusi maliyyələşdirmə alətidir. Bu kreditlərin əsas mahiyyəti ondan ibarətdir ki, banklar yalnız ekoloji təsiri müsbət olan layihələrə maliyyə dəstəyi göstərir və kredit şərtləri də bu məqsədlərə uyğun şəkildə formalaşdırılır. Bu şərtlərə aşağı faiz dərəcələri, daha uzun müddətli ödəmə qrafiki, güzəştli dövr imkanları, risklərin ekoloji meyarlara uyğun qiymətləndirilməsi və daha elastik maliyyə mexanizmləri daxildir. Bu xüsusiyyətlər yaşıl kreditləri həm banklar, həm də borcalanlar üçün cəlbedici edir və dayanıqlı iqtisadiyyatın maliyyələşdirilməsində mühüm rol oynayır.

Yaşıl kreditlər enerji səmərəliliyinin artırılması və resurslardan qənaətli istifadəni təşviq edən layihələrdə geniş tətbiq olunur. Enerji səmərəliliyi texnologiyalarının tətbiqi — məsələn, binaların istilik izolyasiyasının gücləndirilməsi, LED işıqlandırma sistemlərinə keçid, sənaye müəssisələrində enerji qənaətli avadanlıqların quraşdırılması — bu kreditlərin əsas hədəf sahələrindən biridir. Bu tip layihələr həm müəssisələrin enerji sərfiyyatını azaldır, həm də ekoloji yükü minimuma endirir. Eyni zamanda bərpa olunan enerji sistemlərinin quraşdırılması, o cümlədən günəş panelləri, külək turbinləri, geotermal

sistemlər və bioenerji texnologiyaları üçün verilən kreditlər də bankların yaşıl portfellərinin əsas hissəsini təşkil edir **(Avropa Komissiyası 2021).**

Yaşıl kreditlərin əsas üstünlüyü ondan ibarətdir ki, onlar eyni zamanda iki hədəfə xidmət edir: bir tərəfdən, müəssisələrin əməliyyat xərclərini azaldaraq iqtisadi effektivliyi artırır, digər tərəfdən isə ekoloji riskləri azaldaraq ümumi iqtisadi sistemin dayanıqlığını gücləndirir. Bu kreditlər vasitəsilə maliyyələşdirilən layihələr qlobal iqlim dəyişiklikləri ilə mübarizəyə, ölkələrin karbon emissiyalarının azalmasına, enerji təhlükəsizliyinin güclənməsinə və ətraf mühitin qorunmasına mühüm töhfə verir.

Bank sektoru üçün yaşıl kreditlərin verilməsi həm də risklərin daha dəqiq qiymətləndirilməsinə imkan yaradır. Ənənəvi kredit portfellərində risklər əsasən maliyyə göstəricilərinə əsaslanırdısa, yaşıl kreditlərdə risklər ekoloji meyarlar üzrə də təhlil edilir. Bu isə banklara borcalanın uzunmüddətli davamlılıq səviyyəsini, ekoloji məsuliyyətini və iqlim risklərinə adaptasiya qabiliyyətini daha real qiymətləndirməyə şərait yaradır. Nəticədə yaşıl kredit portfelləri banklar üçün daha sabit və daha az riskli aktivlər formalaşdırır.

Beynəlxalq maliyyə qurumları ilə əməkdaşlıq da yaşıl kreditlərin genişlənməsində həlledici rol oynayır. Avropa Yenidənqurma və İnkişaf Bankı (EBRD), Asiya İnkişaf Bankı (AİB), Dünya Bankı, Beynəlxalq Maliyyə Korporasiyası (IFC) kimi qurumlar Azərbaycan da daxil olmaqla bir çox ölkələrdə banklara xüsusi "yaşıl kredit xəttləri" təqdim edir. Bu proqramlar banklara həm aşağı faizli resurslar, həm də yaşıl layihələrin qiymətləndirilməsi üçün texniki ekspertiza təmin edir. Bu əməkdaşlıq bank sektorunda ekoloji standartların tətbiqini sürətləndirir və yaşıl maliyyənin institusional əsaslarını gücləndirir.

Beləliklə, yaşıl kreditlər təkcə maliyyə aləti deyil, həm də iqtisadiyyatın ekoloji transformasiyasını dəstəkləyən strateji mexanizmdir. Bu kreditlərin genişləndirilməsi ölkənin enerji təhlükəsizliyinə, resurslardan səmərəli istifadə siyasətinə, ekoloji sabitlik strategiyasına və ümumi dayanıqlı inkişaf modelinə mühüm töhfə verir. Yaşıl kredit portfellərinin artması bank sektorunu daha məsuliyyətli, innovativ və uzunmüddətli risklərə davamlı maliyyə vasitəçisinə çevirir.

Dayanıqlı investisiya fəlsəfəsinin daha dərindən tətbiqi qlobal maliyyə bazarlarında ESG meyarlarına əsaslanan investisiya portfellərinin geniş yayılması ilə müşahidə olunur. ESG — Environmental (Ekoloji), Social (Sosial) və Governance (İdarəetmə) meyarlarını özündə birləşdirən inteqrativ yanaşmadır və bu model investisiya qərarlarının yalnız maliyyə nəticələri əsasında deyil, həm də ekoloji, sosial və institusional göstəricilər əsasında qiymətləndirilməsini təmin edir. Müasir kapital bazarlarında ESG portfelləri artıq alternativ investisiya forması deyil, qlobal maliyyə sisteminin əsas norması kimi qəbul olunur.

Bu portfellərin xüsusiyyəti ondan ibarətdir ki, daxil edilən şirkətlər ciddi ekoloji standartlara əməl etməli, sosial məsuliyyət siyasətləri həyata keçirməli və idarəetmədə yüksək şəffaflıq nümayiş etdirməlidir. Şirkətlərin karbon emissiyasının həcmi, enerji səmərəliliyi, təbii resurslardan istifadə effektivliyi, əmək hüquqlarının qorunması, gender bərabərliyi siyasətləri, işçi rifahı proqramları, həmçinin idarəetmə strukturunun etibarlılığı və korrupsiya risklərinin minimum olması ESG portfellərinin formalaşmasında əsas göstəricilərdir. Nəticədə bu portfellərdə yer alan şirkətlər həm reputasiya baxımından, həm də uzunmüddətli risklərin idarə edilməsi baxımından digər şirkətlərdən daha üstün mövqedə olur.

ESG portfellərinin geniş yayılmasının əsas səbəblərindən biri risklərin daha obyektiv qiymətləndirilməsinə imkan verməsidir. Ənənəvi investisiya yanaşmalarında risklər əsasən bazar dəyişkənliyi, likvidlik və maliyyə borcları əsasında dəyərləndirilsə də, artıq ekoloji və sosial risklərin də şirkətin gələcək maliyyə dayanıqlığına ciddi təsir göstərdiyi sübut edilmişdir. Məsələn, karbon emissiyası yüksək olan şirkətlər yaxın gələcəkdə karbon vergilərinin artırılması ilə qarşılaşa bilər, ekoloji standartlara əməl etməyən müəssisələr ciddi cərimələr ödəməli ola bilər, zəif idarəetmə strukturu olan şirkətlər isə reputasiya böhranı yaşaya bilər. ESG göstəriciləri yüksək olan şirkətlər isə həm ekoloji tənzimləmələrə daha yaxşı adaptasiya olur, həm də bazar şoklarına qarşı daha dözümlü davranır.

ESG portfellərinin genişlənməsi şirkətlərin daxili strategiyalarına da ciddi təsir göstərir. Şirkətlər daha çox sosial məsuliyyət layihələri həyata keçirir, karbon neytrallığı öhdəlikləri götürür, gender bərabərliyi siyasətlərini genişləndirir, işçilərin rifahını artıran tədbirləri gücləndirir və idarəetmədə şəffaflıq səviyyəsini yüksəldirlər. Bu davranış dəyişiklikləri təkcə investorları cəlb etmir, eyni zamanda şirkətlərin qlobal bazarlarda rəqabət üstünlüyü qazanmasına səbəb olur. ESG uyğun şirkətlərin səhmlərinin dəyişkənliyi daha aşağı olur, kapitallaşma sürəti daha stabil olur, investisiya axınları isə daha etibarlı şəkildə formalaşır.

Son illərin statistik göstəriciləri ESG bazarının sürətlə genişləndiyini təsdiq edir. Qlobal aktiv idarəetmə şirkətlərinin 70–80%-ə yaxını artıq ESG meyarlarını portfel formalaşdırma prosesinə daxil etmişdir. Bu tendensiya önümüzdəki illərdə daha da güclənəcək, çünki həm dövlətlər, həm beynəlxalq təşkilatlar, həm də maliyyə institutları ESG hesabatlılığını məcburi tələblərə çevirir. Beləliklə, ESG portfelləri dayanıqlı investisiya fəlsəfəsinin yalnız bir elementini deyil, bütövlükdə yeni qlobal maliyyə arxitekturasının əsasını təşkil edir.

Yaşıl maliyyənin inkişaf etdirilməsində karbon bazarları və emissiya ticarəti sistemi müasir ekoloji iqtisadiyyatın ən mühüm komponentlərindən birinə çevrilmişdir. Bu mexanizm iqlim dəyişikliyi ilə mübarizədə bazar əsaslı alətlərin tətbiqini təmin edir və müəssisələrin fəaliyyətini ekoloji hədəflərə uyğunlaşdırmaq üçün güclü stimullar yaradır. Karbon bazarlarının əsas mahiyyəti ondan ibarətdir ki, dövlət və ya beynəlxalq qurumlar tərəfindən müəssisələrə müəyyən həcmdə karbon emissiyası üçün icazə — yəni kvota — ayrılır. Bu kvotalar iqtisadi dəyərə malik olduğundan bazarda sərbəst şəkildə alınıb-satıla bilir. Beləliklə, karbon emissiyasına dair öhdəliklər təkcə normativ tələblər deyil, həm də maliyyə dəyəri olan ticarət predmeti kimi formalaşır.

Karbon bazarının digər üstün xüsusiyyəti ekoloji siyasətin iqtisadi əsaslarla tətbiq edilməsinə imkan yaratmasıdır. Əgər ənənəvi tənzimləmə modelləri şirkətlərə sadəcə məhdudiyyət qoyurdusa, karbon ticarəti sistemi onlara qərar azadlığı verir: emissiyanı azaltmaq və ya əlavə kvota almaq. Bu yanaşma rəqabət əsaslı mühit formalaşdırır və müəssisələrin öz ekoloji strategiyalarını daha səmərəli qurmasına şərait yaradır. Ətraf mühitə daha az zərər vuran şirkətlər bazarda həm iqtisadi, həm də reputasiya üstünlüyü əldə edirlər.

Son illər karbon bazarlarında rəqəmsal texnologiyaların tətbiqi də genişlənmişdir. Blokçeyn əsaslı karbon ticarəti platformaları emissiya məlumatlarının şəffaflığını artırır, kvotaların izlenməsini asanlaşdırır və manipulyasiya risklərini aradan qaldırır. Bu, karbon bazarının daha etibarlı, çevik və inklüziv mexanizmə çevrilməsinə imkan verir. Eyni zamanda süni intellekt texnologiyaları müəssisələrin emissiya tendensiyalarını proqnozlaşdırmaq, risk səviyyəsini hesablamaq və enerji səmərəliliyi üzrə optimal həlləri müəyyənləşdirmək üçün geniş şəkildə tətbiq olunur.

Karbon bazarlarının inkişafı müəssisələrin strategiyalarında da ciddi dəyişikliklərə səbəb olmuşdur. Artıq bir çox şirkətlər öz karbon izini azaltmaq üçün uzunmüddətli hədəflər müəyyənləşdirir, karbon neytrallığı strategiyaları qəbul edir və emissiya azaldıcı texnologiyalara böyük sərmayələr yatırırlar. Bu proses yalnız ekoloji məsuliyyətin artmasına deyil, həm də istehsal xərclərinin azalmasına, brend nüfuzunun yüksəlməsinə və qlobal bazarlarda daha əlverişli mövqeyin əldə edilməsinə zəmin yaradır.

Nəticə olaraq, karbon bazarları və emissiya ticarəti sistemi yaşıl iqtisadiyyatın formalaşmasında strateji əhəmiyyət daşıyan mexanizmdir. Bu alət həm dövlətlərin iqlim siyasətlərinin icrasını gücləndirir, həm şirkətləri ekoloji innovasiyalara yönəldir, həm də qlobal maliyyə sistemində dayanıqlı investisiya imkanlarını genişləndirir. Karbon ticarəti yalnız ekoloji tənzimləmə vasitəsi deyil, bazar iqtisadiyyatı ilə ekoloji məqsədləri uzlaşdıran ən müasir mexanizmlərdən biri kimi çıxış edir və yaşıl maliyyənin qlobal miqyasda inkişafına mühüm töhfə verir.

Sosial və davamlılıq istiqrazları yaşıl maliyyə sisteminin mühüm və strateji elementlərindən biri hesab olunur və qlobal maliyyə arxitekturasında artan rol oynayır. Bu istiqrazlar ekoloji məqsədlərlə yanaşı, sosial rifahı dəstəkləyən genişmiqyaslı layihələrin maliyyələşdirilməsini təmin edən maliyyə alətləri

kimi formalaşıb. Əsas prinsip ondan ibarətdir ki, istiqrazlardan toplanan vəsait cəmiyyətin daha həssas təbəqələrinin ehtiyaclarını qarşılamaq, sosial infrastrukturun modernləşdirilməsini sürətləndirmək və icmaların yaşayış səviyyəsini yüksəltmək üçün istifadə olunur. Bu xüsusiyyət onları təkcə maliyyə aləti deyil, həm də sosial siyasətin həyata keçirilməsi üçün innovativ mexanizmə çevirir.

Bu istiqrazların maliyyələşdirdiyi layihələr son dərəcə müxtəlif ola bilər. Sosial mənzillərin tikintisi aşağı gəlirli ailələrin yaşayış şəraitinin yaxşılaşdırılmasına, urbanizasiya prosesinin idarə edilməsinə və regionlarda sosial bərabərliyin təmin olunmasına mühüm töhfə verir. Təmiz suya çıxışın genişləndirilməsi və içməli su infrastrukturunun qurulması əhali sağlamlığının yüksəldilməsi, su çatışmazlığının aradan qaldırılması və sosial dayanıqlığın möhkəmləndirilməsi baxımından strateji əhəmiyyət daşıyır. Həmçinin səhiyyə və təhsil infrastrukturunun yenilənməsi sosial kapitalın formalaşmasını təmin edir, ölkələrin uzunmüddətli inkişaf potensialını artırır və insan kapitalının keyfiyyətcə yaxşılaşmasına şərait yaradır.

Sosial istiqrazların mühüm tətbiq istiqamətlərindən biri də əlilliyi olan şəxslər üçün müasir infrastruktur layihələrinin maliyyələşdirilməsidir. Bu sahəyə qoyulan investisiyalar inklüziv cəmiyyətin qurulmasına töhfə verir, əhalinin bütün təbəqələrinin sosial həyata bərabər inteqrasiyasını təmin edir və bu kateqoriyadan olan insanların iqtisadi fəallığını artırır. Eyni zamanda regionlarda sosial xidmətlərin genişləndirilməsi – yaşlılara xidmət mərkəzlərinin yaradılması, sosial reabilitasiya müəssisələrinin qurulması, uşaq müdafiəsi layihələrinin maliyyələşdirilməsi – sosial müdafiə sisteminin daha stabil və səmərəli fəaliyyətinə şərait yaradır **(Dünya Bankı 2020; Qlobal Dayanıqlı İnvestisiya Alyansı 2022).**

Bu maliyyə alətlərinin qlobal tətbiq təcrübəsi göstərir ki, sosial istiqrazlar həm dövlətlər, həm də beynəlxalq maliyyə qurumları tərəfindən geniş istifadə olunur. Birləşmiş Millətlər Təşkilatının Davamlı İnkişaf Məqsədlərinə (SDG) uyğun layihələrin maliyyələşdirilməsi üçün Dünya Bankı, Avropa İnvestisiya Bankı və digər beynəlxalq təşkilatlar bu istiqrazlardan geniş şəkildə yararlanır. Sosial istiqrazların populyarlığı həm də onların yüksək sosial təsir yaratmaqla yanaşı, investorlar üçün sabit və etibarlı gəlir təmin etməsi ilə bağlıdır. İnvestorlar yüksək reputasiya dəyəri olan sosial təsir aktivlərini portfellərinə daxil etməklə həm sosial məsuliyyət öhdəliklərini yerinə yetirmiş olur, həm də uzunmüddətli riskləri azaldırlar.

Davamlılıq istiqrazları isə sosial və ekoloji komponentləri birləşdirən hibrid maliyyə mexanizmidir. Bu istiqrazlardan toplanan vəsait eyni anda həm ekoloji problemlərin həllinə, həm də sosial rifahın yüksəldilməsinə yönəldilir. Məsələn, enerji səmərəliliyi ilə bağlı layihələr az təminatlı ailələrin kommunal xərclərini azaltmaqla sosial rifaha töhfə verə bilər, yaxud tullantıların təkrar emalı sahəsində yaradılan müəssisələr həm ekoloji təsiri azalda, həm də regionlarda məşğulluğu artıra bilər. Bu xüsusiyyət davamlılıq istiqrazlarını ölkələrin sosial-iqtisadi inkişaf strategiyalarının reallaşması üçün strateji maliyyələşdirmə vasitəsinə çevirir.

Sosial və davamlılıq istiqrazlarının iqtisadi təsiri də kifayət qədər genişdir. Bu istiqrazların emissiyası maliyyə bazarında yeni aktivlər yaradır, kapitalın daha düzgünyönümlü bölgüsünü təmin edir və sosial qayğıya ehtiyacı olan qrupların həyat şəraitinin yaxşılaşdırılması üçün əlavə resurs mənbəyi formalaşdırır. Bundan əlavə, istiqrazların buraxılışı dövlət büdcəsinə təzyiqi azaldır və sosial proqramların icrasını daha çevik və daha şəffaf maliyyə mexanizmi ilə təmin edir.

Beləliklə, sosial və davamlılıq istiqrazları müasir yaşıl maliyyə sisteminin yalnız bir hissəsi deyil, həm də cəmiyyətlərin sosial rifahının yüksəldilməsində, sosial bərabərliyin təmin edilməsində və ekoloji-sosial balansın qorunmasında mühüm rol oynayan strateji alətlərdir. Onların tətbiqi dayanıqlı inkişafın maliyyə təminatının gücləndirilməsinə, sosial müdafiə sisteminin möhkəmlənməsinə və uzunmüddətli iqtisadi sabitliyin təmin olunmasına əhəmiyyətli töhfə verir.

Beləliklə, yaşıl maliyyə alətləri qlobal iqtisadiyyatın dayanıqlı inkişaf tələblərinə cavab verən innovativ maliyyə mexanizmləridir. Bu alətlər kapitalın ekoloji və sosial dəyəri yüksək olan sahələrə yönəlməsini təmin etməklə iqtisadi sistemlərin uzunmüddətli sabitliyini artırır, ekoloji təhlükəsizliyi möhkəmləndirir

və cəmiyyətlərin rifah səviyyəsinin yüksəldilməsinə mühüm töhfə verir. Yaşıl maliyyə alətləri həm milli iqtisadi siyasətlərin, həm dövlət proqramlarının, həm də özəl sektor strategiyalarının mərkəzi komponentinə çevrilməklə qlobal iqtisadi arxitekturanın gələcək inkişafını müəyyən edən əsas faktor statusu qazanmışdır.

Kapital bazarlarında dayanıqlı investisiya modelləri

Müasir kapital bazarlarında investisiya fəaliyyətinin məzmunu əvvəlki dövrlərlə müqayisədə ciddi dəyişikliklərə məruz qalmışdır. Artıq sərmayə yalnız maliyyə gəlirliliyi əldə etmək üçün deyil, həm də ekoloji təhlükəsizliyin təmin olunması, sosial rifahın artırılması və iqtisadi sistemin uzunmüddətli sabitliyinin qorunması məqsədləri ilə yönləndirilir. Qlobal iqlim böhranının dərinləşməsi, karbon emissiyalarının təhlükəli həddə çatması, təbii ehtiyatların tükənməsi və sosial bərabərsizliyin artması ənənəvi investisiya mexanizmlərinin məhdudluqlarını üzə çıxarmış və kapitalın hara yönləndirilməsi ilə bağlı yeni meyarların yaranmasını zəruri etmişdir. Bu yeni yanaşma "dayanıqlı investisiya modeli" adlandırılır və müasir kapital bazarlarında strateji istiqamətə çevrilmişdir.

Dayanıqlı investisiya modelinin əsas mahiyyəti ondan ibarətdir ki, investorların qərarvermə davranışı yalnız qısamüddətli maliyyə nəticələrinə fokuslanmaqla məhdudlaşmır; əksinə, investisiya obyektinin ekosistemlərə təsiri, sosial rifaha verdiyi töhfə və idarəetmədə şəffaflığı kimi qeyri-maddi göstəricilər də maliyyə gəlirliliyi ilə eyni səviyyədə nəzərə alınır. Bu yanaşma klassik investisiya nəzəriyyəsindən kənara çıxaraq daha geniş, çoxölçülü və kompleks qiymətləndirmə modelini formalaşdırır. Belə ki, layihənin yalnız indiki mənfəəti deyil, həm də uzunmüddətli ekoloji sabitlik, sosial təsirlər və idarəetmə keyfiyyəti dayanıqlı investisiya strategiyasının ayrılmaz hissəsinə çevrilir.

Dayanıqlı investisiya modeli kapitalın idarə olunmasında üç əsas məqsədi paralel şəkildə nəzərə almağı tələb edir: maliyyə gəliri, ekoloji təsirin minimuma endirilməsi və sosial rifahın gücləndirilməsi. Bu üçlü yanaşma yalnız investorların risklərini azaltmır, həm də ümumi iqtisadi mühitin daha sabit və daha etik prinsiplər üzərində qurulmasına xidmət edir. Bir tərəfdən, ekosistemlərə zərər vuran layihələr uzunmüddətli perspektivdə həm hüquqi, həm reputasiya, həm də maliyyə riskləri yaratdığı üçün investorlar belə aktivlərdən uzaq durmağa üstünlük verirlər. Digər tərəfdən, ekoloji cəhətdən səmərəli, sosial baxımdan inklüziv və idarəetmədə şəffaf layihələr daha stabil gəlir və daha dayanıqlı bazar mövqeyi təmin edir.

Bu yanaşmada investor yalnız iqtisadi aktor deyil, həm də sosial məsuliyyət daşıyan subyekt kimi çıxış edir. Bu isə onların qərarlarını daha çox etik prinsiplərə uyğunlaşdırır, cəmiyyətin rifahına və ekoloji təhlükəsizliyə töhfə verən layihələrin maliyyələşdirilməsini stimullaşdırır. Nəticədə, dayanıqlı investisiya yanaşması həm iqtisadi, həm sosial, həm də ekoloji baxımdan müsbət nəticələr yaradır.

Dayanıqlı investisiya yanaşmasının üstünlüklərindən biri də kapitalın təhlükəsiz və uzunmüddətli sektorlara yönəldilməsinə şərait yaratmasıdır. ESG meyarlarına cavab verən şirkətlər daha sağlam risk profili ilə seçilir, qlobal tənzimləmə dəyişikliklərinə daha tez uyğunlaşır və bazar şoklarına qarşı daha dözümlü olurlar. Bu səbəbdən investorlar davamlı biznes modeli olan müəssisələri daha etibarlı aktivlər kimi qiymətləndirirlər. Məsələn, enerji səmərəliliyinə, alternativ enerji mənbələrinə, ekoloji nəqliyyat sistemlərinə və sosial rifah layihələrinə investisiya qoyan şirkətlərin kapitallaşma dərəcəsi daha sabit olur, reputasiya riskləri azalır və uzunmüddətli gəlirlilik imkanları daha yüksək qiymətləndirilir.

Eyni zamanda, dayanıqlı investisiya modeli şirkətlərin öz strateji idarəetmə yanaşmalarını da yenidən qurmasına səbəb olur. Şirkətlər kapital bazarlarında rəqabət üstünlüyü qazanmaq üçün ekoloji standartlara uyğunluğu artırır, sosial məsuliyyət proqramlarını genişləndirir və korporativ idarəetmədə şəffaflığı gücləndirirlər. Bu proses dövlət siyasətində yaşıl iqtisadiyyat istiqamətinin güclənməsi ilə paralel şəkildə inkişaf edir və nəticədə həm milli iqtisadiyyat, həm də qlobal bazar daha etibarlı və dayanıqlı maliyyə axınlarına malik olur **(UNEP 2021).**

Beləliklə, dayanıqlı investisiya modeli müasir kapital bazarlarında artıq alternativ seçim deyil, əsas strateji prioritetə çevrilmişdir. Kapitalın məsuliyyətli sektorlara yönəldilməsi həm iqtisadi artımı, həm ekoloji təhlükəsizliyi, həm də sosial rifahı paralel şəkildə təmin edən çoxölçülü inkişaf mexanizmini formalaşdırır.

Dayanıqlı investisiya modellərinin formalaşması kapital bazarlarında investor davranışlarını və portfel strategiyalarını əhəmiyyətli dərəcədə dəyişmişdir. Ən böyük dəyişikliklərdən biri böyük qlobal fondların, pensiya sistemlərinin, sığorta şirkətlərinin və dövlət investisiya fondlarının kapital portfellərini ESG (Environmental, Social, Governance) meyarlarına uyğun şəkildə yenidən qurmasıdır. ESG meyarları şirkətlərin ekoloji performansını, sosial davranışını və idarəetmə strukturunun şəffaflığını ölçərək onların investisiya üçün nə dərəcədə təhlükəsiz və perspektivli olduğunu müəyyənləşdirir. ESG uyğun aktivlər daha sabit risk strukturuna malik olduğu üçün uzunmüddətli sərmayələr üçün cəlbedici hesab edilir. Bu səbəbdən bir çox böyük investorlar portfellərinin 30–70%-ə qədərini məhz ESG uyğun aktivlərdə cəmləşdirir.

Dayanıqlı investisiya modelləri maliyyə sisteminin bütövlükdə risklərini də yenidən formalaşdırır. Ənənəvi investisiya yanaşmasında risk əsasən bazar dəyişkənliyi, faiz dərəcələri, likvidlik və şirkətlərin maliyyə hesabatları ilə ölçülürdüsə, yeni model bu çərçivəni genişləndirərək ona ekoloji, reputasiya və sosial riskləri də daxil edir. Məsələn, karbon emissiyasını azaltmayan şirkətlər yaxın gələcəkdə daha yüksək vergi yükü ilə qarşılaşa bilər, ekoloji standartlara əməl etməyən müəssisələr cərimələnə bilər və sosial məsuliyyəti zəif olan şirkətlər reputasiya itkilərinə məruz qala bilər. Bu risklər investor üçün qısamüddətli gəlirdən daha vacib qiymətləndirilir və kapitalın istiqamətini dəyişir.

Dayanıqlı investisiya modellərinin inkişafı həm də kapital bazarlarının strukturunu yenidən formalaşdırır. Yaşıl istiqrazlar, sosial istiqrazlar, davamlılıq istiqrazları, yaşıl kreditlər, karbon ticarəti mexanizmləri və ESG fondları kimi yeni maliyyə alətləri investorların marağını genişləndirir və bazarın likvidliyini artırır. Bu alətlər həm dövlətlərin, həm də korporativ sektorun ekoloji və sosial layihələr üçün daha geniş maliyyə mənbələri əldə etməsinə imkan verir. Nəticədə kapital bazarlarında yüksək riskli, çirkli sənaye sektorlarından resurs səmərəli, ekoloji təmiz və sosial faydalı sahələrə doğru böyük miqyaslı kapital axını başlayır.

Şirkətlərin strategiyalarında baş verən transformasiya da dayanıqlı investisiya modellərinin təsirinin nəticəsidir. ESG uyğunluğunu artırmaq üçün şirkətlər enerji səmərəliliyi texnologiyalarını tətbiq edir, bərpa olunan enerji mənbələrinə keçid edir, korporativ sosial məsuliyyət layihələrini genişləndirir, idarəetmədə şəffaflığı artırır və işçi rifahını yaxşılaşdırır. Bu dəyişikliklər şirkətləri bazarda daha rəqabətqabiliyyətli edir, investor etimadını gücləndirir və bu müəssisələrin kapitallaşma dəyərini artırır.

Beləliklə, dayanıqlı investisiya modelləri müasir kapital bazarlarının yalnız iqtisadi mənfəət prinsipləri ilə deyil, həm də ekoloji və sosial dəyərlərə əsaslanan yeni inkişaf trayektoriyasına keçməsini təmin edir. Bu tendensiya gələcəkdə kapital bazarlarının əsas strateji xəttinə çevriləcək və qlobal iqtisadiyyatın uzunmüddətli sabitliyində həlledici rol oynayacaq.

ESG meyarlarının kapital bazarlarına təsiri müasir maliyyə sisteminin transformasiyasını müəyyən edən əsas faktorlar sırasında xüsusi yer tutur. ESG – Environmental (Ekoloji), Social (Sosial) və Governance (İdarəetmə) – prinsipləri şirkətlərin fəaliyyətinə yalnız maliyyə nəticələri əsasında deyil, həm də ətraf mühitə təsiri, sosial məsuliyyət səviyyəsi və idarəetmədə şəffaflıq baxımından qiymət verilməsini təmin edən universal çərçivədir. Keçmişdə kapital bazarlarında investisiya qərarları daha çox mənfəətlilik, likvidlik və risk-gəlir balansı kimi göstəricilərə əsaslansa da, son illərdə iqtisadiyyatın ekoloji risklərdən birbaşa təsirlənməsi, sosial narazılıqların artması və korporativ idarəetmənin maliyyə sabitliyinə təsirinin güclənməsi ESG meyarlarının tətbiqini qlobal zərurətə çevirmişdir. Bu gün investorlar şirkətləri yalnız qazanc potensialına görə deyil, həm də onların cəmiyyətə, ekosistemlərə və bazar mühitinə necə təsir göstərdiyinə görə qiymətləndirirlər.

ESG meyarlarının kapital bazarlarına təsiri çoxşaxəlidir və bu təsir həm risk qiymətləndirmə mexanizmlərinin dəyişməsi, həm kapital strukturlarının yenidən formalaşması, həm də investor davranışının transformasiyası ilə müşayiət olunur. Ənənəvi maliyyə nəzəriyyəsində risk anlayışı əsasən bazar riskləri, likvidlik riskləri və kredit riskləri çərçivəsində dəyərləndirilirdisə, ESG yanaşması bu spektri xeyli genişləndirərək ekoloji fəlakət riskləri, iqlim dəyişikliyi riskləri, karbon vergisi riski, reputasiya riskləri, korporativ idarəetmə zəifliyi riski və sosial məsuliyyətsizlik risklərini də daxil etmişdir. Bu isə maliyyə aktivlərinin dəyər formalaşması mexanizmini köklü şəkildə dəyişmişdir. Məsələn, karbon emissiyası yüksək olan şirkətlər yaxın gələcəkdə daha sərt tənzimləmələrlə, karbon tarifləri ilə və emissiya məhdudiyyətləri ilə üzləşə biləcəkləri üçün belə şirkətlər investorlar üçün daha riskli aktivlərə çevrilir. Bu səbəbdən kapital axını yüksək karbon izi olan sektorlar əvəzinə bərpa olunan enerji, enerji səmərəliliyi, tullantıların təkrar emalı və "yaşıl texnologiyalar" kimi sahələrə yönəlir.

ESG-nin sosial komponenti də investisiya qərarlarında mühüm rol oynayır. Şirkətlərin işçi hüquqlarına riayət etməsi, təhlükəsiz iş şəraiti təmin etməsi, gender bərabərliyini qoruması, sosial layihələrdə iştirak etməsi və yerli icmalarla əməkdaşlıq etməsi sosial məsuliyyət göstəricilərini müəyyən edir. Sosial məsuliyyətsiz davranış şirkətlərin reputasiya riskini artırır və investorların belə şirkətlərdən uzaqlaşmasına səbəb olur. Son illər sosial məsuliyyət səviyyəsi yüksək olan şirkətlərin bazar dəyərinin daha dayanıqlı olması müşahidə edilir, bu isə ESG sosial komponentinin kapital axınlarını istiqamətləndirməsində nə qədər önəmli olduğunu təsdiqləyir **(Friede G. et al. 2015).**

Qlobal kapital bazarlarında ən böyük transformasiyalardan biri isə iri investisiya fondlarının ESG əsaslı investisiyalara keçidi ilə bağlıdır. Hal-hazırda dünyanın ən nüfuzlu fond idarəçilərinin – BlackRock, Vanguard, Fidelity və s. – 70%-dən çoxu portfellərinin böyük hissəsini ESG uyğun aktivlər əsasında formalaşdırır. Bu tendensiyanın səbəbi təkcə sosial və ekoloji məsuliyyət deyil, həm də maliyyə baxımından daha səmərəli nəticələr əldə edilməsidir. Empirik tədqiqatlar göstərir ki, ESG göstəriciləri yüksək olan şirkətlər bazar şoklarına qarşı daha davamlı olur, səhmlərinin qiyməti kəskin dalğalanmalara daha az məruz qalır və uzunmüddətli gəlirlik daha stabil formalaşır. Bu xüsusilə pandemiya dövründə özünü aydın göstərmişdir: ESG uyğun şirkətlər qeyri-müəyyənlik dövründə daha az dəyər itirmiş və daha tez bərpa olmuşdur.

Beynəlxalq maliyyə institutları – Dünya Bankı, EBRD, AIIB, ADB, IMF – kredit və investisiya layihələrində ESG meyarlarını rəsmi qiymətləndirmə standartı kimi tətbiq etməyə başlamışdır. Bu o deməkdir ki, ESG uyğunluğu olmayan layihələr artıq daha çətin maliyyələşmə əldə edir. Beləliklə, ESG uyğunluq təkcə üstünlük deyil, məcburi şərtə çevrilməkdədir. Bu tendensiya yaxın illərdə kapital bazarlarının strukturunu daha da dəyişdirəcək və dayanıqlı investisiyanın qlobal maliyyə sistemində aparıcı səviyyəyə yüksəlməsinə səbəb olacaq.

Nəticə olaraq, ESG meyarları kapital bazarlarında yalnız investisiya qərarlarının strukturunu deyil, həm də iqtisadi sistemin fəlsəfəsini dəyişdirir. ESG yanaşması daha şəffaf, məsuliyyətli, etik və sosial dəyərlərə əsaslanan maliyyə mühitinin formalaşmasına təkan verir. Kapitalın məsuliyyətli sahələrə yönəldilməsi həm investor üçün uzunmüddətli sabitlik, həm şirkət üçün rəqabət üstünlüyü, həm də qlobal iqtisadiyyat üçün ekoloji və sosial təhlükəsizliyin təmin edilməsi deməkdir.

Yeni nəsil investisiya platformalarının yaranması rəqəmsal iqtisadiyyatın qlobal maliyyə sisteminə gətirdiyi ən fundamental dəyişikliklərdən biridir və bu proses dayanıqlı investisiya paradiqmasının formalaşmasında aparıcı rola malikdir. Rəqəmsallaşma təkcə investisiya əməliyyatlarının sürətini və xərclərini optimallaşdırmır, həm də kapitalın ekoloji və sosial dəyəri yüksək olan layihələrə daha geniş kütlələr tərəfindən yönəldilməsini təmin edir. Əgər XX əsrdə investisiya bazarları böyük korporasiyalar, banklar və institusional investorların nəzarətində idisə, XXI əsrdə rəqəmsal platformalar bu sistemi kökündən dəyişərək fərdi sərmayəçiləri də eyni səviyyədə prosesə cəlb etmişdir. Beləliklə, maliyyə bazarlarında "demokratikləşmə" mərhələsi başlamış, ekoloji layihələrin maliyyələşməsi daha inklüziv, daha şəffaf və daha innovativ xarakter almışdır.

Yeni nəsil platformaların yaratdığı ən mühüm yenilik mikro-investisiya modelinin genişlənməsidir. Əvvəllər bərpa olunan enerji layihələri, ekoloji texnologiya investisiyaları və böyük infrastruktur təşəbbüsləri yalnız böyük maliyyə institutlarının əlçatan sahəsi idisə, bu gün mobil tətbiqlər vasitəsilə adi bir istifadəçi minimum 5–10 manatlıq investisiya ilə belə günəş panellərinin quraşdırılması, külək turbinlərinin maliyyələşdirilməsi, tullantıların təkrar emalı müəssisələrinin yaradılması və şəhər ekosistemlərinin yaşıl transformasiyası kimi layihələrdə iştirak edə bilir. Bu mexanizm maliyyə inklüzivliyini artırmaqla yanaşı, cəmiyyətin ekoloji məsuliyyət səviyyəsini də yüksəldir və ictimai ekoloji şüurun formalaşmasına mühüm töhfə verir. Mikro-investisiya qlobal səviyyədə yüz minlərlə insana ilk dəfə ekoloji layihələrə sərmayə etmək imkanı yaradaraq yaşıl maliyyənin sosial bazasını genişləndirir.

Rəqəmsal platformaların dayanıqlı investisiyada yaratdığı başqa bir mühüm yenilik blokçeyn texnologiyasının karbon ticarəti mexanizmlərinə tətbiqidir. Ənənəvi karbon bazarlarında uzun illərdir ciddi problemlər mövcuddur: emissiya məlumatlarının saxtalaşdırılması, kvotaların qeyri-şəffaf şəkildə bölüşdürülməsi, manipulyasiya riskləri, qeyri-müəyyən audit mexanizmləri və dövlətlərarası koordinasiyanın zəifliyi. Blokçeyn texnologiyası isə bütün bu problemləri aradan qaldıraraq emissiya kvotalarını rəqəmsal aktivləşdirir, əməliyyatları dəyişdirilməz, izlənəbilən və hər kəs üçün şəffaf edir. Bu sistemdə hər bir karbon krediti unikal rəqəmsal identifikatora malik olur, bütün alqı-satqı əməliyyatları isə real vaxt rejimində izlənə bilir. Nəticədə karbon bazarlarında etibar artır, bazar mexanizmi güclənir, iqlim dəyişiklikləri ilə mübarizə daha səmərəli iqtisadi alətlərə əsaslanır. Bu mexanizm gələcəkdə beynəlxalq səviyyədə vahid karbon bazarının yaranmasını sürətləndirəcək əsas texnoloji baza kimi dəyərləndirilir.

Süni intellekt dayanıqlı investisiya sahəsində xüsusilə güclü transformasiya effekti yaradır. Əvvəllər şirkətlərin ekoloji performansını qiymətləndirmək üçün yüzlərlə göstərici əl ilə analiz edilirdisə, bu gün AI texnologiyaları milyonlarla məlumatı saniyələr içində işlədir, müəssisələrin enerji istehlakını, karbon emissiyasını, su istifadəsini, sosial məsuliyyət proqramlarının effektivliyini, idarəetmədə şəffaflığı və reputasiya risklərini real vaxtda qiymətləndirir. Bu proses investorların daha dəqiq, elmi əsaslı və obyektiv qərarlar verməsinə imkan yaradır. Süni intellekt həm də ekoloji layihələrin uzunmüddətli təsirini modelləşdirməyə, iqlim risklərinin qarşıdakı illərdə şirkətlərin maliyyəsinə təsirini proqnozlaşdırmağa və yaşıl yuma hallarını aşkar etməyə kömək edir. Beləliklə, AI dayanıqlı investisiya qərarlarının ən güclü analitik alətinə çevrilmişdir **(Avropa Komissiyası 2021).**

Yeni nəsil investisiya fondları da rəqəmsal transformasiyanın mühüm tərkib hissəsidir. Bu fondlar ESG kriteriyalarına uyğun aktivlərdən ibarət olmaqla çevik, şəffaf və aşağı əməliyyat xərclərinə malik investisiya modelini təqdim edir. İnvestorlar coğrafi məhdudiyyət olmadan dünyanın istənilən yerindən bu fondlara vəsait yatırmaqla yaşıl iqtisadiyyatın inkişafına bilavasitə töhfə verə bilir. Rəqəmsal fondlar startap ekosisteminin inkişafını dəstəkləyir, innovativ ekoloji texnologiyaların maliyyə təminatını asanlaşdırır və sürətləndirir. Gənc investorların bu modellərə marağı xüsusilə yüksəkdir, çünki rəqəmsal fondlar həm gəlirlilik, həm sosial fayda, həm də texnoloji rahatlıq baxımından praktik üstünlüklər yaradır.

Yeni nəsil platformalar həm də maliyyə savadlılığının inkişafına güclü təsir göstərir. Bu platformalar istifadəçilərə investisiya risklərini qiymətləndirmək, ekoloji göstəriciləri təhlil etmək, karbon hesablamalarını anlamaq, layihələrin uzunmüddətli təsirini görmək və ekoloji investisiya meyarlarını öyrənmək üçün interaktiv alətlər təqdim edir. Nəticədə fərdi sərmayəçilər daha məsuliyyətli maliyyə davranışları formalaşdırır və dayanıqlı iqtisadi sistemin fəal iştirakçısına çevrilir. Bu proses həm də sosial kapitalın artmasına, kollektiv ekoloji məsuliyyət mədəniyyətinin güclənməsinə və gələcək nəsillərin ekoloji şüurlu iqtisadi davranışlar qazanmasına imkan verir.

Beləliklə, yeni nəsil investisiya platformaları rəqəmsal texnologiyalarla yaşıl maliyyə konsepsiyasını birləşdirərək kapital bazarlarında tamamilə yeni dövr açmışdır. Bu platformalar dayanıqlı investisiyaları daha əlçatan, daha çevik, daha şəffaf və daha inklüziv edir. Eyni zamanda, ekoloji layihələrin

maliyyələşməsini sürətləndirir, investor davranışını transformasiya edir, iqtisadi sistemdə ekoloji məsuliyyət mədəniyyətini genişləndirir və qlobal yaşıl keçidin əsas hərəkətverici qüvvəsinə çevrilir. Gələcəkdə rəqəmsal texnologiyaların daha da inkişaf etməsi ilə bu platformaların təsir dairəsi genişlənəcək, ekoloji layihələrin maliyyələşməsi daha innovativ forma alacaq və dünya maliyyə sistemi rəqəmsal-yaşıl sinerjinin rəhbərliyi altında yeni mərhələyə qədəm qoyacaqdır.

Azərbaycanda yaşıl maliyyə modelinin inkişaf perspektivləri

Azərbaycanın iqtisadi inkişaf trayektoriyası son illərdə qlobal tendensiyalarla paralel şəkildə transformasiya olunur və bu prosesdə yaşıl maliyyə modeli xüsusi strateji əhəmiyyət kəsb edir. Qlobal iqlim dəyişikliklərinin yaratdığı təzyiqlər, enerji təhlükəsizliyinin təmin olunması zərurəti, təbii sərvətlərin səmərəli idarə olunmasına olan ehtiyac və post-münaqişə dövrünün iqtisadi quruculuq tələbləri ölkəni yeni maliyyə mexanizmlərinə keçid etməyə sövq edir. Bu kontekstdə yaşıl maliyyə yalnız ekoloji siyasətin tərkib hissəsi kimi deyil, həm də Azərbaycanın uzunmüddətli iqtisadi inkişafının əsas istiqamətlərindən biri və milli iqtisadi modelin yenilənməsi üçün əsas platforma kimi çıxış edir.

Azərbaycanın əlində olan geniş bərpa olunan enerji potensialı yaşıl maliyyənin inkişafı üçün ciddi üstünlüklər yaradır. Xəzər dənizində "offshore" külək enerjisi üçün böyük texnoloji və coğrafi imkanlar, Qaradağ günəş elektrik stansiyası kimi iri layihələrin reallığa çevrilməsi, ölkənin müxtəlif bölgələrində günəş və külək enerjisinin rentabelliyi yaşıl investisiyalar üçün real bazanın formalaşmasına gətirib çıxarır. Enerji istehsalında alternativ mənbələrin payının artırılması həm karbon emissiyalarının azalmasına xidmət edir, həm də enerji ixracı imkanlarını genişləndirir. Bu isə Azərbaycanın gələcəkdə "yaşıl enerji ixracatçısı" ölkəyə çevrilməsi perspektivini ortaya qoyur – xüsusilə Avropa İttifaqına elektrik enerjisi ixracı üzrə strateji xəritə nəzərə alınarsa.

Ölkənin coğrafi mövqeyi və regional logistika şəbəkəsinin əsas qovşaqlarından biri olması da yaşıl maliyyə ekosisteminin inkişafına şərait yaradır. Orta Dəhliz, Bakı–Tbilisi–Qars xətti, beynəlxalq liman infrastrukturu və nəzərdə tutulan Zəngəzur dəhlizi Azərbaycanın regional enerji və logistika mərkəzi rolunu daha da gücləndirir. Bu isə yaşıl nəqliyyat sistemlərinin qurulması, elektriklə işləyən yük və sərnişin daşıma vasitələrinin tətbiqi, karbon emissiyalarının idarə edilməsi, "ağıllı logistika" həllərinin genişləndirilməsi üçün geniş investisiya imkanları açır. Bu sektorlara cəlb olunacaq yaşıl investisiyalar gələcək nəqliyyat koridorlarının rəqabət qabiliyyətini artıraraq Azərbaycanın geoiqtisadi nüfuzunu daha da gücləndirəcək.

Dövlət siyasətində yaşıl maliyyəyə verilən önəm "Azərbaycan 2030" Milli Prioritetləri ilə daha da sistemləşdirilmişdir. "Təmiz ətraf mühit və yaşıl artım" prioriteti çərçivəsində tənzimləyici çərçivənin formalaşdırılması, yaşıl təsnifat sisteminin hazırlanması, ekoloji investisiyaların stimullaşdırılması, karbon emissiyalarının məhdudlaşdırılması və resurslardan səmərəli istifadə hədəfləri ardıcıl şəkildə həyata keçirilir. Azərbaycan hökumətinin hazırladığı yeni fiskal və institusional alətlər – o cümlədən yaşıl vergi mexanizmləri, ekoloji standartların tənzimlənməsi, bərpa olunan enerji üzrə dövlət–özəl tərəfdaşlığı (PPP) modelləri – yaşıl maliyyənin ölkə iqtisadiyyatına daha dərin inteqrasiyasını təmin edir.

Azərbaycanın bank sektoru və maliyyə qurumları da bu prosesdə aktiv rol oynayır. Mərkəzi Bankın dayanıqlı maliyyə çərçivəsinin tətbiqinə başlaması, banklarda ekoloji risklərin qiymətləndirilməsi proseslərinin formalaşdırılması, yaşıl kredit məhsullarının sayının artırılması və ESG hesabatlılığının mərhələli şəkildə tətbiqi ölkədə dayanıqlı maliyyə transformasiyasının sürətləndiyini göstərir. Bu proses yaxın illərdə həm yaşıl kredit portfellərinin genişlənməsinə, həm də bank sektorunun beynəlxalq investisiya cəlb etmə potensialının artmasına gətirib çıxaracaq.

Yaşıl maliyyə modelinin inkişafını sürətləndirən ən mühüm amillərdən biri Azərbaycanın beynəlxalq maliyyə qurumları ilə əməkdaşlığının genişlənməsidir. EBRD-nin yaşıl iqtisadiyyat proqramları, Dünya Bankının ekoloji sabitlik layihələri, Asiya İnkişaf Bankının enerji modernizasiya təşəbbüsləri və BMT agentlikləri ilə birgə həyata keçirilən ekoloji layihələr yaşıl maliyyə infrastrukturunun

formalaşdırılmasına böyük dəstək verir. Bu əməkdaşlıqlar nəticəsində Azərbaycanda yaşıl investisiyaların idarə edilməsinə yönəlmiş institusional baza güclənir və ölkə beynəlxalq maliyyə bazarlarına daha inteqrasiya olunmuş şəkildə çıxış imkanı əldə edir **(Aliyev L. 2021).**

COP29-un Bakıda keçirilməsi perspektivləri daha da genişləndirən qlobal amildir. Bu tədbir Azərbaycanı qlobal iqlim gündəminin mərkəzi aktorlarından birinə çevirərək həm yaşıl maliyyə mənbələrinin ölkəyə axınını artıracaq, həm də ölkənin özünün yaşıl maliyyə alətlərini — yaşıl istiqrazlar, sosial istiqrazlar, davamlılıq istiqrazları — emissiya etmək imkanlarını genişləndirəcək. COP29 çərçivəsində qəbul ediləcək strategiyalar və qurulacaq əməkdaşlıqlar Azərbaycanın yaşıl maliyyə mərkəzi kimi mövqeyini gücləndirəcək və iqtisadiyyatın bütün sektorlarına yeni investisiya axını yaradacaq.

Bütün bu amillər göstərir ki, yaşıl maliyyə modeli Azərbaycanın yalnız ekoloji siyasətinin deyil, həm də makroiqtisadi sabitliyinin, enerji təhlükəsizliyinin, sosial rifahının və beynəlxalq reputasiyasının gücləndirilməsi üçün əsas strateji istiqamət olacaq. Növbəti illərdə hüquqi çərçivə, maliyyə alətləri, institusional mexanizmlər və beynəlxalq tərəfdaşlıq platformalarının inkişafı Azərbaycanın regional yaşıl maliyyə hub-ı olmasını reallaşdıracaq və ölkənin iqtisadi sisteminə keyfiyyətcə yeni transformasiya gətirəcək.

Milli siyasət və institusional əsaslar Azərbaycanın yaşıl iqtisadiyyat strategiyasının mərkəzində dayanır və ölkənin sosial-iqtisadi inkişaf modelinin yeni mərhələsinin əsas çərçivəsini formalaşdırır. Dövlət siyasətinin bu sahədə əsas istiqamətləri "Azərbaycan 2030: Sosial-iqtisadi inkişafa dair Milli Prioritetlər" sənədində öz əksini tapmışdır. Sənəddə "Təmiz ətraf mühit və yaşıl artım" anlayışının prioritet kimi müəyyən olunması ekoloji təhlükəsizlik, enerji səmərəliliyi, resurslardan rasional istifadə və yaşıl texnologiyaların tətbiqini dövlət siyasətinin əsas dayaqlarından birinə çevirmişdir. Bu yanaşma yalnız ekoloji məqsədlərin deyil, həm də iqtisadi modernləşmə, sənayenin rəqabət qabiliyyətinin yüksəldilməsi və enerji təhlükəsizliyinin təmin edilməsi kimi strateji hədəfləri özündə birləşdirir. Yəni yaşıl iqtisadiyyat modeli Azərbaycanda həm ekoloji, həm də sosial-iqtisadi inkişaf strategiyasının mühüm elementi kimi qəbul edilir.

Dövlət siyasətinin prioritet istiqamətlərindən biri bərpa olunan enerji sektorunun sürətli inkişafıdır. Xəzər dənizində külək enerjisi üzrə iri həcmli layihələrin icrası, Qaradağ günəş elektrik stansiyasının istifadəyə verilməsi və Naxçıvanın özünütəmin edən enerji modeli ölkənin enerji balansında yaşıl enerjinin payını artırmaqla yanaşı, idxaldan asılılığın azalmasına, enerji təhlükəsizliyinin yüksəlməsinə və karbon emissiyalarının ciddi şəkildə aşağı salınmasına səbəb olur. Eyni zamanda Qarabağ və Şərqi Zəngəzurda yaradılmış yaşıl enerji zonası konsepsiyası Azərbaycan üçün unikal regional modeldir. Bu zonalar yalnız bərpa olunan enerji istehsalı ilə məhdudlaşmır, eyni zamanda yaşıl sənayenin qurulması, ekoloji kənd təsərrüfatının inkişafı, alternativ nəqliyyat sistemlərinin tətbiqi və "ağıllı şəhər–ağıllı kənd" yanaşmasının reallaşdırılması üçün strateji platforma rolunu oynayır. Bu regionlar gələcəkdə Azərbaycanın milli yaşıl texnologiya laboratoriyasına çevrilmək potensialına malikdir.

Beynəlxalq iqlim öhdəliklərinə uyğun olaraq karbon emissiyalarının azaldılması siyasəti də dövlət strategiyasının əsas komponentlərindən biridir. Azərbaycan Paris Sazişinə uyğun olaraq 2030-cu ilə qədər karbon emissiyalarını 35% azaltmağı öhdəsinə götürmüşdür. Bu hədəfə çatmaq üçün sənayedə müasir filtrasiya sistemlərinin tətbiqi, enerji səmərəliliyinin artırılması, binalarda enerji sertifikatlaşdırılmasının genişləndirilməsi, ictimai nəqliyyatın elektrikləşdirilməsi və tullantıların düzgün idarə olunması üzrə geniş islahatlar həyata keçirilir. Nəqliyyat sektorunda "yaşıl avtobuslar", elektrik avtomobilləri üçün infrastrukturun qurulması və alternativ yanacaq texnologiyalarının tətbiqi emissiyaların azaldılmasında mühüm rol oynayır.

Beynəlxalq təşkilatlarla əməkdaşlıq Azərbaycanın yaşıl iqtisadiyyat strategiyasını daha da gücləndirən əsas amillərdən biridir. Avropa Yenidənqurma və İnkişaf Bankı (EBRD) bərpa olunan enerji layihələrinin maliyyələşdirilməsində və yaşıl bankçılığın inkişafında mühüm tərəfdaş kimi çıxış edir.

Dünya Bankı enerji səmərəliliyi proqramlarının genişləndirilməsi və ekoloji idarəçiliyin modernləşdirilməsi üçün strateji dəstək göstərir. Asiya İnkişaf Bankı (ADB) yaşıl infrastruktur layihələrinə maliyyə və texniki dəstək verir. UNDP isə ekosistem xidmətləri, biomüxtəlifliyin qorunması və iqlim adaptasiyası layihələrini dəstəkləyir **(UNEP 2021).** Beynəlxalq təcrübənin Azərbaycana transferi ölkədə yaşıl maliyyə bazarlarının formalaşmasını sürətləndirir və Azərbaycanı regionda ekoloji maliyyə mərkəzinə çevirmək potensialını artırır.

Beləliklə, milli siyasət və institusional əsaslar Azərbaycanda yaşıl iqtisadiyyatın inkişafı üçün möhkəm çərçivə formalaşdırır. Bu strategiya yalnız ekoloji nəticələrə yönəlmir, eyni zamanda yeni iqtisadi modelin formalaşması, innovativ texnologiyaların tətbiqi, enerji təhlükəsizliyinin təmin edilməsi və beynəlxalq əməkdaşlığın genişləndirilməsi ilə ölkənin uzunmüddətli inkişaf trayektoriyasını müəyyən edir. Azərbaycanın yaşıl iqtisadiyyata keçidi dövlət siyasətinin ardıcıl yanaşması, institusional koordinasiya və qlobal tərəfdaşlıq əsasında həyata keçirilir və bu model yaxın gələcəkdə ölkəni regionun aparıcı yaşıl maliyyə və yaşıl enerji mərkəzinə çevirə biləcək gücə malikdir.

Yaşıl istiqrazların Azərbaycana qazandıracağı iqtisadi üstünlüklər çoxşaxəlidir. Birinci üstünlük ondan ibarətdir ki, bu istiqrazlar genişmiqyaslı enerji və infrastruktur layihələrinin maliyyələşdirilməsi üçün əlavə və etibarlı investisiya mənbəyi rolunu oynayır. Bərpa olunan enerji stansiyalarının qurulması, külək və günəş parklarının genişləndirilməsi, su təchizatı və tullantı idarəetmə sistemlərinin modernləşdirilməsi, ekoloji nəqliyyat infrastrukturunun tətbiqi, ağıllı şəhər modellərinin reallaşdırılması kimi layihələr dövlət büdcəsinin imkanlarını aşdığı hallarda yaşıl istiqrazlar əsas alternativ maliyyə mənbəyinə çevrilir. Bu alət enerji keçidini sürətləndirir, resurslardan səmərəli istifadəni təşviq edir və Azərbaycanın ekoloji yükünü nəzərəçarpacaq dərəcədə azaldır.

İkinci mühüm üstünlük xarici investorların cəlb edilməsidir. Qlobal fondların, pensiya fondlarının və suveren sərvət fondlarının əksəriyyəti artıq yalnız ESG uyğun layihələrə sərmayə yatırır. Azərbaycan yaşıl istiqraz emissiyasına başladıqda ölkəyə yönələcək investisiya axını əhəmiyyətli şəkildə artacaq, ölkənin beynəlxalq maliyyə bazarlarında reputasiyası möhkəmlənəcək, şəffaflıq və məsuliyyət imici daha da güclənəcək. İlk emissiya Azərbaycanın qlobal yaşıl bazarda tanınması üçün mühüm siqnal rolunu oynaya bilər.

Üçüncü üstünlük kapital bazarının dərinləşməsidir. Azərbaycanda fond bazarının strukturu uzun müddət məhdud olmuşdur. Yaşıl istiqrazlar isə bazara yeni aktivlər gətirməklə likvidliyi artırır, dövriyyəni gücləndirir və daha çox investorun iştirakını təmin edir. Beləliklə, ölkə tədricən Yaxın Şərq və Cənubi Qafqaz regionunda dayanıqlı maliyyə mərkəzinə çevrilmək imkanına malik olur. Bu, Azərbaycanın iqtisadi diversifikasiyası üçün də mühüm addımdır, çünki yaşıl istiqrazların tətbiqi qeyri-neft sektorunun inkişafına əlavə dəstək verir.

Yaşıl istiqrazların tətbiqi şirkətlərin öz fəaliyyətlərini ekoloji standartlara uyğunlaşdırmasını da şərtləndirir. İstiqraz buraxmaq istəyən şirkətlər ISO ekoloji standartlarına cavab verən əməliyyat modeli qurmalı, layihələr üçün ekoloji təsir qiymətləndirilməsi aparmalı, enerji səmərəliliyi üzrə proqramlar tətbiq etməli və davamlılıq hesabatlarını hazırlamalıdır. Bu, bir tərəfdən şirkətlərin rəqabət qabiliyyətini artırır, digər tərəfdən isə ölkədə ESG mədəniyyətinin güclənməsinə və korporativ idarəetmənin təkmilləşməsinə səbəb olur. Müasir maliyyə bazarında şəffaflıq və həssas ekoloji yanaşma əsas rəqabət meyarına çevrildiyi üçün yaşıl istiqrazlar şirkətlərin strateji inkişafında mühüm motivasiya amilinə çevrilir.

Nəticə etibarilə, yaşıl istiqraz bazarının formalaşması Azərbaycanın yaşıl maliyyə strategiyasının əsas həlqələrindən birini təşkil edir. Bu alət ölkəni həm ekoloji baxımdan daha məsuliyyətli iqtisadi sistemə aparır, həm də regional və qlobal maliyyə bazarları ilə inteqrasiyanı möhkəmləndirir. Normativ bazanın yaradılması, investor inamının güclənməsi, şirkətlərin ekoloji standartlara uyğunlaşması və kapital bazarının dərinləşməsi yaşıl istiqrazların Azərbaycan üçün uzunmüddətli strateji əhəmiyyətini daha da artırır.

Bank sektorunda yaşıl maliyyənin tətbiqi müasir iqtisadi transformasiyanın əsas istiqamətlərindən birinə çevrilərək Azərbaycanın maliyyə sistemində yeni məsuliyyət və idarəetmə standartları formalaşdırmaqdadır. Qlobal miqyasda yaşıl bankçılıq ekoloji risklərin idarə edilməsini, sosial məsuliyyətin artırılmasını və maliyyə dayanıqlığının uzunmüddətli təmin olunmasını hədəf alan kompleks çərçivə kimi qəbul edilir. Azərbaycanın bank sektoru da bu qlobal dəyişimin təsiri altında öz fəaliyyət mexanizmlərini yenidən qurmağa başlamış, xüsusən də Mərkəzi Bankın təşəbbüsü ilə hazırlanmış "dayanıqlı bankçılıq çərçivəsi" ölkədə yaşıl maliyyənin sistemli tətbiqi üçün normativ əsas yaratmışdır. Bu çərçivə bankların kredit portfellərində ekoloji meyarların nəzərə alınmasını, risk idarəçiliyi strategiyalarında iqlim risklərinin ayrıca kateqoriya kimi qiymətləndirilməsini və bütün bank əməliyyatlarında dayanıqlılıq prinsipinin rəhbər tutulmasını təmin edir.

Azərbaycan bankları yaşıl maliyyənin tətbiqinə ilk olaraq ekoloji risklərin kredit qərarlarına inteqrasiyası ilə başlamışdır. Əgər ənənəvi kredit analizində borcalanın maliyyə sabitliyi, bazar mövqeyi və ödəniş qabiliyyəti əsas meyar idisə, indi enerji səmərəliliyi, istehsal proseslərinin ekoloji təsiri, karbon emissiyası, su və resurs istehlakının miqdarı kimi indikatorlar da risk qiymətləndirməsinin mühüm komponentinə çevrilmişdir. Bu yanaşma bankları potensial ekoloji zərərlərdən sığortalamaqla yanaşı, borcalan müəssisələrin də daha müasir, ekoloji yönümlü fəaliyyət strategiyasına keçidini stimullaşdırır. Nəticədə kredit portfelləri uzunmüddətli perspektivdə daha sabit və daha az riskli struktura malik olur.

Yaşıl bankçılığın mühüm elementlərindən biri də ESG hesabatlılığıdır. Artıq bankların illik hesabatlarında ekoloji performans, sosial məsuliyyət layihələri, əməkdaşların rifahı, cins bərabərliyi, korporativ etik standartlar və icma dəstəyi ilə bağlı ətraflı məlumatlar geniş yer tutur. ESG hesabatları beynəlxalq investorların diqqətini cəlb edən əsas sənədlərdən biridir və bankın həm reputasiyasına, həm də xarici maliyyə resurslarına çıxış imkanlarına müsbət təsir göstərir **(Friede G. et al. 2015).** Şəffaf hesabatlılıq həm ictimaiyyət arasında, həm də qlobal maliyyə bazarlarında bankın etibarlılığını artırır.

Azərbaycan bank sektorunun yaşıl maliyyə potensialının reallaşmasında beynəlxalq əməkdaşlıqlar həlledici rol oynayır. EBRD, AİB, KfW və digər beynəlxalq maliyyə təşkilatları tərəfindən təqdim olunan yaşıl kredit xətləri enerji səmərəliliyinin artırılması, kiçik və orta biznesin ekoloji layihələrinin maliyyələşdirilməsi və bərpa olunan enerji texnologiyalarının tətbiqi üçün böyük imkanlar yaradır. Bu proqramlar yalnız vəsait deyil, eyni zamanda qabaqcıl bilik, beynəlxalq ekoloji standartlar və monitorinq metodologiyalarının ölkəyə transferini təmin edir. Bu şəkildə Azərbaycan bank sektoru qlobal yaşıl maliyyə sisteminin tərkib hissəsinə çevrilir.

Beləliklə, bank sektorunda yaşıl maliyyənin genişlənməsi Azərbaycanın iqtisadi transformasiyasının mühüm sütunlarından biridir. Bu proses təkcə bank fəaliyyətini yeniləmək deyil, həm də iqtisadiyyatın bütün sahələrində ekoloji məsuliyyət mədəniyyətinin formalaşmasına təkan verir. Yaşıl bankçılıq həm enerji keçidini sürətləndirir, həm iqtisadi sabitliyi gücləndirir, həm də Azərbaycanın beynəlxalq maliyyə bazarlarında dayanıqlı tərəfdaş kimi mövqeyini möhkəmləndirir. Uzunmüddətli perspektivdə yaşıl maliyyə modelinin bank sektorunda tam tətbiqi ölkəni regionda dayanıqlı maliyyə mərkəzlərindən birinə çevirə bilər.

DİSKUSSİYA VƏ NƏTİCƏ

Bu tədqiqat kapital bazarlarında dayanıqlı investisiya modellərinin formalaşmasında yaşıl maliyyə alətlərinin rolunu araşdırmışdır. Əldə olunan nəticələrin müzakirəsi göstərir ki, yaşıl maliyyə artıq yalnız ekoloji təşəbbüs kimi deyil, müasir maliyyə sisteminin uzunmüddətli sabitliyini və investisiya keyfiyyətini təmin edən mühüm mexanizm kimi çıxış edir. Ekoloji, sosial və institusional idarəetmə amillərinin maliyyə qərarlarına inteqrasiyası kapital bazarlarında daha şəffaf və dayanıqlı investisiya mühitinin formalaşmasına şərait yaradır.

Aparılan təhlil yaşıl istiqrazların və ESG əsaslı investisiya portfellərinin uzunmüddətli investisiya davranışının təşviqində xüsusilə effektiv olduğunu göstərir. Bu maliyyə alətləri investisiya prosesində

şəffaflığı və hesabatlılığı artırmaqla investor etimadının möhkəmlənməsinə və qeyri-maliyyə risklərinin azalmasına imkan yaradır. Ənənəvi maliyyə alətlərindən fərqli olaraq, yaşıl maliyyə mexanizmləri ekoloji və sosial risklərin qiymətləndirilməsini nəzərə alır ki, bu da daha balanslı və məsuliyyətli investisiya qərarlarının qəbuluna şərait yaradır.

Eyni zamanda, yaşıl maliyyə alətlərinin effektivliyi institusional və normativ-hüquqi mühitin keyfiyyətindən birbaşa asılıdır. Aydın tənzimləmə mexanizmlərinin, açıqlıq standartlarının və monitorinq sistemlərinin mövcudluğu "yaşıl yuma" risklərinin qarşısının alınmasında mühüm rol oynayır. Bu mexanizmlər olmadan yaşıl maliyyə təşəbbüslərinin etibarlılığı zəifləyə və bazar iştirakçılarının etimadı azala bilər.

Milli baxımdan yaşıl maliyyə alətlərinin tətbiqi Azərbaycan üçün xüsusi aktuallıq daşıyır. Ölkənin iqtisadi inkişaf strategiyalarında iqtisadiyyatın şaxələndirilməsi, bərpa olunan enerji mənbələrinin genişləndirilməsi və ekoloji tarazlığın qorunması əsas prioritetlər kimi müəyyən edilmişdir. Bu kontekstdə yaşıl maliyyə mexanizmlərinin kapital bazarlarına inteqrasiyası beynəlxalq investisiya axınlarının cəlb olunmasına və maliyyə resurslarının daha səmərəli bölgüsünə imkan yarada bilər.

Nəticə etibarilə, yaşıl maliyyə alətləri kapital bazarlarında dayanıqlı investisiya modellərinin inkişafında həlledici rol oynayır. Bu alətlərin sistemli və məqsədyönlü tətbiqi maliyyə sabitliyinin möhkəmləndirilməsinə, risklərin idarə olunmasının təkmilləşdirilməsinə və uzunmüddətli dayanıqlı iqtisadi inkişafın təmin olunmasına xidmət edir. Tədqiqatın nəticələri göstərir ki, yaşıl maliyyənin gələcək dövrdə kapital bazarlarının inkişaf istiqamətlərini müəyyən edən əsas amillərdən biri olacağı gözlənilir və bu sahədə elmi araşdırmaların daha da genişləndirilməsi zəruridir.

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AZERBAYCAN'IN SEYAHAT VE TURIZM GELIŞIM ENDEKSI (2019 2024) PERFORMANSI: BAĞIMSIZ DEVLETLER TOPLULUĞU VE BÖLGESEL REKABET BAĞLAMINDA ULUSLARARASI BIR ANALIZ

Metin ALLAHVERDİ

Dr. Öğr. Üyesi, Selçuk Universitesi
E-mail: allahverdi@selcuk.edu.tr
ORCID ID: 0000-0002-8247-4167

Fatih VAROL

Doç. Dr, Selcuk Universitesi
E-mail: fvarol@selcuk.edu.tr
ORCID ID: 0000-0002-0258-5220

Özet

Bu çalışma, Dünya Ekonomik Forumu tarafından yayınlanan Seyahat ve Turizm Gelişim Endeksi (STGE) çerçevesinde Azerbaycan'ın 2019, 2021 ve 2024 yıllarındaki performansını analiz ederek, ülkenin bölgesel konumunu ve Bağımsız Devletler Topluluğu (BDT) içindeki yerini vurgulamaktadır. Azerbaycan, pandemi sonrası toparlanma sürecinde turizm sektöründe dikkate değer bir büyüme kaydetmiş olup, özellikle iş ortamı, güvenlik, sağlık altyapısı, uluslararası açıklık ve kültürel kaynaklar gibi alanlarda iyileşmeler göze çarpmaktadır. 2024 itibariyle Azerbaycan, TTDI'da 119 ülke arasında 56. sıraya yükselmiş ve BDT ülkeleri arasında en iyi performans gösteren ülkelerden biri haline gelmiştir.

Bölgesel analizde Azerbaycan, Güney Kafkasya ve BDT ülkeleriyle karşılaştırmalı olarak değerlendirilmiştir; hava ulaşımı, konaklama altyapısı ve çevresel sürdürülebilirlik gibi yapısal eksiklikler, ülkenin daha yüksek bir sıralamaya ulaşmasını engelleyen başlıca engeller olarak tespit edilmiştir. Uluslararası iş birliği, dijital altyapı yatırımları ve bölgesel turizm rotalarının geliştirilmesi gibi stratejik adımların Azerbaycan'ın turizmdeki rekabet gücünü artırabileceği sonucuna varılmıştır. Bu bağlamda, çalışma, Azerbaycan'ın turizm politikalarının değerlendirilmesi ve bölgesel kalkınma stratejilerinin şekillendirilmesi açısından hem akademisyenler hem de uygulayıcılar için bir rehber niteliğinde bulgular sunmaktadır.

Anahtar Kelimeler: Azerbaycan, Bölgesel Rekabet, Seyahat ve Turizm Geliştirme Endeksi, Turizm Geliştirme, Bağımsız Devletler Topluluğu, Sürdürülebilir Turizm.

AZERBAIJAN'S TRAVEL AND TOURISM DEVELOPMENT INDEX (2019-2024) PERFORMANCE: AN INTERNATIONAL ANALYSIS IN THE CONTEXT OF THE COMMONWEALTH OF INDEPENDENT STATES AND REGIONAL COMPETITION

Abstract

This study analyzes Azerbaijan's performance in 2019, 2021, and 2024 within the framework of the Travel and Tourism Development Index (TTDI) published by the World Economic Forum, highlighting the country's regional position and its place within the Commonwealth of Independent States (CIS). Azerbaijan has recorded remarkable growth in its tourism sector during the post-pandemic recovery process, with improvements particularly evident in areas such as the business environment, security, healthcare infrastructure, international openness, and cultural resources. As of 2024, Azerbaijan has risen to 56th place among 119 countries in the TTDI, becoming one of the best-performing countries among CIS countries.

In the regional analysis, Azerbaijan was evaluated in comparison with the South Caucasus and CIS countries; structural deficiencies such as air transportation, accommodation infrastructure, and environmental sustainability were identified as the main obstacles preventing the country from

achieving a higher ranking. It was concluded that strategic steps such as international cooperation, digital infrastructure investments, and the development of regional tourism routes could increase Azerbaijan's competitiveness in tourism. In this context, the study provides findings that serve as a guide for both academics and practitioners in terms of evaluating Azerbaijan's tourism policies and shaping regional development strategies.

Keywords: Azerbaijan, Regional Competition, Travel and Tourism Development Index, Tourism Development, Commonwealth of Independent States, Sustainable Tourism.

GİRİŞ

Turizm, 21. yüzyılın en dinamik hizmet sektörlerinden biri olarak, ekonomik büyüme, istihdam yaratma, döviz girdisi sağlama ve kültürel etkileşim açısından ülkelerin kalkınma stratejilerinde giderek daha merkezi bir konuma gelmektedir. Dünya Seyahat ve Turizm Konseyi (WTTC) verilerine göre (WTTC, 2025), 2024 yılı itibarıyla küresel ölçekte seyahat ve turizm sektörü, toplam istihdamın yaklaşık %9'unu ve küresel gayrisafi yurt içi hasılanın (GSYİH) %10'unu oluşturmaktadır. Bu rakamlar, turizmin yalnızca "tamamlayıcı" bir hizmet faaliyeti değil, aynı zamanda küresel değer zincirleri ve bölgesel jeostrateji açısından kritik bir sektör haline geldiğini göstermektedir (Hall, 2019; Hall & Page, 2014).

Azerbaycan, uzun süre hidrokarbon ihracatına dayalı ekonomik yapısından, son yıllarda giderek hizmetler ve özellikle de turizm odaklı, daha dengeli bir kalkınma modeline yönelmektedir. Bu dönüşümün kurumsal çerçevesi, öncelikle 6 Aralık 2016 tarihli ve 1138 sayılı Cumhurbaşkanlığı Kararnamesi ile onaylanan *Ulusal Ekonomi ve Ekonominin Kilit Sektörleri için Stratejik Yol Haritaları* ve bunların içinde yer alan *Azerbaycan'da Uzmanlaşmış Turizm Sanayisinin Geliştirilmesine İlişkin Stratejik Yol Haritası* ile çizilmiştir; söz konusu belgelerde turizm, ekonomik çeşitlenmenin öncelikli alanlarından biri olarak tanımlanmıştır.

Bu çerçeveyi daha sektörel ve operasyonel düzeye indirgeyen son politika metni ise Devlet Turizm Ajansı ve Azerbaycan Turizm Bürosu tarafından hazırlanan 2023-2026 Turizm Geliştirme Stratejisi'dir. Strateji, önümüzdeki dört yıl boyunca turizmin gelişimini; turizmin devlet yönetimi, politika ve düzenleme, destinasyonların, kültürel mirasın ve yerel toplulukların geliştirilmesi, destinasyon pazarlaması, turizm ürünlerinin çeşitlendirilmesi, dijitalleşme inovasyon teknoloji, istatistik analiz araştırma kapasitesi, turizm yatırımı ve iş birliği ile insan kaynaklarının geliştirilmesi gibi dokuz temel öncelik ekseni etrafında ele almaktadır (United Nations, 2023) Böylece turizm, yalnızca döviz kazandırıcı bir faaliyet olarak değil, aynı zamanda petrol dışı gelirlerin artırılması, bölgesel kalkınmanın desteklenmesi ve ülkenin uluslararası imajının güçlendirilmesi bakımından Azerbaycan ekonomisinin çeşitlenmesinin "lokomotif" sektörlerinden biri olarak konumlandırılmaktadır.

Azerbaycan'ın turizm potansiyeli, coğrafi ve kültürel çeşitliliği sayesinde oldukça yüksektir. Hazar Denizi kıyısında yer alan ülke hem Asya hem de Avrupa pazarlarına erişim avantajına sahiptir. Bakü'nün modern mimarisi ve kültürel mirası, Şeki, Quba ve Gence gibi şehirlerin tarihi dokusu, Karabağ bölgesinin yeniden yapılandırılmasıyla birleştiğinde, ülkenin yeni destinasyon haritası genişlemektedir. Aynı zamanda, UNESCO tarafından koruma altına alınan İçeri Şehir, Gobustan Kaya Oymaları, Şeki Han Sarayı ve Hirkani Ormanları gibi alanlar, Azerbaycan'ın küresel kültürel turizm zincirindeki yerini güçlendirmektedir (Gaziyev & Boyacıoğlu, 2021).

Pandemi dönemi (2020-2022), küresel ölçekte turizmi derinden etkilemiş, ancak Azerbaycan bu süreçte özellikle iç turizmi güçlendirmeye odaklanarak dirençli bir toparlanma modeli sergilemiştir. 2023-2025 döneminde iç turizm harcamalarının, 2019 düzeyinin %25 üzerinde gerçekleşmesi, bu stratejinin başarısını yansıtmaktadır (WTTC, 2025). Aynı zamanda, ülkenin dijital altyapı yatırımları (e-vize sistemi, dijital ödeme ağları, akıllı şehir uygulamaları) sayesinde turist deneyimi kolaylaşmış, "akıllı destinasyon" yaklaşımı yerleşmiştir (Azadalıyev & Akova, 2024; WEF, 2024).

Küresel düzeyde ülkelerin turizm rekabetçiliğini ve gelişimini ölçmek amacıyla Dünya Ekonomik Forumu (World Economic Forum, WEF) tarafından geliştirilen Seyahat ve Turizm Gelişim Endeksi (STGE), ülkelerin turizm potansiyelini beş temel boyutta değerlendirmektedir: (A) Etkin ortam, (B) Politika ve etkin koşullar, (C) Altyapı ve hizmetler, (D) Kaynaklar (doğal, kültürel ve beşerî) ve (E) Sürdürülebilirlik (WEF, 2022, 2024). Bu boyutlar; iş ortamı, güvenlik ve emniyet, sağlık ve hijyen, insan kaynakları ve işgücü piyasası, bilgi ve iletişim teknolojileri hazırlığı, turizmin önceliklendirilmesi, açıklık, fiyat rekabet gücü, ulaşım ve turistik altyapı, doğal ve kültürel kaynaklar ile çevresel ve sosyoekonomik sürdürülebilirlik gibi alt boyutlar ve 100'ün üzerinde gösterge ile operasyonelleştirilmektedir (Dwyer & Kim, 2003; Crouch, 2011).

Azerbaycan, STGE'de 2019 yılında 51. sırada, 2021'de 55. sırada ve 2024'te 56. sırada yer almıştır (WEF, 2022, 2024; Sungur Avcı & Avcı, 2025). Bu seyir, toplam endeks skorunun 2019-2024 döneminde neredeyse yatay kalmasına karşın, ülkenin göreli konumunun beş sıra gerilediğini ve sıralamadaki değişimin sıralamadaki dalgalanmaların büyük ölçüde diğer ülkelerin görece performansına bağlı olduğunu; buna karşın Azerbaycan'ın kendi içinde "dengeli fakat sınırlı" bir ilerleme kaydettiğini göstermektedir. Özellikle bilgi ve iletişim teknolojileri hazırlığı, insan kaynakları ve kültürel kaynaklar gibi alt boyutlarda artışlar gözlenirken; turizmin önceliklendirilmesi, fiyat rekabet gücü ve çevresel sürdürülebilirlik göstergelerinde görece zayıflama dikkat çekmektedir (WEF, 2024). Bu nedenle, STGE'deki değişim yalnızca bir sıralama hareketi değil, aynı zamanda ülkenin turizm yönetim kapasitesinin kurumsallaşma düzeyini ve politika önceliklerinin tutarlılığını yansıtan bir gösterge olarak değerlendirilmelidir (Crouch & Ritchie, 1999; Dwyer & Kim, 2003).

WTTC'nin 2025 öngörüsüne göre (WTTC, 2025), Azerbaycan'ın seyahat ve turizm sektörü GSYİH'ye 10,3 milyar manat (yaklaşık 6 milyar dolar) katkı sağlayacak, yaklaşık 472.000 kişiye istihdam yaratacaktır. Bu veriler, sektörün hem ekonomik toparlanma hem de sürdürülebilir büyüme açısından stratejik öneme sahip olduğunu göstermektedir.

Bu çalışma, Azerbaycan'ın turizm sektöründeki söz konusu dönüşümü STGE göstergeleri üzerinden sistematik biçimde değerlendirerek, ülkenin bölgesel rekabet konumunu ve sürdürülebilir kalkınma hedefleriyle uyumunu analiz etmeyi amaçlamaktadır. 2019-2024 dönemine odaklanan analiz, Azerbaycan'ın turizm performansını yalnızca tek bir endeks skoru üzerinden değil; ana boyutlar, alt boyutlar ve seçilmiş göstergeler düzeyinde çözümleyerek tarihsel, bölgesel ve ekonomik bağlam içinde yeniden okumayı hedeflemektedir. Böylece, turizm politikasına yön verebilecek güçlü ve zayıf alanlar, fırsatlar ve riskler bütüncül bir çerçevede ortaya konulmakta ve geleceğe yönelik politika tasarımı için kanıta dayalı bir zemin oluşturulmaktadır.

LİTERATÜR TARAMASI

Turizm destinasyonu rekabetçiliği kavramı son otuz yılda hem kuramsal hem de ölçümsel olarak önemli bir evrim geçirmiştir. İlk dönem çalışmalarda rekabet gücü daha çok fiyat, maliyet ve talep hacmi gibi göstergeler üzerinden tartışılırken, zamanla yönetişim, altyapı, insan kaynağı ve sürdürülebilirlik gibi yapısal boyutların da analize dâhil edilmesi gerektiği vurgulanmıştır (Crouch, 2011; Dwyer & Kim, 2003). Crouch ve Ritchie'nin (1999) çerçevesi, destinasyon rekabetçiliğini doğal ve kültürel kaynaklar, destekleyici altyapı, talep koşulları ve yönetişim bileşenlerinin etkileşimi olarak ele alması bakımından literatürde dönüm noktası kabul edilmektedir. Bu yaklaşım, turizmin yalnızca ziyaretçi sayısı ile değil, ülkenin toplumsal refahına yaptığı katkı ve uzun dönemli sürdürülebilirlik kapasitesiyle değerlendirilmesi gerektiğini ortaya koyar (Hall, 2019; Hall & Page, 2014).

Bu kuramsal çerçeve, uluslararası karşılaştırmalara imkân veren bileşik endekslerin geliştirilmesine de zemin hazırlamıştır. Dünya Ekonomik Forumu'nun 2000'li yılların ortasından itibaren yayımladığı Seyahat ve Turizm Rekabetçilik Endeksi (STRE), destinasyonların rekabet gücünü çok boyutlu göstergelerle ölçen öncü araçlardan biridir. 2021 ve 2024 raporlarıyla birlikte bu endeks, Seyahat ve Turizm Gelişim Endeksi (STGE) başlığı altında yeniden tasarlanmış; sürdürülebilirlik, dayanıklılık ve

kapsayıcılık boyutları daha güçlü biçimde endekse entegre edilmiştir (WEF, 2022; WEF, 2024). Böylece geleneksel rekabetçilik yaklaşımı, çevresel ve sosyal boyutları da içeren daha bütüncül bir kalkınma perspektifine doğru genişlemiştir.

Türkiye ve çevre ülkeler üzerine yapılan çalışmalar, STRE/STGE göstergelerinin hem güçlü yanlarını hem de sınırlılıklarını ortaya koymaktadır. Bahar ve Kozak (2005), Türkiye'nin Akdeniz çanağındaki rakiplerine göre rekabetçi konumunu analiz ederken fiyat rekabetçiliğinin tek başına yeterli olmadığını; altyapı ve hizmet kalitesi gibi yapısal faktörlerin belirleyici olduğunu göstermektedir. Benzer şekilde Göral (2017) ile Bostan ve Aydın (2021), Dünya Ekonomik Forumu raporlarını kullanarak Türkiye'nin turizm rekabetçilik sorunlarını ayrıntılı biçimde tartışmakta; özellikle çevresel sürdürülebilirlik ve kurumsal kapasite alanlarındaki zayıflıklara dikkat çekmektedir. Gürsakal ve Arlı'nın (2023) TTDI verileri üzerinden yürüttükleri ekonometrik analiz ise sürdürülebilirlik göstergelerindeki iyileşmenin turizm gelirleri ve turist varışları üzerinde pozitif ve anlamlı etkiler yarattığını ampirik olarak ortaya koymaktadır.

Türk devletleri ölçeğinde yapılan çalışmalar da rekabetçilik literatürüne özgün katkılar sunmaktadır. Sungur Avcı ve Avcı (2025), STGE perspektifinden Türkiye, Azerbaycan ve diğer Türk devletlerinin performansını karşılaştırarak, özellikle dijital altyapı, politik ortam ve kaynak kullanımı boyutlarında ülkeler arasındaki ayrışmaları ortaya koymaktadır. Çalışma, endeksteki ana boyutların (etkin ortam, politika ve koşullar, altyapı ve hizmetler, kaynaklar, sürdürülebilirlik) her biri için kümeler oluşturarak bölgesel bir rekabet haritası çizmekte ve politika önerileri geliştirmektedir. Bu bulgular, STGE verilerinin yalnızca sıralama üretmek için değil, aynı zamanda kümelenme ve profil analizi için de kullanılabileceğini göstermektedir.

Azerbaycan özelinde literatürün daha sınırlı ve parçalı olduğu görülmektedir. Gursoy, Baloglu ve Chi (2009), Orta Doğu ülkelerinin göreli konumunu inceledikleri çalışmada Azerbaycan'ı bölgesel karşılaştırma setine dâhil etmekte; ancak veri kısıtları nedeniyle ülke bazında derinlemesine bir analiz sunamamaktadır. Daha yakın tarihli araştırmalar, çoğunlukla turizmin makroekonomik katkısı ve politika çerçevesi üzerinde yoğunlaşmaktadır. Örneğin Gaziyev ve Boyacıoğlu (2021), Azerbaycan ekonomisinin çeşitlenmesi sürecinde turizmin rolünü Türkiye deneyimi ile karşılaştırarak değerlendirmekte; turizmin GSYH ve istihdam içindeki payının artırılabilmesi için kurumsal kapasite ve ürün çeşitliliğinin güçlendirilmesi gerektiğini savunmaktadır. Bilgiçli ve Hüseynzade (2024) ise alternatif turizm politikaları perspektifinden Azerbaycan'ın mevcut strateji belgelerini incelemekte; kırsal turizm, kültür turizmi ve doğa temelli ürünlerin geliştirilmesinin ülkenin marka değerini artırabileceğini vurgulamaktadır.

Bu çalışmalar Azerbaycan'ın turizm politikasının yönelimleri hakkında önemli ipuçları verse de STGE göstergelerini kullanarak ülkenin güçlü ve zayıf yönlerini sistematik biçimde ortaya koymamaktadır. Diğer bir ifade ile, Azerbaycan'ın turizm rekabetçiliği çoğu zaman nitel politika analizleri ve genel makro göstergeler üzerinden tartışılmakta; endekste yer alan alt boyutlar (örneğin dijital hazırlık, insan kaynağı, turistik hizmet altyapısı, çevresel sürdürülebilirlik) detaylı olarak çözümlenmemektedir. Ayrıca var olan çalışmalar, Azerbaycan'ı genellikle tek başına ele almakta; Güney Kafkasya ve Bağımsız Devletler Topluluğu içindeki akranlarıyla (örneğin Gürcistan, Kazakistan, Özbekistan, Kırgızistan, Tacikistan, Moldova) karşılaştırmalı bir çerçeve sunmamaktadır.

Sürdürülebilirlik boyutu hem STGE'nin yeni yapısında hem de turizm literatüründe giderek daha fazla ön plana çıkmaktadır. Gössling ve arkadaşları (2002), ekolojik ayak izi analizini kullanarak turizmin çevresel etkilerini nicel olarak değerlendirmiş; hızlı büyüyen destinasyonlarda kaynak kullanımı ve emisyonlar açısından kritik risklere dikkat çekmiştir. Hall (2019) ve Hall ve Page (2014) ise turizm planlamasının iklim değişikliği, arazi kullanımı ve yerel toplulukların yaşam kalitesi üzerindeki etkilerini tartışarak, sürdürülebilirlik ilkelerinin destinasyon yönetimi süreçlerine gömülmesi gerektiğini ileri sürmektedir. WEF'in 2021 ve 2024 TTDI raporları da COVID-19 sonrası toparlanmanın "dayanıklı

ve kapsayıcı" olması gerektiğini vurgulamakta; çevresel düzenlemeler, enerji verimliliği ve sosyal kapsayıcılık göstergelerini endeksin merkezine yerleştirmektedir (WEF, 2022, 2024).

Azerbaycan bağlamında sürdürülebilirlik tartışması, son yıllarda özellikle iki eksende yoğunlaşmaktadır. Birincisi, WTTC projeksiyonlarının 2025 itibarıyla ülkenin seyahat ve turizm sektöründe hızlı bir büyümeye işaret etmesi, çevresel ve sosyal taşınma kapasitesi açısından yeni sorular doğurmaktadır (WTTC, 2025). İkincisi ise, alternatif turizm politikaları ve kırsal/kültürel ürün geliştirme çabalarının hem bölgesel kalkınma hem de sürdürülebilirlik hedefleriyle nasıl uyumlandırılacağı sorunudur (Bilgiçli & Hüseynzade, 2024). Bu çerçevede STGE'nin sürdürülebilirlik alt boyutları, Azerbaycan'ın büyüme odaklı turizm politikası ile çevresel ve toplumsal sorumlulukları arasındaki dengenin analitik olarak izlenmesine imkân tanımaktadır.

Özetle mevcut literatür, destinasyon rekabetçiliğini açıklamada güçlü bir kuramsal ve yöntemsel çerçeve sunmakta; Türkiye ve diğer Türk devletleri üzerine kapsamlı analizler üretmektedir (Bahar & Kozak, 2005; Gürsakal & Arlı, 2023; Sungur Avcı & Avcı, 2025). Azerbaycan'a ilişkin çalışmalar ise daha çok makroekonomik katkı, politika belgeleri ve alternatif turizm senaryoları üzerinden ilerlemekte; STGE'nin sağladığı çok katmanlı veri yapısından sistematik biçimde yararlanmamaktadır (Bilgiçli & Hüseynzade, 2024; Gaziyev & Boyacıoğlu, 2021). Literatürde, Azerbaycan'ın 2019-2024 dönemindeki STGE performansını ana boyutlar, alt boyutlar ve tekil göstergeler düzeyinde inceleyen; bu performansı Güney Kafkasya ve BDT ülkeleriyle karşılaştıran ve sürdürülebilirlik boyutunu analizin merkezine yerleştiren kapsamlı bir çalışma bulunmamaktadır. Bu makale, tam da bu boşluğu doldurmayı hedeflemekte; STGE verilerini kullanarak Azerbaycan'ın turizm rekabetçilik profilini nicel ve bölgesel bir perspektifle yeniden okumayı amaçlamaktadır.

METODOLOJİ

Bu çalışma, Azerbaycan'ın seyahat ve turizm rekabetçiliğini STGE göstergelerine dayalı olarak inceleyen, nicel ve karşılaştırmalı bir araştırma olarak tasarlanmıştır. Amaç, Azerbaycan'ın 2019, 2021 ve 2024 dönemindeki performansını yalnızca tek bir skor ya da sıralama üzerinden değil, ana boyutlar, alt boyutlar ve seçilmiş göstergeler düzeyinde çözümleyerek bölgesel bağlama oturtmaktır.

Çalışmada benimsenen çerçeve

Dünya Ekonomik Forumu'nun seyahat ve turizm alanındaki bileşik endeksleri, 2000'li yılların ortasından itibaren öncelikle Seyahat ve Turizm Rekabetçilik Endeksi (STRE) başlığı altında yayımlanmış; bu yapı ülkelerin rekabet gücünü altyapı, iş ortamı, doğal ve kültürel kaynaklar gibi çok sayıda gösterge üzerinden ölçmüştür. COVID-19 sonrası dönemde ise endeks, "rekabetçilik"ten "gelişim ve sürdürülebilirlik" odağına kaydırılarak 2021 raporundan itibaren Seyahat ve Turizm Gelişim Endeksi (STGE) olarak yeniden tasarlanmıştır (WEF, 2022, 2024).

Yeni yapıda endeks beş ana boyut etrafında örgütlenmektedir:

- A – Elverişli Ortam (Enabling Environment)
- B – Seyahat ve Turizm Politikası ve Elverişli Koşullar (Policy & Enabling Conditions)
- C – Altyapı ve Hizmetler (Infrastructure & Services)
- D – Seyahat ve Turizm Kaynakları (T&T Resources)
- E – Seyahat ve Turizm Sürdürülebilirliği (T&T Sustainability)

Bu ana boyutlar, iş ortamı, güvenlik ve emniyet, sağlık ve hijyen, insan kaynakları ve işgücü piyasası, BT hazırlığı, seyahat ve turizmin önceliklendirilmesi, açıklık, fiyat rekabet gücü, hava/karayolu ve turistik altyapı, doğal ve kültürel kaynaklar, çevresel sürdürülebilirlik, sosyoekonomik etki ve talep sürdürülebilirliği gibi alt boyutlar ve 100'ün üzerinde gösterge ile operasyonelleştirilmektedir.

Bu çalışmada, WEF'in sağladığı 2019, 2021 ve 2024 STDE veri setleri kullanılmış; 2019 yılı için de WEF'in geriye dönük uyumlaştırılmış serisi dikkate alınarak aynı boyutsal yapı içinde karşılaştırılabilirlik sağlanmıştır. Böylece hem zaman içinde (2019-2024) hem de bölgesel düzeyde (Gürcistan, Ermenistan, Kazakistan, Özbekistan, Kırgızistan, Tacikistan, Moldova) dengeli bir analitik çerçeve kurulmuştur.

Veri kaynakları

Çalışmada kullanılan nicel veriler üç ana kaynağa dayanmaktadır:

1. Dünya Ekonomik Forumu – STGE 2019, 2021 ve 2024 veri setleri

- Toplam STGE skoru
- Beş ana boyut (A-E) skorları
- İlgili alt boyutlar (örneğin İş Ortamı, Güvenlik ve Emniyet, Sağlık ve Hijyen, BT Hazırlığı, Turistik Hizmetler ve Altyapı, Doğal/Kültürel Kaynaklar, Çevresel Sürdürülebilirlik vb.)
- Seçilmiş tekil göstergeler (örneğin yerel polise güven, dijital ödeme kullanımı, UNESCO kültürel ve doğal miras alanları, T&T GSYH ve istihdam çarpanları, yenilenebilir enerji düzenlemeleri vb.).

2. WTTC (World Travel & Tourism Council) 2023 ve 2024 Ekonomik Etki ve 2025 projeksiyon raporları

- Seyahat ve Turizm'in Azerbaycan GSYH'sine katkısı
- Sektörde istihdam edilen kişi sayısı
- Yurt içi ve yurt dışı ziyaretçi harcamaları

Bu veriler, TTDI bulgularını talep ve makroekonomik katkı perspektifinden bağlama oturtmak için tamamlayıcı olarak kullanılmıştır.

STGE boyut ve alt boyutlarının kullanımı

Analiz üç düzeyde yürütülmüştür:

1. Ana boyut düzeyi (A-E)

- Azerbaycan için 2019, 2021 ve 2024 skorları kullanılarak eğilim analizi yapılmış;
- Elverişli ortam, politika ve koşullar, altyapı ve hizmetler, kaynaklar ve sürdürülebilirlik boyutlarında toplam seviye ve yön değişimi (artış, azalış, stabil seyir) yorumlanmıştır.
- Aynı ana boyutlar için 2024 yılı itibarıyla Azerbaycan, referans ülkeler ile ısı haritası ve radar diyagramları üzerinden karşılaştırılmıştır.

2. Alt boyut düzeyi

- İş Ortamı, Güvenlik ve Emniyet, Sağlık ve Hijyen, İnsan Kaynakları ve İşgücü Piyasası, BT Hazırlığı, Seyahat ve Turizmin Önceliklendirilmesi, Açıklık, Fiyat Rekabet Gücü, Hava Taşımacılığı Altyapısı, Kara ve Liman Altyapısı, Turistik Hizmetler ve Altyapı, Doğal ve Kültürel Kaynaklar, Çevresel Sürdürülebilirlik, Seyahat ve Turizm'in Sosyoekonomik Etkisi ve Talep Sürdürülebilirliği gibi alt boyutlar için:

  - 2019-2024 dönemindeki seviye değişimleri hesaplanmış,

- 2024 yılında Azerbaycan'ın bölge ülkelerine göre nispi konumu (üst grup, orta grup, alt grup) belirlenmiştir.

  - Bu düzeyde hem tablolama hem de ısı haritası görselleştirmeleri kullanılmıştır.

3. Tekil gösterge düzeyi

  - Azerbaycan için 2019-2024 arasında en çok artış gösteren ve en çok azalan yedi TTDI göstergesi belirlenmiştir.

  - Artış/azalış oranları yüzdesel değişim üzerinden hesaplanmış; bu göstergeler, ülkenin turizm rekabetçiliğinde yükselen ve zayıflayan sütunları temsil edecek şekilde yorumlanmıştır.

  - "UNESCO Yaratıcı Şehir sayısı", "dijital ödemelerin kullanımı", "kültürel miras alanı sayısı" gibi artan; "ülke marka stratejisi puanı", "Seyahat ve Turizm GSYİH ve istihdam çarpanları", "hava taşımacılığı hizmet verimliliği" gibi azalan göstergeler, politika tartışmasına doğrudan girdi sağlayacak şekilde ele alınmıştır.

Analiz stratejisi ve görsel araçlar

Veriler temel olarak tanımlayıcı istatistikler ve görsel analitik teknikler kullanılarak değerlendirilmiştir:

- Tablolar ile 2019-2024 döneminde ana boyut ve seçilmiş alt boyutların seyrindeki artış ve azalışları gösterilmiştir.

- Isı haritaları hem ana boyutlar hem de alt boyutlar için Azerbaycan'ın referans ülkelerle karşılaştırmalı konumunu (yüksek değerler için yeşil, düşük değerler için turuncu tonlar) görselleştirmiştir.

Bu yaklaşımla amaç, yalnızca sayısal farklılıkları raporlamak değil; aynı zamanda "hikâye anlatan" görsel profiller üzerinden Azerbaycan'ın güçlü ve zayıf yönlerini, fırsat ve risk alanlarını bütüncül bir çerçeve içinde ortaya koymaktır.

Sınırlılıklar

Metodoloji, üç temel sınırlılık çerçevesinde değerlendirilmelidir. İlk olarak, çalışma tamamen ikincil veriye dayanmaktadır; STGE ve WTTC göstergeleri, veri tanımlarında ve ölçüm yöntemlerinde WEF ve WTTC'nin tercihlerini yansıtmaktadır. İkinci olarak, bazı göstergeler için 2019 ve 2024 arasında ölçüm metodolojisinde örtük değişiklikler olabilir; bu nedenle eğilimler mutlak değerlerden çok yön ve büyüklük açısından yorumlanmıştır. Üçüncü olarak, analiz kapsamı seçilmiş ülke grubu ile sınırlıdır; Azerbaycan'ın küresel rekabetçiliği daha geniş bir karşılaştırma setiyle de incelenebilir, ancak bu çalışma özellikle bölgesel rekabet ortamını görünür kılmayı hedeflemiştir.

Bu metodolojik çerçeve, sonuç bölümünde ayrıntılı olarak tartışılan bulguların hem şeffaf bir şekilde izlenebilmesine hem de politika yapıcılar ve araştırmacılar için yeniden üretilebilir bir analitik zemin oluşturmasına imkân vermektedir.

BULGULAR

Bu bölümde, Azerbaycan'ın 2019-2024 dönemi Seyahat ve Turizm Gelişim Endeksi (STGE) performansı hem zamansal eğilimler hem de bölgesel karşılaştırmalar çerçevesinde incelenmektedir. Bulgular önce toplam endeks düzeyi, ardından ana boyutlar, alt boyutlar ve seçilmiş göstergeler temelinde sistematik biçimde sunulmaktadır.

Genel STGE Performansı: Sınırlı İlerleme ve Dengesiz Dönüşüm

Toplam endeks puanı itibarıyla Azerbaycan, 2019-2024 döneminde hafif negatif eğilimli fakat keskin olmayan bir seyir izlemektedir. STGE toplam değeri 2019 ve 2021 yıllarında yaklaşık 4,00 düzeyinde iken, 2024'te 3,98'e gerilemiştir. Buna paralel olarak ülkenin küresel sıralamadaki yeri 2019'da 51. sıradan 2024'te 56. sıraya düşmüştür. Bu görünüm, Azerbaycan'ın küresel turizm rekabetinde göreli konumunu korumakla birlikte, anlamlı bir sıçrama gerçekleştiremediğine işaret etmektedir.

Tablo 1: Azerbaycan'ın 2019, 2021 ve 2024 SDGE Skorları

Yıl	STGE Skoru	Sıra	Değişim
2019	4.00	51	–
2021	4.00	55	▼ 4
2024	3.98	56	▼ 1 sıra 2021'e göre

Kaynak: WEF, 2024'te yayınlanan endeks değerlerinden yararlanılarak yazarlar tarafından oluşturulmuştur.

Diğer yandan Dünya Seyahat ve Turizm Konseyi (WTTC) verileri, aynı dönemde seyahat ve turizm sektörünün Azerbaycan ekonomisine katkısında dikkat çekici bir toparlanmaya işaret etmektedir. Özellikle 2023'te turizmin doğrudan GSYİH katkısında kaydedilen yaklaşık %55'lik artış ve 2024'te katkının 8,9 milyar ₼ seviyesine ulaşacağına yönelik beklenti, talep tarafında güçlü bir ivmenin varlığını göstermektedir.

Tablo 2: Azerbaycan'ın 2023-2024 Yıllarındaki Turizm Sektörünün Ekonomiye Katkısı

Göstergeler	2023	2024	2019'a göre
GSYİH Katkısı	₼ 6.9 milyar	₼ 8.9 milyar	+ %5.3
İstihdam	390 bin	438 bin	+ %8.4
Yurt içi harcama	₼ 3.3 m	₼ 3.7 m	+ %25
Uluslararası harcama	₼ 2.7 m	₼ 4.1 m	– %6 (2019'a göre)

Note: ₼ (manat)

Kaynak: WTTC, 2025'te yayınlanan endeks değerlerinden yararlanılarak yazarlar tarafından oluşturulmuştur.

Bu bulgular birlikte değerlendirildiğinde, Azerbaycan'da turist sayıları ve harcamaların hızlı bir şekilde toparlandığı, ancak STGE'nin ölçtüğü kurumsal kapasite, altyapı, yönetişim ve sürdürülebilirlik mimarisinin bu dinamiğe aynı hızda eşlik edemediği, dolayısıyla "dengesiz bir dönüşüm" sürecinin yaşandığı söylenebilir.

Ana Boyutlar Düzeyinde Azerbaycan'ın Konumu

Ana STGE boyutları itibarıyla Azerbaycan'ın performansı, yapısal güçlü ve zayıf alanları bir arada barındıran karmaşık bir profil ortaya koymaktadır.

Tablo 3: Azerbaycan'ın STGE'nin Ana Boyutlar Açısından Durumu

STGE Boyutu	2019	2021	2024	Eğilim
A – Elverişli Ortam	4,98	4,97	4,96	Stabil
B – Politika ve Etkin Koşullar	4,89	4,89	4,68	Düşüş
C – Altyapı ve Hizmetler	3,51	3,38	3,42	Kısmi artış
D – Kaynaklar	1,68	1,80	1,95	Artış
E – Sürdürülebilirlik	4,31	4,34	4,22	Azalma

Kaynak: WEF, 2024'te yayınlanan endeks değerlerinden yararlanılarak yazarlar tarafından oluşturulmuştur.

Elverişli Ortam (A) boyutu 2019'da 4,98, 2021'de 4,97 ve 2024'te 4,96 olarak ölçülmüş; dolayısıyla neredeyse yatay, hafif aşağı yönlü ancak temelde istikrarlı bir eğilim sergilemiştir. İş ortamı, hukukun üstünlüğü, güvenlik, sağlık, insan kaynağı ve bilgi teknolojileri hazırlığı bileşenlerinden oluşan bu blokta, makroekonomik ve kurumsal çerçevenin korunduğu, ancak verimlilik ve kalitenin anlamlı ölçüde artmadığı görülmektedir.

Politika ve Etkin Koşullar (B) boyutu 2019 ve 2021'de 4,89 iken, 2024'te 4,68'e gerilemiştir. Bu gerileme; turizmin kamu politikalarında önceliklendirilmesi, ülke marka stratejisinin gücü, seyahat ve turizme açıklık ile fiyat rekabet gücü gibi alt göstergelerdeki bozulma ile yakından ilişkilidir. Pandemi sonrası maliyet artışları, enflasyonist baskılar ve vize ulaşım kolaylığı konularında sınırlı ilerleme, bu boyutun zayıflamasına yol açmıştır.

Altyapı ve Hizmetler (C) boyutu 2019'da 3,51, pandeminin etkili olduğu 2021'de 3,38, 2024'te ise 3,42 olarak gerçekleşmiştir. Bu desen, özellikle hava taşımacılığı ve turistik hizmet altyapısında V biçiminde bir toparlanma sinyali vermekle birlikte, düzeyin hâlen bölgesel rekabet için görece düşük olduğunu göstermektedir. Ulaşım ve konaklama altyapısındaki yatırımların artmasına rağmen, bu yatırımların STGE göstergelerine tam olarak yansımadığı anlaşılmaktadır.

Kaynaklar (D) boyutu Azerbaycan'ın en belirgin iyileşme gösterdiği alan olarak öne çıkmaktadır. 2019'da 1,68 olan puan 2021'de 1,80'e, 2024'te ise 1,95'e yükselmiştir. Doğal miras alanlarının sayısındaki artış, kültürel mirasın görünürlüğünün yükselmesi, UNESCO Yaratıcı Şehirler inisiyatifine katılımın genişlemesi ve kültürel–doğa temelli dijital talep göstergelerindeki artış bu iyileşmeyi destekleyen başlıca unsurlardır.

Sürdürülebilirlik (E) boyutu ise 2019'da 4,31, 2021'de 4,34 iken 2024'te 4,22'ye gerilemiştir. Çevresel sürdürülebilirlik, enerji kullanımı, korunan alanlar ve seyahat ve turizmin sosyoekonomik etkilerini kapsayan bu blokta düşüş; özellikle Seyahat ve Turizm GSYİH çarpanı, Seyahat ve Turizm istihdam çarpanı ve çevresel performans bileşenlerindeki zayıflama ile ilişkilidir. Buna karşılık talep sürdürülebilirliği alt boyutunun nispeten istikrarlı seyretmesi, turizm talebinin henüz kırılgan bir düşüşe girmediğini göstermektedir.

Genel olarak değerlendirildiğinde Azerbaycan, elverişli ortamını büyük ölçüde koruyan, kaynaklar boyutunda kademeli olarak güçlenen; ancak turizm politikası, altyapı ve sürdürülebilirlik eksenlerinde ivme kaybeden bir destinasyon profili çizmektedir.

Alt Boyutlar Düzeyinde Azerbaycan'ın STGE Performansı

Azerbaycan'ın Alt Boyutlar Çerçevesinde Güçlü ve Zayıf Yönleri

Alt boyutlar düzeyindeki tablo, Azerbaycan'ın 2019-2024 döneminde görece dengeli fakat belirgin önceliklere ve boşluklara sahip, "karma" bir rekabetçilik profili çizdiğini gösteriyor.

Tablo 4: Azerbaycan'ın STGE'nin Ana Boyutlar Açısından Durumu

Boyutlar	Alt Boyutlar	2019	2021	2024	Eğilim (2019–2024)
Elverişli Ortam boyutu	İş Ortamı	4,50	4,76	4,56	Durağan / Hafif Artış
	Güvenlik ve Emniyet	5,88	5,21	5,26	Azalış
	Sağlık ve Hijyen	5,47	5,50	5,45	Durağan
	İnsan Kaynakları ve İşgücü Piyasası	4,37	4,61	4,47	Durağan / Hafif Artış
	Bilişim Teknolojileri (BT) Hazırlığı	4,67	4,78	5,07	Artış
Seyahat ve Turizm Politikası ve Elverişli Koşullar boyutu	Seyahat ve Turizmin Önceliklendirilmesi	4,78	4,53	4,50	Azalış
	Seyahat ve Turizme Açıklık	3,85	3,86	3,70	Azalış
	Fiyat Rekabet Gücü	6,05	6,27	5,83	Azalış
Altyapı ve Hizmetler boyutu	Hava Taşımacılığı Altyapısı	3,35	2,95	3,15	Azalış (pandemi sonrası kısmi toparlanma)
	Kara ve Liman Altyapısı	4,24	4,28	4,29	Durağan
	Turistik Hizmetler ve Altyapı	2,94	2,90	2,83	Azalış
Seyahat ve Turizm Kaynakları boyutu	Doğal Kaynaklar	1,62	1,63	1,84	Artış
	Kültürel Kaynaklar	2,01	2,29	2,48	Artış
	Eğlence Dışı Kaynaklar	1,41	1,47	1,53	Artış
Seyahat ve Turizm Sürdürülebilirliği boyutu	Çevresel Sürdürülebilirlik	4,05	4,01	3,97	Azalış
	Seyahat ve Turizmin Sosyoekonomik Etkisi	4,86	4,71	4,41	Azalış
	Seyahat ve Turizm Talebi Sürdürülebilirliği	4,01	4,29	4,28	Artış (stabil eğilim)

Kaynak: WEF, 2024'te yayınlanan endeks değerlerinden yararlanılarak yazarlar tarafından oluşturulmuştur.

Elverişli Ortam bileşenleri içinde özellikle BT hazırlığı, sağlık ve hijyen ile insan kaynakları ve işgücü piyasası alt boyutlarının görece güçlü; buna karşılık turistik hizmetler ve altyapı, doğal kaynaklar ve seyahat ve turizme açıklık gibi alanların ise yapısal zayıflık bölgeleri olarak öne çıktığı görülüyor.

Öncelikle Azerbaycan'ın kurumsal kapasite ve beşerî sermaye bileşenleri görece olumlu bir tablo sunuyor. İş ortamı alt boyutu 2019'da 4,50 iken 2021'de 4,76'ya yükselmiş, 2024'te 4,56'ya hafif geri gelse de genel olarak istikrarlı ve bölgesel bağlamda rekabetçi sayılabilecek bir seviyede kalmıştır. İşe alım–işten çıkarma uygulamalarının görece esnek oluşu, nitelikli işgücü bulma kolaylığındaki orta–yüksek düzey ve kadınların işgücüne katılım oranının görece yüksek seyretmesi, bu alt boyutun arka planındaki temel unsurlardır. Benzer biçimde, insan kaynakları ve işgücü piyasası alt boyutunda 4,37'den 4,47'ye doğru hafif yukarı yönlü bir eğilim, ortaöğretim ve yükseköğretim kalitesindeki artış ile desteklenmektedir. Bu bulgular, turizm sektörünün ihtiyaç duyduğu beşerî sermayenin asgari düzeyde mevcut olduğunu, ancak henüz sıçrama yapacak bir "kalite şoku" yaşanmadığını ima etmektedir.

Sağlık ve hijyen alt boyutu da Azerbaycan'ın güçlü yönleri arasında yer almaktadır. Alt boyut puanı 2019'da 5,47, 2021'de 5,50, 2024'te 5,45 seviyesinde seyretmektedir; yani hemen hemen yatay fakat yüksek bir plato söz konusudur. Kişi başına düşen hekim sayısının görece yüksekliği, temel sanitasyon ve temel içme suyu kullanımının neredeyse tam kapsama yaklaşması, bulaşıcı hastalık insidansının kontrol altında kalması, ülkenin turistler açısından "sağlık ve hijyen bakımından güvenli destinasyon" algısını desteklemektedir. Bu bulgunun, özellikle pandemi sonrası dönemde sağlık güvencesine duyarlı talebin yeniden şekillenmesi bağlamında, stratejik bir avantaj olduğu söylenebilir.

Elverişli Ortam boyutunun bir diğer kritik bileşeni olan güvenlik ve emniyet, puan düzeyi itibarıyla Azerbaycan için hâlâ güçlü bir sütun olmakla birlikte, eğilim itibarıyla daha kırılgan bir görünüme sahiptir. Yerel polise güven ve gece tek başına yürüme güvenliği gibi göstergelerde 2019-2024 boyunca yüksek skorlar korunmakla birlikte, toplam alt boyut puanındaki dalgalanma (5,88'den 5,21'e düşüş, ardından 5,26'ya sınırlı toparlanma) güvenlik algısının küresel ve bölgesel gelişmelere duyarlı olduğunu ortaya koymaktadır. Bu dalgalanma, doğrudan turizm talebi üzerinde kısa vadeli etkiler yaratmasa bile, uzun vadeli marka konumlandırması açısından dikkatle izlenmesi gereken bir alan olarak görülmelidir.

BT hazırlığı alt boyutu ise Azerbaycan'ın en dinamik şekilde güçlendiği alanlardan biridir. 2019'da 4,67 olan puan, 2021'de 4,78'e, 2024'te ise 5,07'ye yükselmiştir. İnternet kullanan bireylerin oranındaki artış, sabit ve mobil geniş bant aboneliklerindeki büyüme, 3G/4G kapsama alanının neredeyse doyum noktasına yaklaşması ve dijital ödeme kullanımındaki belirgin artış, turizm sektörünün dijitalleşme kapasitesini güçlendirmektedir. Bu gelişmeler, çevrimiçi rezervasyon davranışlarından destinasyon pazarlama stratejilerine kadar geniş bir alanı etkileyen altyapısal bir dönüşüme işaret etmektedir.

Buna karşılık, seyahat ve turizme açıklık ile turistik hizmetler ve altyapı alt boyutları Azerbaycan'ın zayıf halkalarını oluşturmaktadır. Seyahat ve turizme açıklık puanı 2019'da 3,85 iken 2024'te 3,70'e gerilemiştir. Vize kolaylığı, hava hizmeti anlaşmalarının sayısı ve pasaport hareketliliği gibi göstergelerde sınırlı iyileşme veya durağanlık, ülkenin "kolay erişilebilir" bir destinasyon olarak algılanmasını zorlaştırmaktadır. Öte yandan, turistik hizmetler ve altyapı alt boyutunda 2019-2024 arasında 2,94'ten 2,83'e doğru küçük fakat istikrarlı bir gerileme söz konusudur. 100 kişi başına düşen otel odası sayısının düşük kalması, kısa süreli kiralık konaklama kapasitesinin sınırlılığı ve T&T sermaye yatırım yoğunluğunun zayıf seyri, arz tarafında önemli kapasite kısıtlarına işaret etmektedir.

Doğal ve kültürel kaynaklar alt boyutları birlikte değerlendirildiğinde, karşımıza "güçlü bir kültürel çekirdek, görece zayıf bir doğa temelli ürün portföyü" çıkmaktadır. Doğal kaynaklar alt boyutu 1,62'den 1,84'e yükselebilmiş olsa da skor seviyesi hâlâ düşük; bu durum, korunan alan oranı, doğal miras alanlarının sayısı ve doğa temelli turizm dijital talebinin sınırlı oluşuyla ilişkilidir. Buna karşılık kültürel kaynaklar 2,01'den 2,48'e yükselmiş, UNESCO Yaratıcı Şehirler, somut olmayan kültürel miras ve kültürel dijital talep göstergelerindeki artış bu eğilimi desteklemiştir. Eğlence dışı kaynaklar alt boyutunda da sınırlı ama istikrarlı bir artış gözlenmekte; küresel şehirlerin varlığı ve önde gelen üniversitelerin katkısı, Azerbaycan'ı iş ve eğitim amaçlı seyahatlerde de görünür kılmaktadır.

Sürdürülebilirlik bileşenleri açısından tablo daha karmaşıktır. Çevresel sürdürülebilirlik alt boyutunda 4,05'ten 3,97'ye doğru hafif bir gerileme; seyahat ve turizmin sosyoekonomik etkisi alt boyutunda ise 4,86'dan 4,41'e daha belirgin bir düşüş söz konusudur. Bu durum, bir yandan seyahat ve turizmin GSYİH ve istihdam çarpanlarının zayıflamasını, diğer yandan da turizmin yerel ekonomi üzerindeki yayılma etkilerinin sınırlanmasını yansıtmaktadır. Buna karşın, seyahat ve turizm talebi sürdürülebilirliği 4,01'den 4,28'e yükselmiş; özellikle kültürel ve doğal cazibe merkezlerine yönelik ilgi yoğunluğunun artması ve turizmin coğrafi olarak dağılmış bir yapı sergilemesi, talebin orta vadede daha çeşitli ve dayanıklı bir nitelik kazandığını göstermektedir.

En Çok Yükselen ve En Çok Gerileyen Göstergeler Bağlamında Bir Değerlendirme

Tekil göstergeler düzeyinde bakıldığında, Azerbaycan'ın STGE performansı "kültürel ve dijital kapasitede kuvvetli bir yükseliş, kurumsal imaj ve ekonomik çarpanlarda ise anlamlı bir zayıflama" olarak özetlenebilir.

Tablo 5: Azerbaycan'ın En Çok Artan ve En Çok Azalan STGE Göstergeleri (2019-2024)

En Çok Artan 7 Gösterge	**2019**	**2024**	**Değişim (%)**
UNESCO Yaratıcı Şehir Sayısı	1.67	3.00	+79.6%
Dijital Ödemelerin Kullanımı	2.47	3.55	+43.7%
Kültürel Miras Alanı Sayısı	1.40	1.80	+28.6%
Yenilenebilir Enerji Düzenlemeleri	2.26	2.50	+10.6%
Doğal Miras Alanı Sayısı	1.00	2.00	+100.0%
İnternet Kullanan Bireyler	5.74	6.16	+7.3%
Temel İçme Suyu Kullanımı	6.39	6.72	+5.2%
En Çok Azalan 7 Gösterge	**2019**	**2024**	**Değişim (%)**
Ülke Marka Stratejisi Puanı	5.84	4.10	−29.8%
T&T GSYH Çarpanı	5.25	3.90	−25.7%
T&T İstihdam Çarpanı	5.30	4.32	−18.5%
Sosyal Koruma Harcamaları	2.64	2.86	−14.0%
Hava Taşımacılığı Hizmet Verimliliği	5.80	5.11	−11.9%
Satın Alma Gücü Paritesi	6.37	5.64	−11.4%

Kaynak: WEF, 2024'te yayınlanan endeks değerleri ile yazarlar tarafından oluşturulmuştur.

En çok artan göstergeler listesinde özellikle UNESCO Yaratıcı Şehir sayısı, doğal miras alanı sayısı, dijital ödemelerin kullanımı, internet kullanan bireylerin oranı ve temel içme suyu kullanım oranı gibi hem kültürel hem de altyapısal temelli unsurlar öne çıkmaktadır. UNESCO Yaratıcı Şehirler ağında yer alan şehir sayısının 1,67'den 3,00'e yükselmesi, Azerbaycan'ın kültür ve yaratıcı endüstriler ekseninde küresel dolaşıma daha güçlü şekilde eklemlendiğini göstermektedir. Benzer biçimde, doğal miras alanlarının sayısındaki artış ve içme suyu altyapısındaki iyileşme hem sürdürülebilir turizm anlatısını

güçlendirmekte hem de yaşam kalitesi göstergeleri üzerinden destinasyon cazibesine dolaylı katkıda bulunmaktadır.

Dijitalleşme cephesinde, dijital ödeme kullanımındaki (2,47'den 3,55'e) ve internet kullanım oranındaki artış, turizm sektöründe elektronik ticaretin, çevrimiçi rezervasyon davranışlarının ve dijital pazarlama kanallarının genişlemesi için kritik bir zemin hazırlamaktadır. Bu göstergeler, STGE alt boyutlarından BT hazırlığı ve talep sürdürülebilirliği ile doğrudan bağlantılı olup, Azerbaycan'ın orta vadede "dijital olarak erişilebilir ve görünür destinasyon" kimliğini pekiştirebileceğini ima etmektedir.

Öte yandan, en çok gerileyen göstergeler, Azerbaycan'ın turizm rekabetçiliğinde hangi alanlarda "alarm zilleri" çaldığını açıkça ortaya koymaktadır. Ülke marka stratejisi puanı 5,84'ten 4,10'a gerileyerek, destinasyon markalaması ve uluslararası imaj yönetimi alanında belirgin bir zayıflamaya işaret etmektedir. STGE bağlamında bu gösterge, ülkenin stratejik iletişim kapasitesi, tanıtım bütçeleri ve marka konumlandırma netliğiyle doğrudan ilişkilidir. Skordaki bu düşüş, Azerbaycan'ın altyapı ve kaynak tarafında yaptığı iyileştirmelerin küresel pazarlara yeterince güçlü bir marka anlatısıyla yansıtılamadığını düşündürmektedir.

Benzer şekilde, seyahat ve turizm GSYH çarpanı ve seyahat ve turizm istihdam çarpanı değerlerindeki gerileme (sırasıyla 5,25'ten 3,90'a ve 5,30'dan 4,32'ye) turizmin ekonomiyle kurduğu bağlantıların zaman içinde zayıfladığını göstermektedir. Bu durum, turizm gelirlerinin yerel üretim ağlarına, tedarik zincirlerine ve işgücü piyasasına eskisi kadar güçlü yayılmadığı; harcamaların daha sınırlı bir aktör grubunda yoğunlaştığı veya ekonominin diğer sektörlerinin turizmle entegrasyon düzeyinin görece düşük kaldığı şeklinde yorumlanabilir.

Kurumsal ve altyapısal göstergeler arasında, hukukun üstünlüğü puanının 4,14'ten 2,89'a gerilemesi ve hava taşımacılığı hizmetlerinin verimliliği skorunun 5,80'den 5,11'e düşmesi de dikkat çekicidir. Hukukun üstünlüğündeki zayıflama, yatırım güvenliği ve uzun vadeli sözleşme ilişkileri açısından turizm sektörüne dair algıyı olumsuz etkileyebilecek bir unsurdur. Hava taşımacılığı hizmet verimliliğindeki düşüş ise, pandemi sonrası dönemde hava bağlantılarının tam olarak toparlanamaması ve kapasite/beklenti dengesizliklerini yansıtmaktadır.

Son olarak, güvenli biçimde arıtılmış evsel atık su oranındaki azalma (4,44'ten 3,48'e) çevresel altyapı açısından önemli bir uyarı niteliği taşımaktadır. Bu gösterge, çevresel sürdürülebilirlik ve halk sağlığıyla doğrudan bağlantılı olduğu için, turizm sektörünün orta–uzun vadeli dayanıklılığı açısından da stratejik öneme sahiptir.

Özetle, alt boyutlar ve tekil göstergeler düzeyindeki analiz, Azerbaycan'ın STGE performansının yalnızca makro bir "sıra ve puan" meselesi olmadığını; aksine, kültürel ve dijital kapasitede yükselen bir ivme ile kurumsal imaj, ekonomik çarpanlar ve çevresel altyapıda derinleşen kırılganlıkların bir arada yaşandığı karmaşık bir dönüşüm süreci olduğunu ortaya koymaktadır. Bir sonraki bölümde, bu iç dinamiklerin bölgesel bağlamda nasıl konumlandığı, Azerbaycan'ın komşu ve akran ülkelerle kıyaslandığında hangi boyutlarda yakınlaştığı veya ayrıştığı tartışılacaktır.

Bölgesel Karşılaştırmalar: Azerbaycan'ın STGE Performansının Ülke Grubu İçindeki Konumu

Azerbaycan'ın STGE performansı, yalnızca kendi zaman içi seyrine bakıldığında "görece istikrarlı" görünse de bölgesel karşılaştırma grafiklerine (ülke puan ve sıralamaları, ana/alt boyut ısı haritaları ve eğim grafikleri) birlikte bakıldığında daha nüanslı bir tablo ortaya çıkmaktadır. 2019–2024 döneminde Azerbaycan'ın toplam endeks puanı yaklaşık 4,00 düzeyinde kalırken, küresel sıralamada 51. sıradan 56. sıraya gerilemesi, aynı dönemde akran ülkelerden bazılarının daha hızlı iyileştiğine işaret etmektedir. Özellikle Özbekistan'ın (94'ten 78'e) ve Kazakistan'ın (58'den 52'ye) sıralama bazında gösterdiği iyileşme, bölgesel rekabet seti içinde göreli bir yer değiştirmeyi beraberinde getirmektedir.

Tablo 6: Ülkelerin Sıralamaları ve Puanları (2019-2021-2024)

Ülke	Sıra 2019	Sıra 2021	Sıra 2024	Puan 2019	Puan 2021	Puan 2024
Azerbaycan (AZE)	51	55	56	4.00	4.00	3.98
Gürcistan (GEO)	49	49	45	4.10	4.14	4.14
Ermenistan (ARM)	64	67	72	3.82	3.83	3.73
Kazakistan (KAZ)	58	58	52	3.92	3.99	4.07
Özbekistan (UZB)	94	84	78	3.41	3.59	3.68
Kırgızistan (KGZ)	103	102	102	3.29	3.36	3.38
Tacikistan (TJK)	96	98	99	3.40	3.41	3.42
Moldova (MDA)	89	87	88	3.49	3.57	3.53

Kaynak: WEF, 2024'te yayınlanan endeks değerlerinden yararlanılarak yazarlar tarafından oluşturulmuştur.

Puan düzeyleri açısından bakıldığında Azerbaycan, 2024 yılı itibarıyla 4,00–4,10 bandında yer alan "orta-üst seviye" bir grup içerisinde konumlanmaktadır. Gürcistan (4,14) ve Kazakistan (4,07) az farkla Azerbaycan'ın üzerinde, Ermenistan (3,73), Kırgızistan (3,38) ve Tacikistan (3,42) ise belirgin biçimde altında yer almaktadır. Moldova (3,53) ve Özbekistan'la (3,68) birlikte düşünüldüğünde Azerbaycan, bölgesel olarak ne "en iyi performans gösteren" ne de "en zayıf halka" olarak tanımlanmakta; daha çok, doğru politika seti ve yatırım öncelikleri ile yukarı sıçrama potansiyeli taşıyan bir orta düzey destinasyon profili çizmektedir.

Ana boyutlar ısı haritası, bu orta düzey performansın hangi eksenlerde görece avantaja, hangilerinde dezavantaja dönüştüğünü göstermektedir.

Şekil 2: STDE Ana Boyutlar – Bölgesel Karşılaştırma (2024)

Elverişli Ortam (A) boyutunda Azerbaycan, Gürcistan ve Kazakistan'ın hemen gerisinde, bölgenin üst bandında yer almakta; iş ortamı, güvenlik ve sağlık göstergeleri bakımından Kırgızistan ve Tacikistan gibi daha kırılgan ekonomilere göre belirgin bir üstünlük sergilemektedir. Politika ve Etkin Koşullar (B) boyutunda ise Azerbaycan, Gürcistan'ın hafif altında fakat Ermenistan, Özbekistan ve Kırgızistan'ın üzerinde konumlanmakta; bu da ülkenin turizm politikası ve düzenleyici çerçeve bakımından "orta seviyeli ama iyileştirmeye açık" bir düzeyde olduğunu göstermektedir. Altyapı ve Hizmetler (C) boyutunda tüm ülkelerin görece düşük skorlar aldığı, ancak Azerbaycan'ın Gürcistan ve Kazakistan'ın gerisinde kaldığı, buna karşın Kırgızistan ve Tacikistan'dan daha iyi durumda olduğu görülmektedir. Kaynaklar (D) boyutunda Kazakistan ve Özbekistan doğa temelli avantajlarıyla ayrışırken, Azerbaycan bu iki ülkenin altında ancak Ermenistan ve Moldova ile benzer bir seviyede yer almaktadır. Sürdürülebilirlik (E) boyutunda ise Azerbaycan, Özbekistan ve Moldova ile birlikte orta-üst bandı oluşturmakta; Kırgızistan'ın altında, Gürcistan ve Kazakistan'la ise benzer bir profile yaklaşmaktadır.

Alt boyutlar ısı haritası, bu genel desenin arkasındaki daha mikro düzeyli farklılaşmaları ortaya koymaktadır.

Şekil 3: STDE Alt Boyutlar – Bölgesel Karşılaştırma (2024)

Azerbaycan, BT Hazırlığı, Sağlık ve Hijyen, İnsan Kaynakları ve İşgücü Piyasası ile Fiyat Rekabet Gücü alt boyutlarında bölgenin güçlü oyuncuları arasına yerleşirken; Turistik Hizmetler ve Altyapı, Doğal Kaynaklar ve Seyahat ve Turizme Açıklık gibi alanlarda Gürcistan ve Kazakistan'ın gerisinde kalmaktadır. Özellikle Gürcistan'ın açıklık ve turistik hizmet kapasitesi, Kazakistan'ın ise doğal kaynaklar ve sosyoekonomik etki boyutlarındaki üstünlüğü, Azerbaycan'ın rekabet ettiği ürün karmasını ve pozisyonlanmasını yeniden düşünmesini gerektiren alanlar olarak öne çıkmaktadır.

Yüzdesel değişim ısı haritası ise, statik düzeylerden ziyade dinamik eğilimleri karşılaştırma imkânı sunmaktadır.

Şekil 4: STDE Alt Boyutların Yüzdesel Değişimi – Bölgesel Karşılaştırma (2019-2024)

2019-2024 döneminde Azerbaycan, BT Hazırlığı, Doğal ve Kültürel Kaynaklar ile Eğlence Dışı Kaynaklar gibi alanlarda kayda değer artışlar sergilemiş; bu bakımdan Gürcistan ve Ermenistan'la benzer bir "kültürel ve dijital güçlenme" yörüngesine girmiştir. Buna karşılık, Seyahat ve Turizmin Sosyoekonomik Etkisi ve Güvenlik ve Emniyet gibi alt boyutlarda yaşanan göreli gerileme, Kazakistan ve Özbekistan'ın gösterdiği pozitif eğilimlerle tezat oluşturmaktadır. Bu durum, Azerbaycan'ın turizmi ekonomik çeşitlendirme ve istihdam yaratma aracı olarak kullanma kapasitesinde görece bir yavaşlama yaşadığını, buna karşın bazı komşularının bu alanda daha hızlı ilerlediğini göstermektedir.

Genel olarak, bölgesel karşılaştırmalar Azerbaycan'ın STGE performansının "orta düzey ama yönü belirsiz olmayan" bir profil sunduğunu ortaya koymaktadır. Elverişli ortam ve dijital altyapı açısından akranlarının önünde veya onlarla aynı hizada olan ülke, turistik hizmet kapasitesi, açıklık ve sosyoekonomik etki boyutlarında ise hem Gürcistan ve Kazakistan'ın hem de kısmen Özbekistan'ın gerisine düşmektedir. Bu bulgular, Azerbaycan'ın turizm rekabetçiliğini güçlendirmek için özellikle ürün çeşitliliği, hizmet kalitesi, doğa temelli turizm ve bütüncül sürdürülebilirlik politikalarına odaklanan, bölgesel öğrenmeye açık bir stratejik çerçeve geliştirmesi gerektiğine işaret etmektedir.

SONUÇ

Bu çalışma, Azerbaycan'ın Seyahat ve Turizm Gelişim Endeksi performansını 2019-2024 döneminde analiz ederek ülkenin bölgesel rekabet pozisyonunu, güçlü ve zayıf yönlerini, fırsat ve tehditlerini sistematik biçimde ortaya koymuştur. Bulgular, Azerbaycan'ın turizm sektörü açısından yapısal istikrar, dijital dönüşüm ve kültürel çeşitlilik gibi alanlarda dikkate değer ilerlemeler kaydettiğini, ancak altyapı, sürdürülebilirlik ve politika önceliklendirmesi konularında hâlâ önemli iyileştirme gereksinimleri bulunduğunu göstermektedir.

2019-2024 verileri, Azerbaycan'ın STGE genel puanında görece istikrarlı bir durum sergilediğini ortaya koymaktadır. "Elverişli Ortam" (A) boyutunun 4,96 puan ile bölgesel ortalamanın üzerinde seyretmesi, makroekonomik istikrar ve politika sürekliliği açısından ülkenin avantajlı konumunu koruduğunu göstermektedir. Buna karşın, "Politika ve Etkinleştirici Koşullar" (B) boyutundaki düşüş, turizmin stratejik planlama belgelerinde ve kamu yatırımlarında öncelik düzeyinin azaldığına işaret etmektedir. Bu durum, devletin turizmi sadece ekonomik bir faaliyet değil, aynı zamanda sürdürülebilir kalkınmanın itici gücü olarak yeniden konumlandırması gerekliliğini ortaya koymaktadır.

Azerbaycan, 2019-2024 arasında BT hazırlığı ve dijital altyapı alanında önemli ilerleme sağlamıştır. İnternet erişiminin artması, dijital ödeme sistemlerinin yaygınlaşması ve mobil bağlantı kalitesindeki iyileşme, ülkenin turizmde dijital dönüşüm potansiyelini güçlendirmiştir. Bu ivmenin kurumsallaşması için, turizm veri yönetimi, çevrim içi destinasyon yönetimi sistemleri (DMS) ve "akıllı turizm" yaklaşımlarının (smart tourism) ulusal stratejiye entegre edilmesi önem arz etmektedir.

Ayrıca Azerbaycan'ın 2024 yılında COP29'a ev sahipliği yapmış olması, ülkenin sürdürülebilir turizm ve yeşil büyüme politikalarını dünya kamuoyuna tanıtması için tarihsel bir fırsat yaratmaktadır. Bu bağlamda turizm yatırımlarında karbon ayak izini azaltacak teşvik modelleri, yenilenebilir enerjiyle çalışan tesis standartları ve çevresel sertifikasyon sistemlerinin (örneğin Green Key) yaygınlaştırılması önerilmektedir.

"Kültürel Kaynaklar" alt boyutundaki %23'lük artış, Azerbaycan'ın kültürel diplomasi ve marka destinasyon stratejisinde başarı kaydettiğini göstermektedir. Şeki ve Bakü gibi şehirlerin UNESCO miras listesine girmesi, "Yaratıcı Şehirler Ağı"na katılım ve kültürel etkinliklerin çeşitlenmesi (örneğin Bakü Caz Festivali, Karabağ Kültür Günleri) ülkeyi Güney Kafkasya'nın kültürel merkezlerinden biri haline getirmiştir. Bu gelişmelerin sürekliliği için, kültürel turizmin yerel kalkınma politikalarıyla bütünleşmesi, bölgesel temalı rotaların (örneğin "Karabağ Miras Yolu", "İpek Yolu Kültür Koridoru") oluşturulması önerilmektedir.

"Altyapı ve Hizmetler" (C) boyutunun düşük seyretmesi, turizmin fiziki temellerinde ilerleme hızının sınırlı kaldığını göstermektedir. Özellikle konaklama kapasitesi, bölgesel ulaşım ağları ve turistik hizmet kalitesi alanlarında yapısal eksiklikler sürmektedir. Bu durum, turizmin coğrafi çeşitlenmesini engellemekte ve sektörü Bakü merkezli yoğunlaşma sorunuyla karşı karşıya bırakmaktadır. Dolayısıyla, Karabağ ve Nahçıvan gibi bölgelerde yeni havaalanı projeleri, çevre dostu otel yatırımları ve bölgesel turizm kümeleri oluşturulması hem bölgesel dengeyi hem de toplam kapasiteyi artırabilir.

"Sosyoekonomik Etki" boyutundaki %9,3'lük gerileme, turizmin toplumsal kapsayıcılığında azalma olduğunu göstermektedir. Turizmin istihdam çarpanı artarken, kadın katılım oranı ve yüksek ücretli istihdam payı düşüktür. Ayrıca turizm sektöründeki iş gücünün nitelik düzeyi (özellikle ortaöğretim ve ileriöğretim mezun oranları) OECD ortalamasının oldukça altındadır.
Bu nedenle, mesleki eğitim reformu, turizm okullarının uluslararası akreditasyonu (örn. UNWTO TedQual) ve kadın istihdamını artıracak teşvikler (örneğin "Kadın Girişimci Turizm Programı") politika önceliği haline gelmelidir.

Azerbaycan, hem Bağımsız Devletler Topluluğu (BDT) hem de Türk Devletleri Teşkilatı (TDT) üyesi olarak önemli bir jeo-ekonomik köprü ülke konumundadır. Bu çerçevede, Gürcistan, Kazakistan ve Özbekistan ile geliştirilecek ortak turizm rotaları (örneğin "Orta Koridor Turizm İnisiyatifi") ve ortak vize kolaylığı politikaları, ülkenin "turizm açıklığı" boyutunu güçlendirebilir.
Ancak bölgesel jeopolitik riskler, özellikle Güney Kafkasya'daki siyasi istikrarsızlık ve sınır güvenliği sorunları, uluslararası turist talebini olumsuz etkileyebilir. Bu nedenle turizm diplomasisi, barış ve istikrar politikalarının bir tamamlayıcısı olarak ele alınmalıdır.

Veri temelli bulgulara göre Azerbaycan'ın turizm gelişiminde üç stratejik öncelik öne çıkmaktadır:

- Altyapısal Dayanıklılığı Artırmak: Fiziksel ve dijital altyapıyı entegre eden yatırımlar ile ulaşım ağlarının güçlendirilmesi.
- Sürdürülebilir ve Kapsayıcı Turizm Modeline Geçiş: Yeşil enerji, karbon nötr otelcilik ve toplumsal kapsayıcılığı teşvik eden "Yeşil Turizm Stratejisi 2030".
- Dijitalleşme ve Bölgesel Entegrasyonun Derinleştirilmesi: Akıllı turizm sistemleri, veri paylaşımı platformları ve TDT-BDT arasında ortak tanıtım stratejileri.

Sonuç olarak, Azerbaycan 2024 itibarıyla bölgesel rekabet gücünü koruyan ancak henüz sürdürülebilir büyüme eşiğine tam olarak ulaşmamış bir turizm ekonomisi görünümü sergilemektedir. 2025-2030 döneminde kamu-özel sektör iş birliğini, dijital dönüşümü ve çevresel sorumluluğu merkezine alan bütüncül bir turizm politikası, Azerbaycan'ı yalnızca Güney Kafkasya'nın değil, Avrasya'nın yükselen turizm merkezlerinden biri haline getirebilir. Talepteki büyümeyi, kurumsal kapasite, altyapı ve sürdürülebilirlik reformlarıyla eş zamanlı yöneten bütüncül bir politika yaklaşımı, ülkeyi yalnızca daha fazla ziyaretçi çeken değil, aynı zamanda turizmi kapsayıcı kalkınmanın temel sütunlarından biri haline getiren bir destinasyon konumuna taşıyabilir.

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THE ROLE OF TECHNOLOGY IN IMPROVING TAX ADMINISTRATION IN NIGERIA

IYKE-NZEH BIBIAN IFEYINWA

Accountant, Nigerian institute of Animal Science
E-mail: bibianoom2007@yahoo.com
ORCID ID: 0009-0000-5845-6172

Abstract

Technology has significantly improved tax administration in Nigeria by enhancing efficiency, transparency, and compliance. The Federal Inland Revenue Service (FIRS) and various state tax authorities have adopted digital platforms such as electronic tax filing, electronic payment systems (e.g., Tax-pro-MAX, e-Tax pay), and integrated taxpayer databases to automate and streamline tax processes. These technological innovations simplify taxpayer registration, filing, and payment procedures while reducing administrative costs and minimizing human errors. Moreover, technology has helped curb tax evasion by enabling better monitoring and enforcement through real-time data access and analytics.

Studies reveal that tax digitization has expanded Nigeria's tax base and increased revenue generation, contributing positively to the country's fiscal health. Digitization benefits include faster processing of tax returns, reduced physical contact promoting social distancing, and improved taxpayer convenience. The integration of emerging technologies such as artificial intelligence and big data analytics holds promise for further transforming tax compliance and administration by enabling predictive analytics, fraud detection, and personalized taxpayer services.

Challenges remain, including infrastructural deficits, limited digital literacy among some taxpayers and officials, and cybersecurity concerns. To maximize the benefits of technology in tax administration, ongoing capacity building for tax officials and public tax education campaigns are essential. Overall, technology adoption in Nigerian tax administration is a critical driver towards increased revenue, greater transparency, and improved governance, ultimately supporting sustainable economic development.

Keywords: Technology, Tax Administration,

INTRODUCTION

Tax administration in Nigeria has historically been hampered by inefficiencies such as manual processing, low compliance rates, tax evasion, and leakages. Recent digital transformation initiatives aim to address these challenges by leveraging information and communication technologies (ICT). This paper situates the role of technology in improving tax system transparency, taxpayer convenience, and overall government revenue generation.

MATERIALS AND METHODS

This study employed a survey research design to investigate the impact of technology on tax administration efficiency in Nigeria. Primary data were collected through structured questionnaires administered to tax officials and taxpayers in selected states, including Oyo and Enugu. The questionnaires focused on the use and effectiveness of digital tax systems such as electronic filing, electronic payment, and electronic registration.

In addition to primary data, secondary data were sourced from government reports, published studies, and records from the Federal Inland Revenue Service. The combination of primary and secondary data allowed for a comprehensive understanding of the technological interventions and their effects on tax administration.

Data collection was conducted over a three-month period from June to August 2025. The questionnaires were designed to capture respondents' perceptions of the ease of use, reliability, and

impact of technology on tax compliance and revenue collection. Follow-up interviews were conducted with select tax officials to obtain qualitative insights into challenges and successes related to technology adoption.

Quantitative data from the questionnaires were analyzed using statistical methods including descriptive statistics and regression analysis to test hypotheses regarding the relationship between technology use and tax administration efficiency. Qualitative data from interviews were subjected to thematic analysis to identify recurring themes and deeper contextual understanding.

Ethical approval for the study was obtained from my Institute Research Ethics Committee, and all participants provided informed consent before data collection. Efforts were made to ensure anonymity and confidentiality of respondents throughout the research process.

FINDINGS

Technology adoption has enabled the Federal Inland Revenue Service to increase its tax collection efficiency by expanding VAT collection points, automating taxpayer services, and implementing real-time data validation portals. Digital invoicing and electronic clearance systems reduce fraud and ensure compliance. Nonetheless, challenges such as digital infrastructure gaps, taxpayers' digital literacy, and resistance to change persist (Deshi, 2025; ICTD, 2025),

Subtitle

Key Techno,logical innovations and their impact on tax administration efficiency in Nigeria,clearly conveys the focus on specific technologies and their roles in enhancing the tax system.The table visualize the key technological innovations and their impact on tax administration efficiency in Nigeria in 2025

Table 1:

Role of Technology	**Description**	**Impact on Tax Administration**
Electronic Tax Registration (e-Registration)	Captures new taxpayers through automated online systems	Expands tax base by registering more taxpayers efficiently
E-Payment Systems (e-Taxpay)	Platforms like Interswitch and NIBSS used for online tax payments	Simplifies tax payment, reduces delays, and increases revenue collection
E-Filing (Electronic Tax Return Filing)	Online submission of tax returns	Reduces paperwork, shortens processing time, and improves compliance accuracy
Electronic Tax Clearance Certificate (e-TCC)	Automated processing and issuance of tax clearance certificates	Accelerates certificate issuance and enhances transparency
Taxpayer Identification Number (TIN)	Unique digital ID for taxpayers	Streamlines taxpayer identification and tracking

Integrated Tax Administration System (ITAS)	Comprehensive digital system integrating tax processes	Automates operations, enhances payment processes, and increases efficiency
Artificial Intelligence (AI)	Use of AI for predictive analytics and fraud detection	Improves accuracy, reduces administrative costs, and strengthens compliance
Mobile-Compatible E-Tax Modules	User-friendly tax platforms compatible with mobile OS (Android, iOS)	Increases accessibility and convenience for taxpayers
Digital Communication Channels	Use of emails, SMS, and online portals for taxpayer interaction	Enhances taxpayer education, support, and timely communication

5

Second Subtitle

Technological innovations driving efficiency and revenue growth in tax Administration in Nigeria..This subtitle highlights the focus on both efficiency improvements and revenue impact from the technological innovations discussed. It pairs well after a first subtitle like "Key Technological Innovations and Their Impact on Tax Administration Efficiency in Nigeria" by emphasizing outcomes and benefits.samphina+2

Third Subtitle

Determinants and strategies for enhancing tax Administration efficiency in Nigeria ,this include several factors:

> Autonomy of tax Authority:Greater fiscal and operational autonomy allows tax agencies to function effectively without undue political interference, improving decision-making and resource allocation.

>Adoption of digital platforms and automation tools facilitates accurate data processing, reduces errors, and improves taxpayer services

>Training tax officials and providing incentives increase efficiency and effectiveness in tax collection and administration.

>Simplified regulations and robust enforcement deter tax evasion and ease compliance burdens

>Transparent and Accountability:Strong oversight mechanisms and transparent processes reduce corruption and build taxpayer trust, improving compliance rates.

>Educating taxpayers on their obligations and benefits of compliance increases voluntary tax payment and reduces evasion.

DISCUSSION AND CONCLUSION

The effectiveness of technology in tax administration depends on sustained government commitment to funding digital infrastructure and capacity-building for tax officials. Increasing public awareness and simplifying digital tax systems encourage voluntary compliance. Integration of emerging

technologies like data analytics and blockchain can further reduce evasion and improve policy enforcement.

Technology plays an indispensable role in modernizing tax administration in Nigeria, enhancing efficiency, transparency, and revenue mobilization. To realize its full potential, ongoing reforms should focus on inclusive digital access, skill development, and continuous system upgrades. Effective use of technology will strengthen Nigeria's fiscal foundation amid declining oil revenues.

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ROLE OF MUNICIPALITIES IN SOLVING HOUSING PROBLEM AMONG SLOVAKIA'S MARGINALIZED ROMA COMMUNITIES – TRANSITIONAL HOUSING AS A VIABLE OPTION?*

León RICHVALSKÝ

PhDr., PhD., Faculty of Social Sciences of UCM in Trnava, Bučianska 4/A, 91701 Trnava, Slovak Republic
E-mail: leon.richvalsky@ucm.sk
ORCID ID: 0000-0003-3592-5495

Abstract

Access to adequate and affordable housing is one of the most pressing challenges in the Slovak Republic, particularly in relation to marginalized Roma communities living in segregated and substandard settlements. This environment is often characterized by legal insecurity, infrastructural deficits, and long-term spatial exclusion, which together reinforce cycle of poverty and social marginalization. Although Slovak municipalities are formally entrusted with several competences relevant to housing, their efforts are frequently hindered by insufficient resources, fragmented sources of support, and the long-term absence of a coherent national housing strategy. This paper explores the potential of transitional housing as an innovative and socially inclusive response to these systemic challenges. Based on qualitative content analysis of legislative documents, strategic policies, scholar literature and recent implementation data, including a brief case study of the city of Topoľčany, we examine how municipalities can utilize transitional housing models to support social reintegration and gradual access to the mainstream housing market. A portion of the data also stems from a national evaluation study on housing programmes for marginalized Roma communities, in which the authors of this paper actively participated. Despite its recent introduction in the conditions of Slovakia and limited empirical evaluation, transitional housing demonstrates promising alternative as a multi-tiered system combining accommodation with targeted social support. Our findings suggest that while pilot projects have produced valuable insights, the success of this model depends on long-term political commitment, adequate funding mechanisms, and strong intersectoral cooperation, as well as integrated social services and locally tailored strategies. This paper underscores the need for systemic and continual support of inclusive, community-based housing models that go beyond technical solutions and actively promote desegregation, empowerment, social assistance and long-term stability.

Keywords: Housing, transitional housing, rental housing, social housing, marginalized Roma communities.

INTRODUCTION

Housing is one of the basic needs of human life, the satisfaction of which should reflect the level of economic and social development of society. It represents a key determinant affecting the health, safety and social ties of a person, while fundamentally shaping the quality of life of all individuals and their families. Unsuitable housing conditions, such as segregated location, low quality of housing and limited access to basic infrastructure or public services have a significant impact on the development possibilities of an individual and his integration into social life (Vidová, 2007). According to Filadelfiová (2013), improving living conditions is often beyond the power of an individual and requires multi-generational efforts to overcome structural barriers. In terms of housing, the most vulnerable population group in the Slovak Republic are members of marginalized Roma communities (MRC), who

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live in clusters in substandard and inadequate improvised dwellings, so-called settlements, in several locations in the Slovak Republic. As further mentioned in above mentioned analysis, there are several problems that are closely related to the absent or inadequate housing, namely the distance from basic services and infrastructure, low quality of housing, overcrowding of dwellings, demotivation and deactivation of the individual and, last but not least, the negative impact on children. However, any citizen can find themselves in an unfavourable social situation and troubles with securing own housing, so it is necessary for the government or local self-governments (municipalities) to offer effective assistance tools in the area of housing. This assumption is also stated in Article 31 of the European Social Charter (1996), which underlines the need to adopt measures aimed at supporting the availability of housing at an adequate level, preventing homelessness and reducing the number of homeless people in order to gradually solve their situation. It also states that the signatories undertake to ensure the availability of affordable housing for people with insufficient incomes.

LITERATURE REVIEW

In recent years, the issue of the availability, quality, and sustainability of rental and social housing in Slovakia has attracted growing scholarly and political attention. This area reflects a complex connection of several dimensions, including economic affordability, social inclusion, the elimination of discrimination, and overall sustainability. In the context of Slovakia, the matter is particularly pressing due to the limited scope of the public rental housing stock, the absence of systematic support for municipal housing, and the specific characteristics of regional disparities—especially among marginalised groups such as the Roma population.

According to the Slovak National Centre for Human Rights (Ujházyová, Máriássyová, Mesároš, 2024), municipalities are not only the principal actors in the provision of rental housing but also face considerable limitations in terms of capacity, legislation, and financing. These constraints render vulnerable groups unable to secure housing independently. A guidance document for local self-governments (Máriássyová, Ujházyová, Mesároš, 2024) highlights the lack of unified allocation criteria and recommends transparent, participatory, and pre-defined rules - key preconditions for preventing discrimination.

Statistical data further confirm these concerns. As Cár (2020) notes, homeownership continues to dominate over rental housing, with public rental housing accounting for only a negligible share. This condition is largely a legacy of the post-1989 housing privatisation process and weak regulation of the rental market. Regional surveys, including an analysis of the capital city of Bratislava (Markovič. Šedovič, 2021), reveal significant disparities between supply and demand and the persistent unaffordability of housing. The need to support rental housing in all of its forms is also stated in the strategic document of the Ministry of Transport of the Slovak Republic. (MDSR, 2025)

From the perspective of social housing as a mechanism to support vulnerable populations, the sector suffers from a lack of political will and institutional capacity at the local level. Brňak (2017) warns that social housing is often perceived merely as a last-resort solution for the extremely poor, a view that both narrows its policy significance and reinforces social stigma. In contrast, the “Housing First” model promoted by the organisation Notabene (Beňová et al., 2022), emphasises unconditional access to housing as a first step toward integration and has shown superior outcomes compared to traditional, conditional approaches.

A crucial complement to this context is transitional housing, which serves as an intermediary step between crisis accommodation and long-term rental housing. A comprehensive evaluation of housing support programmes for marginalised Roma communities, initiated by the Office of the Plenipotentiary of the Government of Slovak Republic for Roma Communities (Szolgayová et al., 2023), identified several shortcomings: low quality of available housing units, their location in segregated areas, as well as insufficient integration with social services. Transitional housing often fails to facilitate a meaningful

progression toward stable and independent living, thus undermining its intended function within the broader system of social inclusion.

In their study on municipal hostels and transitional housing, Fico, Ondrušová and Škobla (2019) underscore the inadequacy of these facilities as instruments of integration. In practice, many function as long-term segregated and substandard housing arrangements devoid of structural support. Moreover, the absence of regular evaluations hinders efforts to optimise and tailor these interventions to local needs.

The housing situation of the Roma population demands particular attention. It has long been characterised by segregation, insufficient infrastructure and substandard living conditions. The Government's Strategy for Equality, Inclusion and Roma Participation by 2030 (ÚSVRK, 2025) prioritises housing deconcentration, integration into standard residential zones, and improving of technical infrastructure. Findings from the EU SILC_MRK 2020 survey (Markovič, Plachá, 2022) reveal alarming deficiencies, as 63% of Roma households lack access to public water supply, and more than half experience overcrowding. The COVID-19 pandemic further exacerbated these issues (Hidas et al., 2022), intensifying health risks, social isolation, and exclusion.

Many Roma communities face spatial exclusion, which (beyond physical segregation) also entails limited access to public services, education, and employment opportunities. Government and municipal interventions are frequently restricted to technical solutions (e.g., modular housing construction), which fail to address the deeper challenge of social integration and may perpetuate generational poverty (Rusnáková, Rochovská, 2014). Approaches that combine housing provision with community development and education have proven to be more effective.

In addition to social exclusion, residents of Roma settlements are exposed to significant environmental and health risks. Studies report that many settlements are located in ecologically unsuitable areas such as floodplains, waste dumps, or industrial zones—conditions that contribute to higher incidences of respiratory, dermatological, and infectious diseases (Chabada, 2013; Ravasz, Kovacs, Markovič, 2020). These living conditions threaten not only the residents themselves but also the broader population, particularly in cases where settlements are not connected to sewerage and potable water systems, thereby posing risks of soil and groundwater contamination (Filčák, 2012).

The risks associated with such housing conditions are indirectly affecting local municipalities and public service providers. Healthcare workers and field practitioners operate in deteriorated sanitary environments that hinder effective infection prevention and control (Škobla, Filčák, 2023). From an environmental planning perspective, many settlements were established illegally, complicating infrastructure investment and fostering informal urbanisation with negative effects on the environment (Filčák, Škobla, 2021).

While synthesising the findings from these diverse document types, it is evident that Slovak public housing policies face several interlinked challenges: ineffective coordination between central government and local self-governments (Horváth, Urc, 2024), chronic underfunding, lack of institutional capacity, and the absence of long-term strategic vision. The literature consistently highlights the need for comprehensive, integrated, and inclusive strategies, particularly if public policies are expected to fulfil their social, economic, and democratic potential.

MATERIALS AND METHODS

This study adopts a qualitative research approach focused on content analysis with the aim of examining the role of local self-government in addressing the housing challenges faced by marginalised Roma communities (MRC) in the Slovak Republic. Special attention is given to the concept of transitional housing as a potentially effective mechanism bridging emergency accommodation and permanent housing solutions. The methodological framework combines secondary data analysis, qualitative

content analysis of relevant documents, and a brief case study of the successful implementation of transitional housing in the town of Topoľčany.

Our paper is based upon the analysis of publicly available strategic documents, evaluation reports, legislative frameworks, and academic publications. Our key source is the publication Comprehensive Evaluation of Housing Support Programmes in Marginalised Roma Communities (Szolgayová et al., 2023), to which we contributed as a co-author. This involvement enables the inclusion of primary data and empirical insights gained during the evaluation of transitional housing projects, thereby enhancing the interpretative value of the study with regard to practical implementation experiences.

Our qualitative content analysis of relevant documents included following materials:

• Programme documents and calls for proposals under the Operational Programme Human Resources;

• Data from the Atlas of Roma Communities;

• Research and policy frameworks produced by national authorities and local governments;

• Academic and scholar studies and publications related to housing, Roma issues, social exclusion, desegregation, and municipal rental housing policy.

These materials were subjected to qualitative content analysis with the objective of identifying key patterns of success and failure in the implementation of transitional housing, as well as critical factors for sustainability and social inclusion.

To illustrate the practical functioning of the transitional housing system, a brief case study of the city of Topoľčany is presented. This self-government implemented a three-tier model of transitional housing, serving as an example of central government combined with European housing policy application at the local level. The case study draws upon:

• Official project documentation of the self-government;

• The methodological framework of the transitional housing system in Topoľčany;

• Empirical findings from our own field-based evaluation conducted as part of the publication Comprehensive Evaluation of Housing Support Programmes in Marginalised Roma Communities (Szolgayová et al., 2023);

• a recent newspaper article assessing the current situation in the city of Topoľčany.

Hence, our paper is based on a combination of publicly available and author-processed secondary data. No direct fieldwork involving respondents was conducted specifically for the purposes of this paper - therefore, ethical approval of research involving human subjects was not required. A significant limitation lies in the recency of the analysed transitional housing projects, the majority of which were only completed in the December of 2023. As such, the study does not offer a comprehensive assessment of long-term outcomes or the successful integration of target groups into the private housing or rental market. On the other hand, our involvement in one of the core evaluation publications offers a unique insider perspective on the research process, thereby enhancing the credibility and relevance of the conclusions.

SLOVAK MUNICIPALITIES AND HOUSING ISSUES

In addition to housing in rental apartments and the transitional housing system, which we will discuss in the following part of this paper, each municipality has several obligations towards its citizens that are closely related to housing. Act No. 369/1990 Coll. on municipal organization (hereinafter referred to as the municipal organization Act) establishes: "(the municipality)...procures and approves the

development concept of individual areas of municipal life and housing development programs and cooperates in creating suitable conditions for housing in the municipality", followed by additional obligations and competencies in the area of social services and social assistance, as stated: "(the municipality)...performs tasks in the area of social assistance to the extent specified in a special regulation." At this point, the municipal organization act refers to Act No. 448/2008 Coll. on social services (hereinafter referred to as the social services act), which specifies these obligations. If we disregard other social services for now and focus on the area of housing, or rather the provision of temporary social accommodation or rental housing among the competencies of Slovak municipalities, we find the competence to provide or ensure the provision and at the same time to create, establish and control an overnight accommodation facility, low-threshold day centre, facility for seniors, care service facility and day care centre, or to create, establish and control other facilities according to the relevant law. (Act No. 448/2008 Coll. on social services). In the area of housing, we can also mention the possibility of providing or ensuring the provision of other types of social services and the obligation to develop and approve a community plan of social services in their territorial district. Therefore, in the conditions of Slovak Republic, municipalities or other governing and public authorities have no direct legal obligation in the area of ensuring permanent housing for people who find themselves in an unfavourable situation, or people without a home. However, such legislative institutions are not common. In current practice, such interventions by the government or local self-governments are observed in Scotland and Finland for example, where housing problems and homelessness are being gradually reduced. (Summary of current legislation, 2024; Juhila, Raitakari, Ranta, 2022)

Despite the presence of these competencies and certain obligations within legislation, the creation and provision of such establishments is problematic for several Slovak municipalities. (Danielová, 2025) The 2019 Atlas of Roma Communities mapped the situation in 825 municipalities with the presence of MRC, where housing options and the absence of assistance in the area of temporary or social housing are a frequent problem. In these locations in Slovakia, substandard housing is often found - shacks, sheds and other illegal dwellings that do not meet basic safety, technical or hygiene standards. (Ravasz, Kovács, Markovič, 2020). Of the 825 municipalities surveyed, 38.54% had municipal rental apartments available, a total of 21.43% had some of the above-mentioned forms of temporary, emergency or social accommodation, but 475 municipalities, i.e. more than 57%, did not have any of the above-mentioned forms of accommodation available. (Szolgayová et al., 2023). Only one municipality out of the 825 surveyed provides all housing and accommodation options, i.e. in addition to all the mentioned temporary, emergency and social accommodation solutions, the possibility of renting a municipal apartment.

Table 1: Forms of housing provided in 825 municipalities from the Atlas of Roma Communities 2019

Housing solutions offered	Number of municipalities from ARK 2019 providing the given solution	Percentage of the total number of municipalities in the ARK 2019 (825)
Municipal rental apartments	318	38,54%
Hostel	68	8,24%
Emergency housing facility	24	2,90%
Overnight accommodation facility	40	4,84%
Shelter	33	4%

Home "halfway"	12	1,45%
Nothing listed	**475**	**57,57%**
Everything listed	**1**	**0,12%**

Source: Szolgayová a kol., 2023

Rental housing, or rather the provision of rental municipal apartments, is not an obligation or a matter of course for municipalities, as it is closely related to the property of a specific local self-government - if the given municipality does not own an apartment building or other space suitable for reconstruction and creation of housing units, the provision of rental housing is not possible. However, in the conditions of the entire Slovak Republic, rental housing is spread relatively little, which was also evident from the words of Michal Kaliňák from the Association of Cities and Municipalities of Slovakia, as he stated in an interview that only 7% of rental apartments are registered in the Slovak Republic, of which 4% belong to cities and municipalities. (Samospráva: Nájomné byty v Bešeňovej..., 2020).

The situation with rental housing and its possible support from the government has been a frequently repeated question in recent years, and at the time of writing this paper, this issue is coming to the fore again. Prime Minister Robert Fico announced at a press conference on November 22, 2024, that the government is launching a project to build a rental housing fund for Slovak citizens, which will support both the construction industry and investors. According to him, several criteria have been adjusted and investors could start building or purchasing apartment buildings from January 2025. The project as such is not focused on social housing, but on standard rental apartments, which will be available on improved terms. The government has the ambition to reserve up to 40% of newly built rental apartments for teachers, medical personnel and other employees in the public service. This project is intended to support the stabilization of the workforce, improve its mobility and address the rental housing deficit that has persisted in Slovakia for a long time. (Štát podporí súkromných investorov pri výstavbe..., 2024). At the time of finalizing this paper, the first government-supported rental housing project has been completed and is available on the website of the Agency for State Supported Rental Housing. (Prvé štátom podporované nájomné byty..., 2025).

For local governments with the ambition to create rental housing, or an alternative form of housing for disadvantaged citizens, there have been three support options in recent years:

• Construction or reconstruction of housing units financed from government budget funds within the State Housing Development Fund.

• Construction or reconstruction of housing units financed from European Structural and Investment Funds within various calls, in the 2014-2020 programming period with the possibility of assisted housing in a transitional form within the Human Resources operational program.

• Model of assisted self-construction of family houses into personal ownership, supported by various NGOs.

(Szolgayová a kol., 2023; Vaceková, Richvalský, Strculová, 2023)

Discussion on the possibilities of assisted rental housing in the Slovak Republic

In June and July 2019, the Institute for Research on Labour and Family, in cooperation with the Ministry of Labour, Social Affairs and Family, organized two round tables dedicated to the proposal of a transitional housing system. The Concept of the State Housing Policy of the Slovak Republic until 2020 obliges the Ministry to create a transitional housing system that would enable the integration of disadvantaged groups through various forms of housing and active social services. As part of this task,

expert consultations were held with the involvement of relevant stakeholders, organized as part of the research task of the Institute for Research on Labour and Family. The round tables resulted in suggestions and recommendations for the creation of a transitional housing system. (Inštitút pre výskum práce a rodiny, 2019)

The discussion at the first roundtable (3.6.2019) was devoted to the applicability of the transitional housing system in Slovakia. The conclusions of this roundtable included several common findings:

• Transitional housing is not a quick fix – obtaining independent housing and exiting the transitional housing system can take years.

• The prospect of standard housing in a few years can be demotivating for people traumatized by homelessness or living in an illegal settlement. Merit should therefore not always be an argument for social solutions.

• Targeted programs - criteria for entering the social assistance system allow for targeting different groups (families with children, people with addictions, mental illnesses, etc.).

• Sustainability of the system - changes in election cycles and changes in political positions can affect the system, which applies to all models of ending homelessness or social support.

• Cooperation between multiple sectors and cooperation with NGOs increases the chances of success - they can also provide support directly in apartments, work with clients.

• Housing provision as a first step - experience shows that providing housing leads to solving other problems (health, employment, etc.). The lack of rental housing and assisted living facilities prevents the wider application of this approach.

• The important role of crisis services - although they do not solve housing as such, the development of overnight accommodation facilities and shelters is important. Social services should also provide long-term support (e.g. accompanying people to doctors, building trust in institutions, helping with decision-making in various life situations).

(Ondrušová, Fico, Škobla, 2019)

The second roundtable (3.7.2019) focused on increasing the availability of rental housing as the final level of transitional housing. The conclusions presented in the same document by the above-mentioned authors were following:

• In Slovakia in 2019, the necessary mechanisms were absent - there is no legislation or funding for entities offering housing for vulnerable groups, which would also guarantee work with clients after moving in. Social enterprises in the field of housing have limited options if they do not own housing facilities.

• The amount of the housing allowance is not sufficient to cover the cost of rent, especially in new municipal rental apartments. The statement of the local government representative emphasized that allocating an apartment to persons with insufficient income can lead to further indebtedness.

• Commercial hostels, providing services for a fee - in some cities they make up for the lack of rental housing, but often at the expense of people in need and their limited finances.

• Possible use of unoccupied housing units, the use of which for social purposes is questionable, since they are mostly recreational facilities in the countryside. However, higher taxation of unused apartments should be considered.

• Motivation to build rental apartments, since the lack of public rental apartments and the high costs of commercial housing represent a problem for vulnerable groups of the population. However, housing development is not always a priority for local politicians.

• New housing models - a combination of commercial and social use of the housing units could increase the interest of local self-governments in reconstruction. This model, operating for example in the Netherlands, allows profits from commercial rent to be invested in social housing.

• Economic benefits of affordable housing – housing in a decent and healthy environment can reduce public spending, for example on alternative childcare or emergency healthcare, as evidenced by programs such as Careful Housing in Slovakia or similar initiatives in the Czech Republic.

• Increasing the availability of rental housing requires legislative changes, greater financial support and broader cooperation between the public and private sectors.

TRANSITIONAL HOUSING AS A NEW FORM OF SOCIAL RENTAL HOUSING

Transitional housing is a system designed to solve housing problems of people in adverse living situations. In the conditions of the Slovak Republic and municipalities from the Atlas of Roma Communities, these people often not yet lived in standard conditions. Transitional housing is based on the assumption that integration and reintegration into society is possible only with continuous solutions to social problems with the support of social services, social work and housing policy. This type of housing is associated with field social work, which provides tenants with assistance with adaptation to housing and educates them in topics such as financial literacy, household management, care of the apartment and surrounding areas, as well as environmental issues, such as waste management, proper heating, etc. The aim of transitional housing is to help individuals and their families become independent and successfully transition to commercial housing market, i.e. move to the standard system of unassisted housing. (Smatanová, 2019).

Transitional housing is based on merit and allows households to gradually move to better forms of housing. The basic, first level provides coverage of basic living conditions and includes frequent visits by a housing assistant, while higher levels offer better amenities, larger living space, longer leases and fewer inspections. As the levels increase, the need for assistance also decreases. A key feature of the system is two-way transition: households can move up if they follow the rules, or down if they break them. The minimal structure of this system must therefore include two levels. As Smatanová (2019) further states, the success of this model depends on thorough knowledge of the social situation of the applicant or potential tenant, their needs and potential, together with high-quality social work. The aforementioned housing assistant provides support, motivation and assistance to households in maintaining housing, and also functions as a liaison between the municipality that operates the transitional housing and its residents, tenants. In addition to the housing unit itself, two levels and the housing assistant, it is important to ensure also a janitor or doorman, so certain established rules are monitored even during the absence of the housing assistant. The selection of suitable households is also very important, it can be based on the recommendation of field social workers for example.

In the Slovak Republic, this concept was first introduced in the document “Concept of State Housing Policy until 2020”, approved by resolution of the Government of the Slovak Republic No. 13 of 7 January 2015. The document states that this system is highly motivating because it allows for better quality housing, while systematic social work with clients is a key condition. The introduction of such housing system could significantly contribute to the prevention of socio-pathological phenomena such as homelessness. The solution is also in line with the European approach to the issue and allows for drawing financial resources from EU funds. (Koncepcia štátnej bytovej politiky do roku 2020, 2015). According to Smatanová (2019), the following three steps are necessary for the sustainability of this system. First one is to process this system at the municipal level as a binding strategic document (e.g. in the form of a general binding regulation) and ensure a consistent control when planning housing

development and allocating apartments. Second one is to involve future residents (target groups) in planning and setting up the system in order to create realistic transitional rules that will be clearly communicated to all participants. Finally, to do regular reviews - ideally every two years, to check if the transition rules still reflect current needs and current situation.

Based on discussions with experts from the above-mentioned round tables (Ondrušová, Fico, Škobla, 2019), several recommendations were also formulated regarding the creation of a system of transitional housing and increasing the availability of housing for people in housing need. First of all, the development of social housing should not be forgotten, since there is a lack of affordable rental apartments in the Slovak Republic. It is also necessary to support various tools that will enable homeless people to obtain housing with a rental contract under fair conditions, while it is important to focus on projects such as rapid re-housing and housing-first. When defining cooperation between the client and the social worker, individual rules should be established, and access to housing should not always be conditional on merit. When ending homelessness (in the conditions of the Slovak Republic and the MRC also life in illegal settlements), ensure sufficient support from social workers, psychologists and health professionals. At the same time, it is important to increase the availability of housing by mapping and acquiring unused buildings, especially those owned by the government and municipalities. The next step should be to condition developers that a certain percentage of the new construction of the housing units should be designated for rental housing. It is also necessary to analyse how local self-governments could access government land, since one of the problems is the lack of suitable land for construction. Experts also see room for legislative changes that would allow local self-governments to use part of their housing units for commercial rental and part for social housing for vulnerable groups. The principles of desegregation and deghettoization should be applied within social and supported housing projects (in the case of MRC, the 3D principle, i.e. desegregation, deghettoization and destigmatization). Some cities have found that large hostels contribute to the emergence of problems, since they are creating segregation. When acquiring apartments, the structure of households should also be taken into account so that the size of the apartments corresponds to the number of their members, thus preventing neighbourly conflicts. It is also important to increase the amount of housing allowance, not with the aim of solving the overall housing crisis, but in order to help the most vulnerable households. Last but not least, not only the provision, but also the creation of social crisis intervention services should be supported. Experts at the roundtables also positively assessed the creation of microloans for self-construction of housing, which could be another alternative for increasing housing availability. (In Slovakia, there are already successful initiatives by NGOs that are dedicated to this area; in the first chapter of the article, we present them as a third option for supporting housing within municipalities.)

Transitional housing projects in the Slovak Republic

Support for transitional housing, primarily addressed to MRC, was implemented in the Slovak Republic thanks to a combination of the European Regional Development Fund, the European Social Fund and special budgetary resources allocated to the Youth Employment Initiative under the Investment for Growth and Jobs objective in Slovakia. The European Commission, by its Implementing Decision No. CCI 2014SK05M0OP001 of 9th December 2014, adopted and approved the Operational Programme Human Resources for the programming period 2014-2020. (Operačný program Ľudské zdroje, 2024). The relevant document of the Operational Programme Human Resources states, that different forms of housing are also being explored in the Slovak Republic, which can contribute to improving the living conditions of MRC, and one of these forms is multi-stage or transitional housing, which creates suitable conditions for individual integration. This system, according to this document, includes a complex of social services for vulnerable and endangered groups of the population, while it´s based on a vertical system of social housing, which supports social growth and integration of these people into society. An integral part of transitional housing is systematic social work, which is carried out by field social workers and community workers, who provide advice and assistance in solving the problems of endangered

groups and implement various reintegration programs. (OPĽZ na programové obdobie 2014 - 2020, 2014).

The first call for applications with the aim of introducing rental housing with transitional housing elements, titled "Call focused on improved forms of housing for municipalities with the presence of marginalized Roma communities with transitional housing elements", was issued on November 19th, 2018, and the assessment of submitted applications took place in six rounds - April 2019, July 2019, October 2019, September 2020, February 2021 and May 2021. (Výzva OPLZ-PO6-SC611-2018-2, 2024) The call was directed at two sectors of society - public and non-profit, with the distribution of financing of the total eligible project expenses in accordance with the rules set out in the current EU Financing Strategy, in the form of: 85% of the funds from the European Regional Development Fund, 10% from the government budget and 5% co-financing from the sources of the eligible applicant. The minimum amount of the contribution was not set, the maximum amount was set at €2,375,000, i.e. the total eligible expenses stated in the application could not exceed €2,500,000. The call further specified the eligible applicant as:

• municipalities with a presence of MRC,

• NGOs providing generally beneficial services,

• church and religious societies,

• associations,

• Slovak Red Cross.

(Szolgayová a kol., 2023)

The support was aimed at the reconstruction or creation of lower standard housing units, which form a multi-stage social housing system with elements of a transitional model. Each stage of this system requires the accompaniment of a social worker - a housing assistant. In addition to other conditions and requirements, it was necessary for the applicant (or rather the manager of transitional housing) to have a document created, covering all the conditions of transitional housing, along with the rights and obligations of the landlord and tenant. Within this call, 18 projects were advanced to the implementation stage.

Another call, "Call for improved forms of housing for municipalities with the presence of MRC with elements of transitional housing within the Catching up - regions initiative" was published on September 30th, 2021 and the assessment of applications took place in four rounds - February 2022, April 2022, June 2022 and September 2022. (Výzva OPLZ-PO6-SC611-2021-1, 2024). Only municipalities with the presence of MRC within the Catching - up regions initiative were eligible applicants in this call, i.e. only the public sector, precisely specified in 12 specific municipalities from the Prešov, Košice and Banská Bystrica regions: Ostrovany, Čičava, Krivany, Varhaňovce, Dlhé Stráže, Varadka, Jelšava, Šumiac, Fiľakovo, Vítkovce, Vtáčkovce and Jasov. Change to this call announced on August 8th, 2022 added two more municipalities from the Košice region, Trebišov and Dobšiná to this list. This call was, after the change, focused on 14 municipalities. The financing of eligible expenses was also divided in the standard form of 85:10:5 in this case, as in the previous call. The call did not set a minimum or maximum amount of contribution per application. Eligible applicants were defined in advance, so there was no need to specify them further in the conditions. The focus of support remained the same as in the previous call, while the requirements for the minimum and maximum number of housing units, their technical and spatial requirements, as well as the obligation to include at least 30% of these units for residents of the MRC were also maintained. In terms of time and deadline, this call had certain specifics, as it was only announced on 30th of September 2021. The contract on the provision of funds with the approved applicant had to be concluded no later than 30th of June 2022, while the implementation of

the project was to be completed by 31st of December 2023. The construction work was to last a maximum of 24 months, while in justified cases it was possible to extend this period. After first amendment to this call, the date of the contract on the provision of funds was extended from 30th of June 2022 to 30th of June 2023, but the completion date of the implementation remained the same – 31st of December 2023. This extended the possibility of submitting an application and closing a contract by one year, but left a very short timeframe for the implementation and execution of the project. No project was advanced to the implementation stage under this call. (Szolgayová a kol., 2023)

Table 2: Approved applications for funding from the OP Human Resources in the call "Call focused on improved forms of housing for municipalities with the presence of marginalized Roma communities with elements of transitional housing", which have reached the implementation stage.

Municipality	**District**	**Objective (HU = housing unit)**	**Project name**
Benkovce	Vranov nad Topľou	4 new HU	Construction of an apartment building for transitional housing in the municipality of Benkovce
Buzica	Košice	8 renovated HU	Improved housing for residents of the MRC
Bystré	Vranov nad Topľou	2 new HU	Transitional housing in the municipality of Bystré
Čirč	Stará Ľubovňa	12 new HU	Transitional housing in the municipality of Čirč - new construction of apartment buildings
Ďurkov	Košice	14 renovated HU	Improving the quality of housing for residents of the MRK in the municipality of Ďurkov
Jarovnice	Sabinov	48 new HU	Transitional housing in the municipality of Jarovnice
Jelka	Galanta	3 new HU	Transitional housing – municipality of Jelka
Košice Luník IX	Košice	48 new HU	Transitional housing - Luník IX
Lenartov	Bardejov	18 renovated HU	Housing system with transitional housing elements for the municipality of Lenartov
Martin	Martin	6 renovated HU	Transitional housing in Martin city
Moldava nad Bodvou	Košice	4 renovated HU; 3 new HU	Transitional housing in Moldava nad Bodvou
Myjava	Myjava	13 renovated HU	Transitional housing and community centre in the city of Myjava

Nitra nad Ipľom	Lučenec	16 new HU	Temporary housing in the municipality of Nitra nad Ipľom
Ružomberok	Ružomberok	18 new HU	Support for housing with transitional housing elements for MRC in the city of Ružomberok
Sládkovičovo	Galanta	6 renovated HU	Reconstruction of an apartment building for the needs of a transitional housing project in the city of Sládkovičovo
Spišský Hrhov	Levoča	8 new HU	Construction of two-stage transitional housing apartments in the municipality of Spišský Hrhov.
Topoľčany	Topoľčany	36 renovated HU	Reconstruction of apartment buildings for transitional housing in the city of Topoľčany
Varadka	Bardejov	22 new HU	Varadka apartment buildings - transitional housing

Source: Výzva OPLZ-PO6-SC611-2018-2, 2024; Szolgayová a kol., 2023

During the field survey, the team of authors of the publication "Comprehensive Evaluation of Housing Support Programs in Marginalized Roma Communities: Thematic Survey" visited several municipalities that implemented transitional housing through this call. In all cases studied, the completion of the projects was set for December 2023, i.e. at the time of the survey and the creation of the above-mentioned publication, the construction/reconstruction was still in the final stages of implementation, i.e. not yet inhabited in most locations. Practical experience from the real functioning of the transitional housing concept in the conditions of the Slovak Republic must therefore be collected as part of further ongoing research.

DISCUSSION AND CONCLUSION

As a good example of the implementation of transitional housing, we will introduce the city of Topoľčany, which uses a three-stage transitional housing model. As was evident from the conditions of both calls, one of the requirements for the provision of a subsidy from the EU funds was the preparation of a binding document covering all the conditions of transitional housing, which in the case of the city of Topoľčany is called "Housing System with Transitional Housing Elements for the City of Topoľčany." (Systém bývania s prvkami..., 2020). The main goal of participating in this call and implementing the project was to improve the housing of MRC households in Topoľčany by introducing a social housing system with transitional housing elements. The city of Topoľčany listed following as partial goals: the support of the social inclusion of MRC in the area of housing, the improvement of the quality of life of MRC members, the support of desegregation, deghettoization and destigmatization of MRCs, as well as the reduction of CO2 emissions and energy consumption in social housing.

The city of Topoľčany has carried out the reconstruction of two apartment buildings and selected housing units, thus involving 36 housing units on Pod Kalváriou street and 8 housing units on Valentína Beniaka street in the transitional housing system. As part of providing housing assistants, the city has employed three assistants who will help residents of transitional housing system to manage independent living. The project includes the implementation of three levels of transitional housing within a total of 44 apartments. The city will utilize this type of housing primarily for residents in unsatisfactory conditions, especially MRC (93.56%). The improvement of housing conditions should affect 156 MRC members, who are subsequently expected to enter the independent (commercial) housing system. In

addition, 36 apartment units out of the total number of 44 will reach the energy class according to Decree 324/2016, which will save 20.5 t of Co2 annually. (Rekonštrukcia bytových domov pre potreby..., 2020.)

The above-mentioned document of the city of Topoľčany, entitled "Housing System with Transitional Housing Elements for the City of Topoľčany." defines the individual levels as follows: The first level of housing in the proposed transitional housing system represents the lowest standard and the smallest area of housing units. Its aim is to provide accommodation to people in a crisis situation or social exclusion and motivate them to move to a higher level. The rent in this level ranges from €19 to €49 per month, depending on the size of the apartment, and reflects the financial capabilities of the target group. Residents of the first level of housing will have intensive social assistance available. A housing assistant and a field social worker will work closely with tenants, help them manage crisis situations and provide financial literacy training. The second level of transitional housing represents a transition from the first level to higher-quality housing, with the aim of preparing households for independent living, improving their standard of living and teaching them how to manage their finances. The rent ranges from €19 to €49 per month depending on the size of the apartment. Residents of the second level will have access to adequate social assistance, including the support of a housing assistant. The third level of social housing is the highest, with the highest-quality apartments (author's note: it is also in a location with a high presence of the majority population) and serves as the last step before moving to a standard commercial rental apartment or another form of own housing (e.g. buying an apartment, individual construction of a house, self-construction projects etc.). The rent for the third level is set at €49 per month, which corresponds to the financial capabilities of households. Residents of the third level will have social assistance available, primarily in the form of advice in finding their own independent housing. In all three levels, the City of Topoľčany guarantees that the annual rent will not exceed 5% of the purchase price of the apartment, determined according to the method of procurement in accordance with §2 of the Measures of the Ministry of Finance of the Slovak Republic on the Regulation of Apartment Rental Prices. (Systém bývania s prvkami..., 2020)

As stated by the author of the report Katarína Čierna (2024), the location of the so-called sugar factory had no systemic solution for many years and burdened the city budget. The situation culminated in a fire that also threatened surrounding buildings, but a change occurred in 2022 with a social housing project with elements of transitional housing. Today, there are total of 36 first and second level transitional apartments operating here, where residents live under the supervision of housing assistants. Adults work, children go to school, and housing must be earned by following rules. On Tuesday, 21 st of May 2024, the city was visited by the Government Plenipotentiary for Roma Communities, Alexander Daško, who praised the transformation of the location. According to the report, the sugar factory is no longer a "disgrace to the city", the debt is decreasing to zero, coexistence between different communities is working out and anti-social behaviour is not tolerated. Thanks to the help of the Slovak Knights of Malta, a community centre was also created here, which teaches and supports the social and hygienic habits of children and mothers. The plenipotentiary highlighted the centre as one of the few functional places, which works effectively with the community, and where people spend time meaningfully.

We consider transitional housing to be a very promising and potentially effective tool for supporting the integration and reintegration of individuals into standard housing, i.e. housing in premises designated for this purpose, equipped with the necessary infrastructure and appliances. Projects aimed at the construction or renovation of housing units for transitional housing were supported in the Slovak Republic through the European Structural and Investment Funds, specifically within the Operational Programme Human Resources, in two calls. Within the first call, 18 projects reached the implementation stage, the second call ended more or less unsuccessfully. In the Slovak Republic, the housing situation is insufficient, especially in localities with concentrations of marginalized Roma communities who live in illegal housing in segregated localities, so-called settlements. In several cases, however, this situation is also partially connected with the possibilities of local self-governments, as more than half of the 825 municipalities listed in the Atlas of Roma Communities have no possibility of rental, crisis, supported

or temporary accommodation - i.e. no municipal rental apartments, hostels, emergency housing facilities, overnight accommodation facility, shelters or "halfway" homes. At the time of writing this article, the long-prepared process of building a rental housing fund for citizens of the Slovak Republic has also taken turn to reality. Support for the construction and reconstruction of rental apartments for commercial use will not directly have the character of social housing for vulnerable groups of the population, but it can help to free up currently used older housing units and enable their use for various supported housing projects - for example, for transitional housing projects, if this system proves its effectiveness in the coming years. Practical experience with transitional housing is currently low in the Slovak Republic, as several implemented projects were completed only in December 2023 - their real functioning, experience and possible shortcomings are therefore only beginning to be formulated after a year of operation. Assessing the effectiveness of the entire system and percentage of people who were able to exit the transitional housing system into the commercial housing sphere is also practically impossible at the moment, as this process has an individual length and can last several years. The effectiveness of this type of assisted housing in the Slovak Republic is therefore unclear at the moment and will only be proven in the coming years. A positive example of the implementation and practical understanding of this issue is the city of Topoľčany, which has introduced a system of transitional housing in three stages, where the third stage is implemented in apartment buildings together with a majority population.

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ACCESSING THE CYBER SAFETY CONCERNS AND E-COMMERCE ADOPTION IN DEVELOPING NATIONS: CULTURAL DYNAMICS SHAPING TECHNOLOGY ADOPTION

Abstract

In the recent era, digital commerce has proved to be the engine of transactional efficiency. However, it raises security and confidentiality concerns for consumers because of data privacy issues. As a result, it undermines consumer confidence and negatively impacts commerce's sustainability in the marketplace. This study explores the role of cyber safety concerns, confidentiality concerns, and personal inclinations in consumer online transaction intention and adoption of e-commerce. Using convenience sampling, we collected data from 243 respondents as a sample from Rawalpindi and Islamabad. To confirm the reliability and validity of the instrument, we initially apply Confirmatory Factor Analysis (CFA) average variance extracted (AVE), and after that, we apply Structural Equation Modeling (SEM) to test our hypothesis. Findings indicate that Cyber safety concerns, confidentiality concerns, and personal inclination significantly impact consumer intention and adoption of e-commerce. These results suggest that cyber safety concerns, confidentiality concerns, and personal inclination adequately induce individuals' intention towards online payments and the adoption of e-commerce. The findings are significant for business managers, organizations, and policymakers in ensuring customers' safety and building long-term relationships.

Keywords: Cyber safety concern, e-commerce adoption, online payment, confidentiality concern

Introduction

The emergence of new technology during the information age gave organizations and people an opportunity through the industrialization of the Internet in the 1990s. Payment technologies eliminated spatial and temporal restrictions to transform how institutions interact with customers. On the other

hand, organizations, customers, and the Internet are the media; a relationship between organizations and customers is introduced in the market and will constitute an exchange of an individual's personal information (Mohammed & Tejay, 2017), leading to confidentiality issues. In the study by (Saxena & Thakur, 2023), confidentiality issues were one of the big problems of the digital age because when people were mentioned, they lost their power over what they published in the public field on the net. According to (B. Lu & Yi, 2023), confidentiality is the individual control over the collection, use, and dissemination of the data provided. E-commerce transactions can involve submitting personal information from users to organizations, leaving users open to opportunistic behaviour by those organizations (Tao et al., 2024a). This consequently induces doubt in people, hindering e-commerce acceptance due to confidentiality issues (C. H. Lu, 2024; D. Ma et al., 2025).

While confidentiality concerns undermine the ability of organizations to take full advantage of the increased global reach that e-commerce provides, the increased utilization of their products in another country can be detrimental to the individual and the organization. However, the effects of these confidentiality concerns may not be universal, given that the interpretation could be culturally bound. Countries have different e-commerce adoption rates, as noted by a worldwide survey (Singh et al., 2024). In some developing countries such as Pakistan, consumers use the Internet more to browse products and services than to purchase online (Singh et al., 2024). Consumers in the Asia-Pacific region have shown quite a different attitude towards shopping than Pakistan, as they prefer online shopping over any other mode (Singh et al., 2024). Previous research in the domain of confidentiality has argued that a rational reason for variations in the degree of e-commerce acceptance worldwide is the role of national culture in shaping people's attitudes toward privacy (Choung et al., 2024; Huang, 2022; X. Li et al., 2025; Zibarzani et al., 2024) national culture as an essential driver of individuals' concerns about confidentiality (2000), which led to differences in a country's regulation of the confidentiality of information by companies. Similarly, (Hallikainen & Laukkanen, 2018) explored the influence of national culture on 29 countries' reception to confidentiality and revealed that their society's culture strongly influenced people's confidentiality perceptions. This paper also divulged some contrasting insights of developing countries such as Pakistan, suggesting that cultural differences in the collectivist, low trusting society versus the individualist, high trusting society plays a role that effects the longer decision-making process that consumer undergo in deciding to go ahead and participate in the economy by carrying out transactions over the Internet. Therefore, previous studies have shown that national culture and confidentiality concerns associated with e-commerce should be taken into consideration by organizations to realize the potential benefits that e-commerce could achieve (Alzaidi & Agag, 2022; Tao et al., 2024b; Zibarzani et al., 2024).

This study examines the national culture's contribution to the association between confidentiality concerns and adopting e-commerce in developing countries. This suggests that e-commerce has excellent potential to become ubiquitous in every society (Singh et al., 2024). However, the statistics on online shoppers differ by country. There is more cyber penetration in developed countries than in developing countries (Singh et al., 2024). Although these divergences could be explained by differences in living standards and economic institutions, national culture might trump these factors. (Alzaidi & Agag, 2022) found that cultural dimensions like individualism, collectivism, and uncertainty avoidance play a crucial role in online shopping behaviour. Moreover, established online e-commerce sites pave the way for underdeveloped technological and economic infrastructure to overcome hurdles. The study (Jaspers & Pearson, 2022) argued that cultural values promote different perspectives on confidentiality in society or at governmental and organizational levels. Thus, we suggest that the cultural values of a society influence the concerns of individuals participating in the adoption of e-commerce, regardless of structurally technological and economically relevant systems.

This study tests the research model using a dataset collected from Pakistan, considered representative of developing countries. Under this classification by the World Bank, Pakistan the report of International Monetary Fund, 2014 is recognized as an emerging market, a status that anticipates quick

growth. This study contributes to the existing literature on confidentiality by examining how cultural values affect individual perceptions of confidentiality in the developing context, as well as the impact of those characteristics on e-commerce adoption. Section 2 reviews the evidence and related literature, Section 3 presents the theoretical foundation and research model. Section 4 presents data collection and analysis, Section 5 shows the discussion, and Section 6 presents the conclusion.

Literature review

The confidentiality issue has a long history dating back centuries (Engström et al., 2023). Nevertheless, studies of information confidentiality have only begun recently since this concept is different from confidentiality itself (Zibarzani et al., 2024). Confidentiality of information is the challenge that has befallen us with the growth of information and communication technologies. So, the confidentiality of information is only part of the broader meaning of confidentiality in general (Handoyo, 2024). The reliance on the complexity of the cross-disciplinary concept has cast a net of its research across several direct disciplines (Mutimukwe et al., 2020). But that raises the question, what is information confidentiality? The idea is so complex and nebulous that there does not seem to be a common understanding of its meaning (Gouthier et al., 2022).

Information system scholars have drawn upon various definitions of confidentiality to study the role of information confidentiality (Mohammed & Tejay, 2017). At first, confidentiality was an objective value for a collective of individuals. Consequently, it has been posited that confidentiality is a fundamental human right (Mutimukwe et al., 2020). (Hampden-Turner & Trompenaars, 1997) asserted that confidentiality meant the right to be left alone. This concept has been the basis for many court cases in the U.S. regarding protecting individuals' decisions in particular contexts (Ladhari et al., 2015). As far as information privacy is concerned, there is a line of research which assumes that equivalent to other privacy means, information privacy constitutes a right deserving of respect and protection within society. (Shneor et al., 2021) stated that collecting personal information is widely accepted if consumers know its use and control over it, placing the assumption of fairness at the core of their Internet users' confidentiality concerns (IUCC). (Marieke & Geert, 2002) also took a similar view, advocating that through fair information practice, organizations can earn the trust of their customers.

The application of fair information practices states that a customer has a right to protect the personal information they share. In contrast, the entity to whom this information is given must safeguard it. However, suppose the confidentiality of information should be considered a right. In that case, it will have to be determined whether this is an absolute characteristic of all cultures or only a way of life-based on the beliefs and values shared by the constituents of some societies (Tam & Oliveira, 2019).

Since information is valuable in the community, researchers noticed that most individuals are ready to ensure their private information if rewarded with something precious. As a result, information confidentiality has often been seen as a commodity (Y. Ma, 2024). This commodity-based understanding underlies individuals' behaviour of exchanging interpersonal information for a product or service based on a rational ethical calculus (Zhang et al., 2018).

On the other side of the spectrum, the other theory views information confidentiality as cognate-based, having value to people as subjective (Shang et al., 2023). The cognate-based definitions are more specifically described as confidentiality as a state or a form of control. According to Schoeman, information confidentiality is "a state of limited access to a person" (Barnum, 2011); thus, individuals seek at least some confidentiality regarding their personal information. The idea behind this model is that people can select from multiple levels of the spectrum of confidentiality, spanning from complete to almost no confidentiality (Shang et al., 2023).

However, other studies tend to emphasize confidentiality as a type of control (Barnum, 2011; Contiua et al., 2012; Liu et al., 2005; Q. (Steven) Lu et al., 2018; Mohammed & Tejay, 2017). By this definition, people are more inclined to share data about themselves, provided they believe they retain control over

it. It is also subjective to the individual, just as the concept of a state. Information confidentiality as control falls in line with the characteristics of confidentiality (Barnum, 2011), as it has been exhibited many times that individuals fear for their privacy the moment their personal information is disclosed because they feel they have ceded control over it (Deep Prakash & Majumdar, 2021; Picoto & Pinto, 2021). As confidentiality is more than just a matter of control, it should be recalled that control is an accurate measure of information confidentiality (Abdelhakim et al., 2023).

The importance of information confidentiality is demonstrated by its relationship with the acceptance of information technologies. Even though information technology provides many serious advantages to organizations and societies in coping with many problems simultaneously, some problems result in preventing information technology. For example, information confidentiality may seriously impede the progress of technologies like e-commerce, effectively restricting benefits to organizations, individuals, and countries. However, a significant amount of literature addresses confidentiality issues related to e-commerce technology (Barnum, 2011; Q. (Steven) Lu et al., 2018; Sanguineti & Maran, 2024). Though confidentiality issues are a negative factor that hinders the widespread usage of e-commerce, studies show that other factors can lessen these effects (Alipour & Yaprak, 2022; Y. Ma, 2024; Sanguineti & Maran, 2024).

According to (Zhou et al., 2021), the uncertainty implicated by sellers' opportunistic behaviour discourages consumers from engaging in online transactions. Privacy concerns were identified as a driving force shaping the perceptions of uncertainty; this negative effect could be alleviated by the presence of trust, the informativeness of the website, and social presence (C. Q. Nguyen et al., 2024). On the contrary, (Anic et al., 2019) used aspects of information transparency (which they defined as features concerning the access to information that an organization has obtained about each consumer) and product and service value, which proved to be significant in counteracting the adverse impact of confidentiality concerns. Furthermore, organizations should aim for consumers who are pragmatic in perceiving the value of the trade-off between sharing personal data for an improved benefit rather than consumers who are mainly sceptical about the excessive price of unveiling personal data (Sullivan & Kim, 2018). Likewise, the research conducted by (Zhao et al., 2024) discovered certain factors to mitigate the effects of confidentiality concerns in e-business transactions, given that consumers evaluate the risks versus gains of participating in an online transaction. Fig. 1 Extended model of privacy calculus adapted from (Liu et al., 2005): The factors with negative narrative (privacy risk and confidentiality concerns) lead to withholding of personal information, and positive factors (trust and distrust) lead to disclosure of personal information. However, (Liu et al., 2005) had more findings similar to those of (Olivero & Lunt, 2004) and (Marieke & Geert, 2002). But this begs the more fundamental question of how a person's pliable perceptions of risk and rewards take hold.

Fig. 1: Extended Privacy Calculus(EPC) Model of Dinev and Hart (2006).

Many researchers have found that government regulations contributed to shaping consumers' use of e-commerce, but the explanation for attitudes of a population is explained more strongly by national culture (Liu et al., 2005; Marieke & Geert, 2002; Olivero & Lunt, 2004). For instance, different countries' differing confidentiality regulatory models may have been adopted based on cultural values as the results (Marieke & Geert, 2002), including in their perspective where individuals, governments, and organizations viewed information privacy through a lens of values of the culture. According to the findings and results of (Deep Prakash & Majumdar, 2021), in India, one group of individuals demonstrates better trust in the government, and the other groups of the New Indian do not. Data is based on the cultural norms of these groups (Picoto & Pinto, 2021). This suggests that although government regulations and culture may determine people's confidentiality concerns, the two are

unrelated to individuals' e-commerce adoption. Due to this reason, researchers have stated that the rate of e-commerce adoption in various countries is inconsistent, as the adoption is subject to cultural considerations (Alzaidi & Agag, 2022; Jaspers & Pearson, 2022). Information privacy has negative influences on online transactions (Mohammed & Tejay, 2017), but previous research suggested that confidentiality beliefs depend on individuals' cultural background (Alzaidi & Agag, 2022; Choung et al., 2024; Gouthier et al., 2022; Singh et al., 2024) using a sample from 38 countries found that sentiment about their government is not significantly correlated with sentiment about the World Cup. (Anic et al., 2019) showed that respondents who have higher values of the culture of the country have less fear of privacy, according to (Hampden-Turner & Trompenaars, 1997), paid significantly less attention to information privacy. The study of (Abdelhakim et al., 2023) examines the differences in trust between the two countries.

In contrast, Bangladesh has a low-trust, group-oriented society, and India has a high-trust, individual-oriented society. It explores how factors like social and cultural attitudes and trust levels affect people's willingness to give good or bad reviews online. The goal is understanding how these factors help e-business growth in different regions. The disparity between the two institutions is in the socioeconomic condition in Bangladesh, which is likely to be a limiting factor in adopting the Internet and e-commerce despite various technological and regulatory conditions for both to be met. Bangladesh had lower perceived confidentiality concerns than India as a part of its collectivist culture (Contiua et al., 2012). Likewise, (Mohammed & Tejay, 2017) studied a sample from developing countries to examine the impact of confidentiality issues and perceived privacy control on online payment intention. Similar to previous studies, they found that culture plays a significant role in privacy-related decision-making. What this review of findings from historical literature shows is that there exists a compelling culture-based dimension to individual perceptions towards information privacy and information privacy-related factors and that this, in turn, strongly impacts the extent of e-commerce engagement in a particular consumer, such that e-commerce becomes an integral part of individual consumer usage behaviour in an increasingly sophisticated and broader consumer market. The research model is introduced in the next section.

Theoretical basis

Researchers have found Hofstede's (1980) theory of cultural differences applicable when studying the cultural aspects of information confidentiality across societies (Bajunaied et al., 2023; Contiua et al., 2012; Gouthier et al., 2022; X. Li et al., 2025). In this research, we build upon existing literature using Hofstede's cultural dimensions theory as our theoretical underpinning. Other theories were included, such as Fukuyama's theory of social capital and trust (Fukuyama, 1995), and Hall's low-context and high-context factors (Hall, 1976). However, Fukuyama's theory of social capital (Fukuyama, 1995) was inadequate for this research because it is limited to well-formed beliefs that individuals may have about privacy and applying e-commerce.

Hall's low and high context factors are linked to the social relationships of the people in a culture rather than the general use of technology and attitude of a person in a transactional engagement using a technology-advanced medium such as e-commerce (Q. (Steven) Lu et al., 2018). The dimensions of Hofstede's theory align more effectively with an individual forming a relationship through online transactions with an organization that may fall into the "stranger" category. One widely known one is Hofstede's theory of cultural differences (Tam & Oliveira, 2019), which points out that we can describe six different natures of cultures from each other. Their dimensions are as follows; Indulgence versus Restraint, Individualism versus Collectivism(IDV), the Power Distance Index(PDI), Uncertainty Avoidance Index(UAI), Masculinity versus Femininity(MAS) and Long Term Orientation versus Short Term Normative Orientation(LTO) (Shneor et al., 2021). Next are descriptions of these dimensions.

The dimension of the Power Distance Index (PDI) measures the degree to which less powerful members of a society defer to more powerful members. Low-power distance cultures expect and accept less

hierarchical, more consultative, or democratic relations of power, with individuals interacting more as equals, regardless of formal positions. This enables subordinate subjects to participate in and criticize the decision-making process of their superiors, and they can expect their superiors to respond proportionally to the criticism. In contrast, high power distance cultures have people of lower power who embrace more autocratic and paternalistic power relationships. In traditional informal, hierarchical structures, subordinates obey their superiors simply due to their role power. Hence, the Power Distance Index is not a true power dynamic ; instead, it is a perception of variation in power individualism based on and focused on individual selves, individual successes, and individual rights. Individuals are supposed to protect themselves and their close relationships, to take their allegiances. In collectivist societies, this is not how it works. Humans do not live as individuals but as part of a group, a lifelong working organism that should be preserved in exchange for loyalty. It should be noted, however, that the collectivist defines the people's mentality in how they treat one another, not in the sense of politics or form of government. Masculinity vs Femininity uncertainty is all about how much you will try to fit into your biological sex gender roles. Masculine-driven societies lean toward competitiveness, assertiveness, materialism, ambition and power, while feminine-driven societies lean toward cooperation, modesty, caring for the weak, and quality of life. The High MAS index also leads to an expectation of higher male prevalence in the performance of assertive citizens of society due to the differentiation of roles associated with gender. Women and men play diffusion roles, and tasks are evenly distributed among team members in very low MAS index countries. The uncertainty avoidance index measures how threatened members of a culture feel in unknown situations: how comfortable members of a society are with uncertainty and the extent to which they try to avoid uncertainty to reduce anxiety. Cultures with high uncertainty avoidance are emotional and avoidant, seeking to avoid the unknown or the strange. Change occurs gradually, in stages; rules, laws and regulations are designed and instituted. Conversely, low uncertainty avoidance cultures are more comfortable in unstructured situations or dynamic high-changed environments; they often have few rules and are pragmatic and tolerant of changes.

The initial first four indices were dimensions created by (Hampden-Turner & Trompenaars, 1997). Later, a new dimension was introduced: LTO and Indulgence versus Restraint (IND) (Marieke & Geert, 2002). Long-term societies care more about the future and encourage pragmatic values around perseverance and adaptability. Conversely, societies with a short-term orientation tend to be normative, revealing ultimate truths through strict adherence to rules, relying on immediate outcomes, preserving face, reciprocity, and obligation. This second dimension is also called (short-time) normative versus (long-time) pragmatic (PRA) (Contiua et al., 2012). Indulgence vs. Restraint is the fifth and final dimension added to the theory. This shows how far society designed those social norms to be gratified for their basic and natural human needs of enjoying life and having fun. A tiger society with high Restraint means slowly fulfilling needs and with stringent social codes.

Based on measurement items for each dimension, the Hofstede Centre 2014 presented the scores for each cultural aspect by country worldwide. The scores for cultural dimensions for India and Bangladesh are IDV 15, PDI 46, UAI 54, MAS 57, IND 83 and PRA 12 (Mohammed & Tejay, 2017). A PDI of 46 displays low power distance (PDI), which implies informal views regarding superiors in both organizations and social classes (Mohammed & Tejay, 2017). The IDV score of 15 indicates a very collectivistic society where loyalty precedes a society's rules and regulations. In such contexts, strong relationships help ensure mutual liability within groups of individuals, where feelings of shame and informal punishments stand as significant repercussions of wrongdoing (Mohammed & Tejay, 2017).

Developing countries, such as India and Bangladesh, are considered masculine societies with a MAS score of 57, where people put work before leisure and value equity, competition, and achievement (Mohammed & Tejay, 2017). A UAI score of 54 indicates mid-range uncertainty avoidance, either a moderate and realistic attitude towards globalism or a combination of inquisitive curiosity and healthy scepticism about new ideas. According to (Mohammed & Tejay, 2017), a PRA score of 12 reflects a

normative society which believes in the absolute truth, respects its traditions and has low saving intent. This score also indicates an abiding scepticism about social change. Finally, a score of 83 in IND suggests a society where people follow their impulses and desires to be positive and wasteful in money (Mohammed & Tejay, 2017).

Fig. 2 depicts the research model adapted from (Mohammed & Tejay, 2017) cultural dimensions. The relationships presumed in this model are created based on cultural dimension scores for Rawalpindi and Islamabad, and explanations of this model are provided in the below sub-sections.

Fig 2. Model for this research

Cyber safety concerns

The ability of e-commerce to allow people to conduct transactions from anywhere, at any time, regardless of physical constraints, and the capability of businesses to expand their customer base beyond local markets has led to its rapid adoption in developed nations. Online interactions range from purchasing products and services to web banking and license renewal. However, such innovations in e-commerce are still novel in developing countries (Bajunaied et al., 2023). When individuals think of online platforms, it stems mainly from the uncertainty they associate with cyber welfare in these contexts. While facing high uncertainty (Choung et al., 2024) and low trust (Liu et al., 2005; Maqableh et al., 2021; Saxena & Thakur, 2023; Zibarzani et al., 2024), disclosure of personal information for individuals is difficult because they are less willing to provide the personal information to conduct e-commerce.

India and Bangladesh have a UAI score of 54, which suggests that online payments may be on the radar for these consumers, but they may also feel a degree of apprehension. On the contrary, if people see a rise in cyber safety, their intention towards online payments is higher.

H1. The level of cyber safety concerns being addressed certainly shows that people do have an intention toward online payments.

Adoption of e-commerce

Literature has investigated many factors that influence technology acceptance. (Fred D. Davis, 1889) proposed that technology will be adopted based on usefulness and ease of use. It has subsequently been applied in most studies to investigate new technology acceptance among new users, particularly within e-commerce adoption contexts (Handoyo, 2024). Cultural considerations may also be relevant to e-commerce technology adoption, given that users often consider how such technologies could affect their culture and the unknowns they may create. UAI (55) and PRA (13) scores for the acceptance of technology are likely down in India and Bangladesh. However, the perception of higher cyber safety might reduce ambiguity and increase acceptability.

H2a. A high level of adoption of e-commerce is associated with a high level of addressed cyber safety concerns.

However, it is essential to make a difference between the uptake of e-commerce and an individual's intention to be paid online. E-commerce adoption indicates that people view the technology as beneficial and are encouraged to become involved (Maqableh et al., 2021). However, when things become secret, people risk ignoring these benefits to protect themselves from external threats. It indicates how information confidentiality concerns affect the intention or adoption behaviour differently. However, the more technology is accepted, the more intention there is for online payments.

H2b. A high intention towards online payments is associated with high e-commerce adoption.

Confidentiality concerns

A confidentiality concern has been frequently employed as an underlying proxy for examining information privacy in earlier studies (Anic et al., 2019; Olivero & Lunt, 2004; Sullivan & Kim, 2018; Zhou et al., 2021). Such concerns have been repeatedly recognized as an online transaction obstacle (Zhao et al., 2024). However, other studies have aimed to reduce confidentiality concerns by improving trust (Hallikainen & Laukkanen, 2018). (Hampden-Turner & Trompenaars, 1997) pointed out that confidentiality concerns vary significantly from one country to another. Similarly, (Deep Prakash & Majumdar, 2021) explores confidentiality concerns based on the IDV index, which they deem relatively lower than the case in the United States for Italy. The studies, therefore, highlight that the confounding between confidentiality cannot be treated homogeneously across the culturally varied (Zhao et al., 2024).

Based on (Hallikainen & Laukkanen, 2018), this study assesses the confidentiality issues using IDV level for India and Bangladesh. Society is classified as very collectivist, with an IDV score of 16, identified by the index as having relatively high ideas about sharing in the culture rather than sharing information individually. However, as previous studies have shown, privacy concerns can increase uncertainty associated with adopting e-commerce and intention to make online payments (Tam & Oliveira, 2019) and lower perceptions of cyber safety.

H3a. Confidentiality concerns are lower in Pakistan.

H3b. High cyber safety concerns are associated with low confidentiality concerns.

H3c. A high level of e-commerce adoption is related to low confidentiality concerns.

H3d. High intention for online payments is related to low confidentiality concerns.

Personal inclination

However, India and Bangladesh's IND score is 83, which suggests a high level of indulgence among members of all such societies. This means people in India and Bangladesh have a greater tendency to it, which can motivate e-commerce in India or Bangladesh, which depends entirely on their approach towards e-commerce. More specifically, personal inclination can be defined as the discretionary attitude toward engaging in e-commerce activities. According to (Maqableh et al., 2021), personal motivation is realized as an internal cognitive state that can be expressed as a belief owing to a self-fulfilling idea about getting joy from performing a given task. Thus, individual interest is attached to e-commerce adoption.

H4a. In Pakistan, Personal inclination is higher.

H4b. A high level of e-commerce adoption is related to a high level of personal inclination.

H4c. High intention toward online payments is related to a high level of personal inclination.

Data collection and analysis

The first step involved gathering data. In phase one, we conducted a pilot study of 70 respondents, primarily native to Islamabad, Pakistan. This pilot study aimed to assess and analyze the factor loading and reliability, as well as the validity of the survey items. None of the items were identified as having issues (Appendix A). The next step was data collection through survey questionnaires undertaken in the manifold of Rawalpindi and Islamabad. The survey was carried out with a target sample of 500, of which 264 people responded, yielding a response rate of 52.8%. From the responses, 21 surveys were incomplete, or multiple responses were given for a single item, resulting in exclusion from the analysis. This yielded a final data set of 243 completed surveys, which were analyzed against the proposed hypotheses. Table 1 shows the demographics of the sample in Rawalpindi and Islamabad.

Table 1: Demographic for Rawalpindi and Islamabad

Profile	Characteristic	Percent (%)
Gender	Male	38.6
	Female	61.4
Age	< 21	7
	21-30	36
	31-40	40
	41-50	12
	> 50	5
Experience of Internet (Number of Years)	<1	3.1
	2-4	4.3
	5-7	8.6
	8-10	75.2
	>10	8.8
Usage of Internet (Hours/Week)	1-3	23.2
	4-6	18.4
	7-10	40.3
	>10	18.1

Items were also adapted from the indicated measurements for confidentiality concerns, personal inclination, and intention to use online payments (Huang, 2022; Tao et al., 2024b). The questions pertained to cyber safety concerns adapted from (Mohammed & Tejay, 2017) but were tailored to this study. All items were rated on a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). Items were rated on a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). Confirmatory factor analysis (CFA) was performed to test the measurement models. Structural equation modelling (SEM) using LISREL 9.1 tested the structural model.

To evaluate reliability, a measure of internal consistency is used, which enables the researcher to test how many of the items from one single construct measure that construct correctly (F. D. Davis, 2011; George, 2018; P. H. Nguyen et al., 2024). The internal consistency was assessed through Cronbach's alpha, and a threshold of 0.70 or higher was considered acceptable (Xie et al., 2017). As shown in Table 2, all Cronbach's alpha values were above the threshold, demonstrating internal consistency, which was confirmed by the average variance extracted (AVE). AVE is the variance explained by the construct divided by the variance associated with measurement error (C.S. et al., 2022). AVE values should be al above 0.50 (Kim et al., 2024), and as shown in Table 2, the lowest AVE was 0.65 in the study, confirming the high internal consistency for all constructs.

Table 2: Correlation Matrix

	Mean	SD	CSC	AEC	CC	PI	ITOP	Cronbach's alpha	AVE
CSC	2.39	1.21	1.00					0.87	0.79
AEC	2.89	1.28	0.47***	1.00				0.81	0.67
CC	3.99	1.17	−0.04	0.13	1.00			0.79	0.76
PI	3.13	1.23	0.11	0.08	0.07	1.00		0.76	0.65
ITOP	3.01	1.29	0.44*	0.49***	−0.14***	0.27	1.00	0.84	0.68

CSC - Cyber safety concerns, AEC - Adoption of e-commerce, CC - Confidentiality concerns, PI - Personal inclination, ITOP Intention toward online payments.

Convergent and discriminant validity are used to assess construct validity. It is the degree of agreement between measures of interest (converging constructs). Conversely, discriminant validity reflects the extent to which constructs differ. We established convergent validity for measurement validation by showing that the average variance extracted(AVE) for each construct was equal to or greater than 0.50 (Fornell & Larcker, 1981). As shown in Table 2, all AVE values exceeded this threshold. To ensure discriminant validity, we verified that the square root of the AVE was more significant than all of the correlations of that construct with all other constructs (Contiua et al., 2012).

Table 3: Discriminant validity

	CSC	AEC	CC	PI	ITOP	Cronbach's alpha	AVE
CSC	**0.87**					0.84	0.76
AEC	0.49***	**0.80**				0.79	0.63
CC	−0.04	0.13	**0.86**			0.86	0.79
PI	0.11	0.08	0.09	**0.81**		0.74	0.62
ITOP	0.43*	0.50***	−0.12***	0.29	**0.83**	0.85	0.68

CSC - Cyber safety concerns, AEC - Adoption of e-commerce, CC - Confidentiality concerns, PI - Personal inclination, ITOP Intention toward online payments.

Table 4: Model fit

χ^2 (d.f.)	χ^2/d.f	NFI	CFI	IFI	GFI	AGFI	NNFI	RFI	SRMR
241.29 (111)	2.1	0.92	0.94	0.96	0.88	0.86	0.95	0.89	0.071

Discriminant validity was confirmed, as shown in Table 3. The overall model fit of the structural equation modelling (SEM) output was then evaluated using LISREL, summarized in Table 4. Finally, the goodness-of-fit of the model was assessed using the normed fit index (NFI) and comparative fit

index (CFI), and both of them were higher than the threshold level of 0.90 (Gefen et al., 2000), signifying a good model fit. Although the GFI was 0.88 less than 0.90, Hooper et al. (2008) advise against using GFI as it is sensitive. However, the more goodness of fit measures, at least the adjusted goodness of fit index(AGFI) , which approaches 1.0, the better fit is preferred. The AGFI was greater than 0.80 in this analysis, indicating a good fit for the model (Mohammed & Tejay, 2017). On another level, both the IFI and NNFI exceeded the 0.90 line, thus confirming the fitness of this model (Olivero & Lunt, 2004). The standardized root mean square residual(SRMR) was less than 0.08, in line with the recommended range by (Contiua et al., 2012). A model is better parsimony if its chi-square is less than 2 (Barnum, 2011). In this situation, however, the model's value is 2.1, which approaches the acceptable threshold to affirm the adequacy of the model.

The study's hypotheses can be tested using the correlation matrix in Table 2. The positive significant correlation (0.44, $p < 0.05$) between CSC and ITOP supports H1, meaning that accounting for the safety of the cyber domain improves individuals' intention to perform online payment transactions. Likewise, the positive and significant association (0.47, $p < 0.001$) between CSC and the Adoption of E-commerce (AEC) supports H2a since a boost towards cyber safety motivates e-commerce adoption. Finally, the positive relationship (0.49, $p < 0.001$) between AEC and ITOP confirms H2b that e-commerce adopters are likely to pay online.

The results for confidentiality concerns (CC) are mixed. On the other hand, the relationship between CC and ITOP (−0.14, $p < 0.001$) supports H3d that lower confidentiality concerns increase intention toward online payments, while neither CC and CSC (−0.04, not significant) nor CC and AEC (0.13, not significant) support H3b and H3c, respectively. The average score of CC was 3.99, indicating relatively high concerns with confidentiality in India and Bangladesh, contrary to H3a's assumption of low confidentiality concerns in these societies.

The values of Personal Inclination (PI) correlate weakly with AEC (0.08, not significant) and ITOP (0.27, not significant). Though this somewhat supports H4c, the link between PI and AEC is weak and offers no strong support for H4b. On the other hand, A highly moderate mean value of PI (3.13) also indicates a personal inclination, but the evidence directly supporting H4a for Pakistan is still missing.

Table 5 - Hypothesis testing

Hypothesis		Path co-efficient	t-statistic	P-value	Inference
H1	CSC > AEC	0.736	17.235	0.000	Supported
H2	CSC > ITOP	0.723	16.811	0.000	Supported
H3	CC > AEC	0.461	10.481	0.000	Supported
H4	CC > ITOP	0.358	6.396	0.000	Supported
H5	PI > AEC	0.821	21.986	0.000	Supported
H6	PI > ITOP	0.766	18.013	0.000	Supported
H7	AEC > ITOP	0.798	20.118	0.000	Supported

CSC - Cyber safety concerns, AEC - Adoption of e-commerce, CC - Confidentiality concerns, PI - Personal inclination, ITOP Intention toward online payments.

From the output of Table 5, the proposed hypotheses statistically support their validity, as evidenced by both the p-values ($p < 0.001$) and the t-statistics being high for each case. The results reveal the significant impact of cyber safety concerns (CSC) on e-commerce adoption (AEC) and intention toward online payments (ITOP). The path coefficient for H1 is quite robust in the positive direction ($\beta = 0.736$, $t = 17.235$, $p = 0.000$), implying that the more consumers feel email marketing is safe, the more they are likely to adopt e-commerce. Likewise, H2 ($\beta = 0.723$, $t = 16.811$, $p = 0.000$) supports that the high level of cyber safety makes one willing to make online payments and strengthens the importance of safe digital payments.

Confidentiality concerns are the fourth most influential factor, but its relatively small path coefficients show its importance in e-commerce adoption and intention to use the online payment system. Based on the results for H3 ($\beta = 0.461$, $t = 10.481$, $p = 0.000$), privacy concerns are also positively contributing to e-commerce adoption, but this effect appears to be weaker than the effect of cyber safety. Parallel to that, H4 ($\beta = 0.358$, $t = 6.396$, $p = 0.000$) shows that individuals with more significant confidentiality concerns are less likely to make payments online, further emphasizing the need for transparent data protection policies and regulatory measures.

Personal inclination (PI) is the most significant factor driving e-commerce adoption and online payment intention. For H5, the result ($\beta = 0.821$, $t = 21.986$, $p = 0.000$) indicates that those naturally inclined toward digital are significantly more likely to adopt e-commerce. Similarly, our sixth hypothesis was also confirmed (H6: $\beta = 0.766$, $t = 18.013$, $p = 0.000$), indicating that consumers with a personal inclination to technology adoption and online shopping have a greater intention to use digital payment methods.

Furthermore, AEC significantly correlated with ITOP and had high statistical significance. It demonstrates that the t and p values are at the strong level ($\beta = 0.798$, $t = 20.118$, $p = 0.000$) H7. The more one is suited for e-commerce, the more interested they are in digital payment transactions. This finding is in line with the idea that trust and confidence built around online shopping readily transfer to acts of buying financial products.

Discussion

Our claim in this study is that cultural ethos governs people's choice to use online transactional facilities. This argument is rooted in the existing literature, providing evidence that confidentiality concerns are influenced by cultural features (Abdelhakim et al., 2023; Contiua et al., 2012; Gilboa & Mitchell, 2020; Hallikainen & Laukkanen, 2018; Picoto & Pinto, 2021). Moreover, previous studies indicate that culture critically influences individuals' intentions regarding online payments (B. Lu & Yi, 2023; Singh et al., 2024; Sullivan & Kim, 2018; Ye et al., 2022). Countries that are socio-economically balanced are less likely to face an upward trend in e-commerce; this research did not address socioeconomic factors, such as technological infrastructure and Internet penetration, as these factors are beyond the values used in this study. However, in this research, we try to analyze the cultural effect of confidentiality concerns on e-commerce usage (Liu et al., 2005).

Respondents reported having high confidentiality concerns even in a strongly collectivist environment like Rawalpindi and Islamabad. This indicates that individuals' perceptions may be influenced more by factors such as a country's regulation system to protect citizens' privacy. According to the literature, regulations of a nation often mirror its cultural values (Alzaidi & Agag, 2022; Eastin et al., 2016), and individuals' trust in government institutions can also play a role in how efficiently these regulations can reduce concerns about confidentiality. Alternatively, and indeed more completely, individuals may find their privacy more secure as long as government policies explicitly protect it, despite a strong cultural norm (Gilboa & Mitchell, 2020; Hallikainen & Laukkanen, 2018).

However, cultural beliefs are not uniform across an individual country. Some regions may have their traditions, so perspectives vary on confidentiality, online security, and presence. Indian diverse cultural

groups show different cultural beliefs, revealing that culture-bound behaviour is not a worldwide phenomenon (Sanguineti & Maran, 2024). One reason for this is the remarkable diversity of geographic locations, which adds a layer of complexity to the cultural influences on online purchase behaviours.

The results of this study highlight that cyber safety concerns, adoption of e-commerce, confidentiality concerns, and personal inclination govern the intention of individuals toward online payments. Hofstede's cultural dimensions grounded the hypotheses of this study. The safety of cyberspace has proved itself to be one of the key aspects that have crucial effects on the operational presentation of e-commerce in practice. However, e-commerce users tend to use the services more as they find the e-commerce websites safer. Cyber safety concerns are conceptually related but different from the trust factor often examined in information privacy and e-commerce literature (Anic et al., 2019; Hallikainen & Laukkanen, 2018; Mutimukwe et al., 2020; Tao et al., 2024a). Cyber safety Concerns are individuals' general perceptions regarding the security of online transactions regardless of the organization. Trust, on the other hand, is about the particular relationship between an organization and its customers. Cyber safety concerns are generally related to the perceptions of the Internet, whereas trust is built on interactions with specific online vendors (Alipour & Yaprak, 2022; J. Li et al., 2024). However, the role played by concerns about cyber safety was consistent with that of trust for individuals' intentions to transact online.

E-commerce adoption is not the same as an intention to buy online. While the Internet is a medium for businesses to communicate with customers, e-commerce technology offers multiple avenues to build intimacy with consumers (Bajunaied et al., 2023; Dhagarra et al., 2020; Mohammed & Tejay, 2017). Consumers are not bound by spatial and temporal constraints when purchasing goods and services. They must be ready to adopt it and interested in it so that consumers can use this technology. On the contrary, many other aspects are initiated while sharing personal details. E-commerce in Rawalpindi, Islamabad, is still on a tiny scale, which we believe is contextually related to society's culture by uncertainty avoidance index and the normative state of society. E-commerce entails order inclination online. The relationship between cyber safety concerns and e-commerce adoption (intention to pay online) was more substantial than the direct relationship between cyber safety concerns and intention to pay online. These findings indicate that even though people might believe that the Internet is safe for business, they are more prone to transact online if they have a technical affinity. Technology is kind of like attractiveness.

Confidentiality concerns are essential in this study, as they characterize information privacy (Huang, 2022; Saxena & Thakur, 2023; Tao et al., 2024a). Given the interlinked society of Rawalpindi and Islamabad, we speculated that there would be generally limited concerns about confidentiality. (Shneor et al., 2021) found that fewer privacy concerns relate to the lower individualism in societies., (Liu et al., 2005) found that Italian society has low trust, while my home country, the USA, has a high-trust society. This implies that trust should be considered when measuring confidentiality concerns because quite a few studies have shown that it could be an antecedent of confidentiality concerns (Anic et al., 2019; B. Lu & Yi, 2023).

Furthermore, confidentiality concerns were predicted to affect cyber safety concerns and e-commerce adoption negatively, but the results were insignificant. While we expected that confidentiality issues would decrease adherent's safety perception, the insignificance of this relationship may be since we see that information protection and information privacy are separate constructs (Bajunaied et al., 2023; B. Lu & Yi, 2023; Maqableh et al., 2021). Indeed, confidentiality discourages some people's willingness to make online payments.

That all came down to how indulgent a society was feeling, personally. The study hypothesized personal inclination and adaptation to e-commerce. That is probably because consumers are far more curious about products than specific use-case e-commerce. It's perhaps because consumers care much more about products as a category than real-world use case e-commerce. Someone could be tempted to buy something for its price or convenience for others on the Internet but has no plans to continue purchasing

it for all other businesses. This aligns with results from (Liu et al., 2005), showing 39% online sales of prescription drugs versus books. Nonetheless, the intention toward online payments dramatically depends on personal preference.

This study adds to the literature concerning information privacy and e-commerce by investigating how national culture affects confidentiality concerns and e-commerce intention. The results suggest that cultural dimensions help explain some of the phenomena around consumers' intention to use online payments and that confidentiality concerns may be more nuanced than reflect a society's cultural beliefs. In particular, the meaning of confidentiality varies between developed countries and developing countries with a strong collectivist orientation. Although (Barnum, 2011) showed the primacy of culture on the impact of networks of confidentiality concern and individuals' privacy calculus, the findings in this study demonstrated that culture could explain the degree to which consumers would be willing to transact online with one another instead of information privacy itself. In general, intention toward online payments is heavily influenced by cyber safety concerns and the adoption of e-commerce.

Confidentiality concerns affect people's willingness to transact online, but under some conditions, such concerns are overpowered by positive factors. These results of the study are consistent with the findings of same area of information privacy studies, in which people go through a cost (what would they have to give up) and benefit (what would they gain) analysis when determining to disclose some of their data or not (Eastin et al., 2016; Jaspers & Pearson, 2022; Mohammed & Tejay, 2017; Mutimukwe et al., 2020; Tao et al., 2024a). In short, as (Saxena & Thakur, 2023) pointed out, people might choose timely and enjoyable features over security and privacy.

The findings of this study entail several managerial implications. Even if culture cannot fully account for the differences in confidential concerns, it affects other aspects of e-commerce adoption. As a result, consumers' cultural values must be considered by companies entering the e-commerce marketplace. This will also allow global tech-based institutions to understand consumers' cultural beliefs. This knowledge of cultural influences will enable them to devise plans to draw clients toward areas with much more cultural sway instead of focusing exclusively on moderate to high-stage e-commerce looser areas. In particular, marketing and awareness programs should be tailored demographically to catch customers' attention. This means that organizations need to bear in mind cultural norms. In some cultures, face-to-face interaction is vital to transactions, which online marketplaces cannot offer (Tam & Oliveira, 2019). If such is the case, it may be better suited to abstain from marketing to consumers from countries whose cultures seem more favourable toward e-commerce outlets. Even in demographic e-commerce favourable zones, the fear of confidentiality is a significant barrier to its use (Jaspers & Pearson, 2022). Hence, organizations should not avoid these apprehensions but instead focus on creating trust to reduce the challenges (Alzaidi & Agag, 2022; X. Li et al., 2025; Liu et al., 2005; Mutimukwe et al., 2020). Qualitative approaches, like ethnographic studies, would also help apply e-commerce theories in developing countries, so future research may explore why some populations are reluctant to adopt e-commerce. More research might engage more explanatory theories of cultural influence to understand how culture shapes individuals' relations to the world. This could enhance the comprehension of the connection between information privacy and culture. Moreover, the effects of both culture and regulation could be explored to investigate their impact on individuals' perceptions of privacy and the effects of the organizations involved.

Conclusion

The emergence of digital technologies replaces the traditional business and payment method. It replaces the physical markets with digital and traditional payment systems with innovative digital payment systems. This digital transformation is convenient for buyers and sellers regarding trading and payment. However, these digitally enabled marketplaces oblige customers to provide their personal and financial

information, which raises customers' concerns about safety and confidentiality. From this perspective, it is essential to acknowledge customers' safety concerns and take necessary steps to increase their trust. This study explores the role of cyber safety concerns, confidentiality concerns, and personal inclination towards consumer online transaction intention and the adoption of e-commerce. Using convenience sampling, we collected data from 243 respondents as a sample from Rawalpindi and Islamabad. To ensure the instrument's reliability and validity, we conduct appropriate tests and conduct Structural Equation Modeling (SEM) to test our hypothesis. Results show that Cyber safety concern, confidentiality concerns, and personal inclination significantly impact consumer online transaction intention and adoption of e-commerce. These results suggest that cyber safety concerns, confidentiality concerns, and personal inclination are salient factors that have adequately induced individuals' intention toward online payments and adopting e-commerce. These results are significant for business managers, marketing companies and policymakers to ensure customers' safety and build long-term relationships.

Theoretical and managerial implications

This study makes a significant addition to the literature by exploring the role of cyber safety concerns, confidentiality concerns, and personal inclination towards the intention of consumers to engage in online transactions and adopt e-commerce from the perspective of Pakistan. Perceived security concerns can have a significant effect on the level of engagement that people have with e-commerce. Policymakers and businesses must consider a holistic approach while formulating strategies to promote e-commerce adoption. Fortunately, the necessary infrastructure can be established through regulatory compliance, consumer protection, cybersecurity, and other mechanisms built to promote robust trust in digital transactions.

Limitations and Future Direction

This study has limitations despite several contributions; first, the findings were primarily limited to Pakistan, inhibiting the findings' generalizability to developing countries. Although Pakistan is a representative case for developing economies, the culturally varying nature of other regions implies varying results. This will need to be studied in countries with comparable economic conditions to see if there are commonalities in the findings across cultural environments, but this is a great start. Second, since this study investigates mainly cultural influences, it does not consider that government regulations could also moderate privacy concerns. Since national policies shape digital behaviour by creating specific policies concerning online privacy and security, further research may investigate national policies' effect on consumers' sense of privacy and security.

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Appendix A

Table B1. Factor loadings, reliability and convergent validity of the pilot study.

Construct	Items	Factor loadings	Cronbach's alpha	AVE
Cyber safety concerns	CSC1	0.917	0.9	0.825
	CSC2	0.952		
	CSC3	0.857		
Adoption of e-commerce	AEC1	0.793	0.778	0.596
	AEC2	0.788		
	AEC3	0.692		
	AEC4	0.837		
Confidentiality concerns	CC1	0.937	0.947	0.891
	CC2	0.97		
	CC3	0.955		
Personal inclination	PI1	0.893	0.882	0.8
	PI2	0.919		
	PI3	0.899		
Intention toward online payments	ITOP1	0.913	0.863	0.7
	ITOP2	0.727		
	ITOP3	0.893		

	ITOP4	0.836

TABLE B2. DISCRIMINANT VALIDITY OF THE PILOT STUDY.

	CSC	**AEC**	**CC**	**PI**	**ITOP**
CSC	**0.889**				
AEC	0.651	**0.761**			
CC	0.159	0.345	**0.988**		
PI	0.261	0.345	0.310	**0.870**	
ITOP	0.441	0.673	0.432	0.401	**0.825**

CSC - CYBER SAFETY CONCERNS, AEC - ADOPTION OF E-COMMERCE, CC - CONFIDENTIALITY CONCERNS, PI - PERSONAL INCLINATION, ITOP INTENTION TOWARD ONLINE PAYMENTS. SIGNIFICANT AT ***P < 0.001, **P < 0.01, *P < 0.05

MACROECONOMIC DETERMINANTS OF CORRUPTION: AN EMPIRICAL ANALYSIS OF EASTERN EUROPEAN COUNTRIES

GEORGIOS TAVELLARIS (CORRESPONDENT AUTHOR)

Ph. D. student, International Hellenic University
E-mail: geortave@ihu.gr
ORCID ID: 0009-0005-4484-2458

Pavlos STAMATIOU

Associate Professor, International Hellenic University

E-mail: p.stamatiou@ihu.gr

ORCID ID: 0000-0001-5777-4224

Vasileios VLACHOS

Associate Professor, International Hellenic University
E-mail: vlachosuk@ihu.gr
ORCID ID: 0000-0002-2629-3425

Abstract

Corruption is a complex issue that undermines institutional integrity, distorts economic incentives and significantly contributes to disparities in economic development and inequality. The phenomenon is influenced by a range of factors and we examine the impact of key macroeconomic determinants identified in the literature as likely drivers of corruption dynamics in open economies. Our analysis of panel data from Eastern European countries (Panel Fully Modified Least Squares) reveals that, in the long run, economic freedom, government expenditure on education, inward foreign direct investment (FDI), and government effectiveness are associated with decreased perceptions of public sector corruption. The findings provide a comprehensive understanding of the macroeconomic drivers of corruption and propose policy recommendations to mitigate its adverse effects on economic growth and equity.

Keywords: corruption, eastern Europe; FDI; governance; government expenditure; openness;

INTRODUCTION

Corruption can undermine economic growth by distorting markets, eroding trust in institutions, and discouraging both domestic and foreign investments. This paper examines how corruption develops in both public and private sectors as a result of macroeconomic growth and other related macro-level variables, including public spending and investments, as well as how corruption is classified according to institutional factors within a democratic framework. We focus on the impact of macroeconomic determinants on corruption for the following reasons: i) the secondary data utilized in previous empirical studies and literature reviews is widely accessible to researchers; ii) the selection of macroeconomic variables plays a critical role in the evolution of public corruption; iii) it is essential from a scientific perspective to collect and analyze data on public corruption and its development across different time periods and geographical regions. Such efforts could assist countries in formulating public economic strategies within a democratic framework.

Public sector corruption remains one of the most significant unresolved issues of our time. In a systematic literature review of 93 studies, Weissmuller and Zuber (2023) synthesize empirical evidence

from 241 cases, revealing several dimensions that influence the corruptibility of civil servants. Weissmuller and Zuber (2023) identify various rationalization mechanisms that extend beyond mere greed, incorporating factors such as accountability conflicts, social obligations, and culturally reinforced norms. These influences can distort behavior, shaped by differing psychological reference points related to accountability and legitimacy, ultimately leading to fundamental value conflicts between self-serving actions and integrity. Furthermore, Weissmuller and Zuber (2023) emphasize that corruption has a detrimental impact on the flow of international investment to host countries.

Cieslik and Goczek (2017) analyzed data from 142 countries and found that the World Bank's control of corruption index indicates that lower levels of corruption influence positively the growth rate of real per capita GDP and increase the investment ratio. Their findings suggest that corruption directly impedes economic growth by obstructing investment and leads to the conclusion that wealthier countries with better access to international financing tend to grow faster and are less susceptible to the detrimental effects of corruption compared to less developed or emerging economies.

Corruption is also an issue for several states of the European Union. Vlachos (2022) investigates the effect of the short-comings in institutional quality on firms' R&D expenditure and indicates that corruption is harmful to R&D investments in Southern Europe. In the context of Eastern Europe, Batory (2018) investigates whether joining the EU has helped or hindered the growth of corruption in post-communist states. Batory (2018) indicates that adherence to the EU's legal rules was often more evident on paper than in practice and that corruption varies throughout the region: in addition to the east-west divide that distinguishes the region from low-corruption countries in Western Europe, there is also a north-south divide that places the continent's most corrupt states in the Balkans, where state capture by corrupt officials is evident. A recent macro-level study (Tiganasu et al., 2022) indicates that expansionary fiscal policies have led to internal devaluations of the currency, which ultimately increased external competitiveness (measured as real effective exchange rate) of Central and Eastern European economies. In economies where corruption is high, the impact of fiscal policies on competitiveness is reduced due to the negative effects caused by corruption (Tiganasu et al., 2022).

The rest of the paper is structured as follows. The second section presents the findings of previous studies on the determinants of corruption and the method employed. The third section presents the results. The fourth and final section concludes the study.

MATERIALS AND METHODS

We investigate the relation between the dependent variable of the perceived corruption index and independent variables of economic freedom, defense and education government expenditures, foreign direct investment (FDI) inflows, effective governance, and economic growth. Data were collected from European databases, such as V-Dem and WBGI, for Eastern European countries (Latvia, Lithuania, Estonia, Belarus, Moldova, Georgia, Moldova, Poland, Romania) over the period from 2012 to 2022. Missing values were handled using the forecast function of Eviews 12 software.

The selection of variables is based on the findings of the literature. The findings of key studies on the relation between corruption and economic growth is presented in Table 1. The findings indicate that corruption has an adverse effect on economic growth. The findings of key studies on the relation between corruption and public and private investment expenditure is presented in Table 2. The findings of key studies on the relation between corruption anticorruption policies and democratization is presented in Table 3.

Table 1: Corruption and economic growth

Author	Sample	Dependent Variable	Independent Variable	Relation

Uroos et al. (2021)	Time series analysis	Corruption	Trade openness and other macro-economic determinants	While inflation has a favorable impact on corruption, the literacy rate, GDP growth, and economic integration have also a negative impact on it.
Dzhumashev (2014)	Not mentioned	Economic Efficiency	Corruption, economic growth	Corruption hampers economic efficiency when there is a lower economic growth in a country.
Kunieda et al. (2014)	Data from 106 countries	Government Corruption	Economic Growth and financial openness	Government corruption affects the economic development of less corrupt nations and it is mitigated if such nations liberalize their capital accounts
Mendez & Sepulveda (2006)	Data from wide number of nations	Annual GDP growth	Real income per capita, the investment share of GDP	Corruption is worse when there are larger governments because it decreases the effectiveness of how funds are allocated.

Source: Authors' elaboration

Table 2: Corruption and investment expenditure

Author	Sample	Dependent Variable	Independent Variable	Relation
Cieslik & Goczek (2017)	Data from 142 countries	through investments		Negative

Ledyaeva (2013)	2263 foreign-owned businesses in Russia	International manufacturing companies are more likely t

obefoundinlesscorruptanddemocraticregionsofRussiath

a n a r e b u s i n e s s e s e n g a g e d i n t r a d e a n d t h e s e r v i c e s s e c t o r , w

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Jadhav (2012)	Not mentioned	FDI inflows in BRICS economies	Institutional and political determinants	rruptregions. Despite the BRICS countries' poor levels of

political stability, voice, accountability, and corrupti

on control, FDI influx to the sees economies remained unaffect

	Data from 48 African countries	Corruption,	Government Spending and Investments	ed. Corruption has a complementary effect on military spen

ding, which makes the negative impact of military spending l

Pagano et al. (2017)	Data from 49 countries	a r g e r . I n c r e a s e d c o r r u p t i o n i s n o r m a l l y r e l a t e d t o l e s s f o

		reign portfolio investment in a country.
Corrado & Rossetti (2018)	Dataset from 20 It	Negative

			alianregions	

Source: Authors' elaboration

Table 3: Corruption, anticorruption policies and democratization

Author	Sample	Dependent Variable	Independent Variable	Relation
Villanueva (2023)	Data from 30 democ	Perceived Corruption	A lack of a strong civil society, a lack of extensive and impartial publi	Positive

			racies c disco urse, and a high level of politi cal exclu sion
Qu et al. (2018)	Data from 31 provinces in China	Economic growth	Antic orrupt ion meas ures (the logari thm of the previ ous year's GDP per capita , the vecto r, which is a set of contr ols com monl y used in the growt h literat ure, the share of physi cal invest ment	There was a negati ve asso ciati on betw een the ind

in GDP, the population growth rate, and average years of education) is essential for economic growth, the negative associations suggest that

hatanticorruptioncampaignslowerreconomicgrowth,atleast

					in the short run.
Tavares (2007)	Data from 101 countries	Democratization (government size, log of population, literacy, and average	GDP growth in a half decade, following or not policy changes, liberalization, and democratization processes.)	Negative	

Pieroni (2013)		Data from 100 firms per country and 67 countries	Financial Projects (components of economic freedom, like private investment regulations, firm's covariates, and macro covariates (GDP, INV, GOVSPEN, GINI, and CIVIL)	The civil liberty index (CIVIL) in reduces corruption, oversize

dstate(GOV)affectstheefficiencyofexpenditure,leadingto

					increased corruption.
& Ben Ali		Data from the economic development i	Corruption	The real GDP per capita, government size, economic freedom, democracy, political and economic freedom in relation to government size, educational background	An increase in income increase in corr

	n MENA Countries	, unemployment, ethnic tensions.	uption in natural-resource-rich countries. A higher political fre

edomeffi cientlyreducescorruptioninMENAcountries.Furthermo

re, an increase in the population's education level in the MENAc

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cientandsecretmanner. Moreover, an increase in unemploymen

tinthe working-age population decreases corruption.

Source: Authors' elaboration

The cross-section units were tested for cross-section dependence and the first differences were stationary. The Pedroni and Kao cointegration tests were used to estimate long run relationships and the final sample (2013-2020) was analyzed with Panel (pooled) Least Squares (PLS) and Fully Modified Least Squares (FMOLS).

FINDINGS

Table 4 presents the results of Pedroni and Kao panel cointegration tests. The results are statistically significant and indicate that there is a cointegrating relationship between the variables.

Table 4: Panel cointegration tests

Method		Statistic	Prob.	Weighted stat.	Prob.
Pedroni common AR coefs	Panel PP-Statistic	-1.260361	0.1036	-6.544728	0.0000
	Panel ADF-Statistic	-0.566190	0.2856	-2.725793	0.0032
Pedroni individual AR coefs	Group PP-Statistic	-8.581849	0.0000		
	GroupADF-Statistic	-3.580482	0.0002		
Kao cointegration test (AFD)		-4.912628	0.0000		
Westerlund test for cointegration		-2.5337	0.0050		

Source: Edit by author

Tables 5 and 6 present the results of PLS and FMOLS respectively. The results indicate that FDI inflows and government effectiveness decrease corruption in the long run, while economic freedom and public expenditures in defense and education decrease corruption both in the short and the long run. GDP growth has an adverse effect on corruption only in the short run.

Table 5: OLS Results

Dependent Variable: Corruption Perception Index

Method: Panel Least Squares

Sample (adjusted): 2013 2020

Periods included: 8

Cross-sections included: 8

Total panel (unbalanced) observations: 63

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant	-55.57500	6.637157	-8.373314	0.0000
Economic freedom	1.068544	0.093258	11.45793	0.0000
Military expenditure (% GDP)	9.337465	1.352416	6.904284	0.0000

Education expenditure (% GDP)	4.571043	0.664375	6.880219	0.0000
FDI inflows (% GDP)	-0.367160	0.213865	-1.716785	0.0915
Government effectiveness	6.143011	3.775232	1.627188	0.1093
GDP growth	0.391230	0.194696	2.009442	0.0493

R-squared	0.882657	Mean dependent var	52.14286
Adjusted R-squared	0.870084	S.D. dependent var	12.18388
S.E. of regression	4.391535	Akaike info criterion	5.901674
Sum squared resid	1079.992	Schwarz criterion	6.139800
Log likelihood	-178.9027	Hannan-Quinn criter.	5.995330
F-statistic	70.20551	Durbin-Watson stat	0.858079
Prob(F-statistic)	0.000000		

Source: Edit by author

Table 6: FMOLS Results (long run)

Dependent Variable: Corruption Perception Index

Method: Panel Fully Modified Least Squares (FMOLS)

Sample (adjusted): 2013 2020

Periods included: 8

Cross-sections included: 8

Total panel (unbalanced) observations: 63

Panel method: Pooled estimation

Cointegrating equation deterministics: C

Coefficient covariance computed using default method

Long-run covariance estimates (Bartlett kernel, Newey-West fixed bandwidth)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Economic freedom	0.843321	0.099924	8.439608	0.0000

Military expenditure (% GDP)	0.114188	0.961049	0.118816	0.9059
Education expenditure (% GDP)	1.899388	0.557859	3.404782	0.0013
FDI inflows (% GDP)	0.230284	0.121130	1.901127	0.0632
Government effectiveness	8.685256	1.577090	5.507142	0.0000
GDP growth	0.116365	0.085294	1.364272	0.1787

R-squared	0.977304	Mean dependent var	52.14286
Adjusted R-squared	0.971283	S.D. dependent var	12.18388
S.E. of regression	2.064691	Sum squared resid	208.8844
Long-run variance	2.454135		

Source: Edit by author

DISCUSSION AND CONCLUSION

In summary, it is clear that there exists a relationship among economic and political freedoms, government size, and corruption. While this is broadly acknowledged, it is also important to highlight the role of the civil liberties index in mitigating corruption, which aligns with theoretical expectations. Conversely, an oversized government may hinder the efficiency of public expenditures, contributing to increased corruption levels.

Further analysis of the relationship between government size and corruption indicates that democratization can lessen the positive correlation between large government size and corruption levels. Additionally, ethnic tensions tend to elevate corruption levels.

These findings carry significant policy implications. Effective anti-corruption strategies necessitate greater political freedoms to effectively reduce corruption through enhanced checks and balances. However, it is important to note that stringent anti-corruption measures can deter investment, which in turn can negatively impact economic growth. This is particularly paradoxical given that FDI inflows are typically associated with a reduction in corruption, particularly when governance is efficient and democratic. Consequently, it is concluded that a "grease the wheel" approach may be necessary to navigate substantial corruption for the purpose of fostering economic development. This approach should operate under conditions of transparency within the state's functions and its economic and institutional frameworks.

Finally, the interplay between educational expenditures and anti-corruption policies, grounded in ethical considerations and political will, merits further exploration. It is also critical to develop mechanisms for controlling corruption within democratic institutions, such as NGOs, and to investigate the role of pressure groups in maintaining a stable economic environment in future research.

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THE ROLE OF INNOVATION CLUSTERS IN INTERNATIONAL VALUE CHAINS

Author Information
Author (ASA): Aghasif Abdullayev
Scientific Degree: PhD Candidate
Organization, City, Country: Baku Business University, Baku, Azerbaijan
Email: aghasifabdulla@gmail.com
ORCID: https://orcid.org/ 0009-0000-3071-5718

Beynəlxalq dəyər zəncirlərində innovasiya klasterlərinin rolu
Müəllif Məlumatı
Müəllif (ASA): Ağasif Abdullayev
Elmi dərəcə: Doktorant
Təşkilat, Şəhər, Ölkə: Bakı Biznes Universiteti, Bakı, Azərbaycan
E-poçt: aghasifabdulla@gmail.com
ORCID: https://orcid.org/ 0009-0000-3071-5718

Роль инновационных кластеров в международных цепочках создания стоимости
Информация об авторе
Автор (ASA): Агасиф Абдуллаев
Учёная степень: Аспирант (кандидат PhD)
Организация, Город, Страна: Бакинский университет бизнеса, Баку, Азербайджан
Эл. почта: aghasifabdulla@gmail.com
ORCID: https://orcid.org/ 0009-0000-3071-5718

Abstract
This article explores the strategic role of entrepreneurship education in facilitating digital business transformation, with a focus on the period between 2019 and 2024. Innovation clusters play a crucial role in strengthening the competitiveness of countries and regions within global value chains. They facilitate collaboration among enterprises, research institutions, and government bodies, fostering the transfer of technology and knowledge. This study examines how innovation clusters contribute to the integration of firms into international value chains through enhanced innovation capacity, increased productivity, and access to foreign markets. The paper also explores policy mechanisms that support cluster-based development, emphasizing the importance of innovation ecosystems for sustainable economic growth and international competitiveness.
Keywords: Innovation clusters; global value chains; international competitiveness; knowledge transfer; technological development; cluster policy; innovation ecosystem; sustainable economic growth

Xülasə
Bu məqalədə innovasiya klasterləri ölkələrin və regionların qlobal dəyər zəncirlərində rəqabətqabiliyyətinin gücləndirilməsində mühüm rol oynayır. Onlar müəssisələr, tədqiqat institutları və dövlət qurumları arasında əməkdaşlığı təşviq etməklə texnologiya və biliklərin ötürülməsini təmin edirlər. Tədqiqat innovasiya klasterlərinin firmaların beynəlxalq dəyər zəncirlərinə inteqrasiyasına təsirini — innovasiya potensialının artırılması, məhsuldarlığın yüksəldilməsi və xarici bazarlara çıxış imkanlarının genişləndirilməsi baxımından — araşdırır. Məqalədə həmçinin klaster əsaslı inkişafı dəstəkləyən siyasət mexanizmləri və dayanıqlı iqtisadi artım üçün innovasiya ekosistemlərinin əhəmiyyəti vurğulanır.

Açar sözlər: İnnovasiya klasterləri; qlobal dəyər zəncirləri; beynəlxalq rəqabətqabiliyyət; bilik və texnologiya transferi; klaster siyasəti; innovasiya ekosistemi; davamlı iqtisadi artım

РЕЗЮМЕ

Эта статья исследует стратегическую роль предпринимательского образования в содействии цифровой трансформации бизнеса, с особым акцентом на период 2019–2024 годов. Инновационные кластеры играют ключевую роль в укреплении конкурентоспособности стран и регионов в рамках глобальных цепочек создания стоимости. Они способствуют сотрудничеству между предприятиями, научно-исследовательскими институтами и государственными структурами, обеспечивая передачу технологий и знаний. В исследовании рассматривается, как инновационные кластеры способствуют интеграции компаний в международные цепочки создания стоимости за счёт повышения инновационного потенциала, роста производительности и расширения доступа к зарубежным рынкам. В статье также анализируются политические механизмы, поддерживающие кластерное развитие, и подчёркивается важность инновационных экосистем для устойчивого экономического роста и международной конкурентоспособности.

Ключевые слова: Инновационные кластеры; глобальные цепочки создания стоимости; международная конкурентоспособность; передача знаний и технологий; кластерная политика; инновационная экосистема; устойчивый экономический рост

Introduction

In the context of digital transformation and the spatial shortening of production networks, innovation clusters play a strategic role in the transformation of international value chains (IVCs). Technological progress, the COVID-19 pandemic, and geopolitical shifts have intensified the need for organizing production processes based on regional and institutional proximity. Under these conditions, innovation clusters serve as key nodes that concentrate high value-added activities in geographically proximate areas and enhance the intensity of knowledge and technology transfer.

Innovation clusters strengthen the knowledge-based segments of the economy by fostering network relations among enterprises, universities, research institutions, and government bodies. Their integration into international value chains contributes to both regional competitiveness and the expansion of firms' innovation and technological development capabilities. Within this process, clusters' **absorptive and innovation capacities**, together with **governance structures** and **public support mechanisms,** determine their potential for upgrading within IVCs.

Empirical evidence from Europe demonstrates that clusters—particularly those based in the ICT industry—achieve higher positions in international value chains through strong knowledge potential, open governance models, and public-private partnerships. In this regard, the role of clusters goes beyond improving production and export structures; they also act as platforms for the creation of regional innovation ecosystems and for promoting sustainable economic growth.

Literature Review

Recent scholarship underscores the central role of innovation clusters in shaping the structure and competitiveness of international value chains. According to Gereffi (2018) and Coe and Yeung (2019), clusters serve as essential nodes linking local capabilities to global production networks, enabling regions to participate in higher value-added activities. Their studies demonstrate that the transformation of global value chains into more regionalized and knowledge-intensive systems—driven by

technological change, digitalization, and geopolitical dynamics—has elevated clusters as critical intermediaries between local industries and international markets.

Similarly, Gancarczyk and Bohatkiewicz (2018) argue that the upgrading of clusters within international value chains depends on the interaction between **governance mechanisms** and **capability-based factors**, such as absorptive and innovation capacity. They note that clusters with higher absorptive capacity—defined as the ability to acquire, internalize, and exploit external knowledge—tend to perform better in innovation-driven sectors like ICT. Their findings suggest that such clusters not only attract more investment and talent but also facilitate technology transfer and collaborative R&D across borders.

Hervas-Oliver et al. (2012) further support this view, emphasizing that knowledge governance within cluster networks enhances innovation performance by enabling firms to integrate new technologies and co-create solutions. In this context, **non-hierarchical governance structures**, which promote mutual learning and open communication among firms, research institutions, and public agencies, are identified as vital for sustainable upgrading.

Recent European studies have expanded this understanding by linking cluster development to **regional innovation policies** and **smart specialization strategies** (Balland & Boschma, 2021; De Propris & Bailey, 2020). Evidence from ICT-based clusters shows that regions fostering collaboration through public–private partnerships and targeted policy instruments achieve higher innovation output and international competitiveness. Nonetheless, differences persist across regions due to variations in institutional frameworks, innovation culture, and policy support.

Despite the growing literature on cluster dynamics and upgrading, there remains a research gap in quantifying how absorptive capacity, innovation capability, and governance structures jointly determine a cluster's position within international value chains. Existing studies often rely on qualitative case analyses or regional comparisons, offering limited generalizability. Therefore, this study contributes to filling that gap by providing an integrated theoretical and empirical framework to assess the determinants of innovation cluster upgrading in international value chains, with a specific focus on the European ICT industry.

Methodology

This study adopts a **mixed-methods research design**, integrating both qualitative and quantitative approaches to comprehensively analyze the role of innovation clusters in international value chains (IVCs). This methodological combination allows for triangulation between theoretical concepts, empirical data, and policy evidence, providing both analytical depth and generalizability of findings. Data were collected and analyzed through the following three core stages:

1. **Literature Review**: A systematic review of academic sources, policy documents, and empirical studies on clusters, value chain governance, and innovation upgrading was conducted. This review served as the theoretical foundation of the research, drawing upon key frameworks developed by Gereffi (2018), Coe and Yeung (2019), and Gancarczyk and Bohatkiewicz (2018). The analysis focused on identifying determinants such as absorptive capacity, innovation capability, and governance structure that influence cluster upgrading within IVCs. The literature review also highlighted existing research gaps, particularly the lack of quantitative models addressing European innovation clusters.
2. **Case Studies**: Targeted case studies were selected to provide contextual insights into how innovation clusters operate within international value chains. The cases included ICT and technology-oriented clusters from **Finland, Germany, and Poland,** chosen due to their strong regional innovation ecosystems and policy-driven development models. These case studies were derived from secondary data—such as policy briefs, regional innovation reports, and published case documentation—and analyzed to understand how **absorptive capacity, public–private collaboration,** and **governance mechanisms** contribute to upgrading processes. The case analysis provided qualitative depth by illustrating real-world practices that complement the broader statistical findings.

3. **Industry Reports**: A review of global and regional **industry reports, white papers,** and **policy documents** was conducted to provide a macro-level perspective on international cluster dynamics. Sources included the **World Economic Forum (WEF), OECD Science, Technology and Innovation Outlook, McKinsey Global Institute,** and **European Cluster Collaboration Platform (ECCP)**. These reports offered quantitative indicators and strategic insights regarding digitalization trends, R&D investment patterns, and the evolution of cluster-based industrial policy in Europe. Their inclusion ensured that the study's analytical framework aligned with current economic realities and international policy discourse.

By synthesizing data from these three sources, the research builds a robust framework for analyzing how entrepreneurial learning drives digital capability development and strategic adaptation in modern business contexts.

Discussions and Generalization

The analysis of the European Information and Communication Technologies (ICT) industry reveals its fundamental role as a core driver of innovation and productivity across all sectors of the economy. As highlighted by Gancarczyk and Rodil-Marzábal (2022) and Bartolacci et al. (2022), the ICT industry operates as both an enabler and a beneficiary of technological transformation, serving as the backbone of the modern digital economy. The findings of this study, supported by the data presented in **Figure 1** , confirm that ICT clusters generate a substantial share of value added in Europe's international value chains, with the majority originating from service-oriented activities.

Empirical data from Eurostat (2023) indicate that the **total value added** generated by the ICT industry in the European Union exceeded **EUR 631 billion in 2020**, accounting for **5.2% of EU GDP**. Notably, ICT **services** contributed almost fifteen times more value added than ICT **manufacturing**, illustrating a structural shift towards knowledge-intensive and service-dominated models of production. As shown in Table X, three sub-sectors—**computer programming and consulting (51%), telecommunications (28%)**, and **wholesale of ICT equipment (10%)**—collectively accounted for nearly 90% of total ICT-related value added.

These figures align with the theoretical model of **upstream and downstream specialization** proposed by Gereffi and Fernandez-Stark (2011), according to which the highest value-added activities are concentrated at the early (R&D, design) and late (marketing, after-sales, digital services) stages of the value chain. Within the ICT sector, these stages correspond to **innovation generation, software design, consulting services,** and **data-driven solutions**—all of which are deeply embedded in regional innovation clusters.

The dynamics observed in European ICT clusters also reflect the principles of the **digital convergence economy**, where product and service boundaries blur through technological integration. The rise of Software-as-a-Service (SaaS), artificial intelligence, and cloud computing illustrates how traditional manufacturing has evolved into hybrid production systems that simultaneously generate tangible and intangible value. This transition reinforces the strategic significance of **absorptive capacity**, as clusters capable of integrating new technologies and developing complementary services achieve higher levels of international upgrading.

Figure 1. Value added growth in ICT production and services in the 2015–2020 period (2015 = 100).

Source: Author's Eurostat, 2023; Gancarczyk & Bohatkiewicz-Czaicka, 2025, p. 133

Furthermore, the ICT industry exemplifies the **triple-layered nature** of value creation within innovation clusters:

1. **Technological and Knowledge Dimension** – driven by R&D intensity, patent activity, and the digital skill base;

2. **Organizational and Institutional Dimension** – supported by cross-sectoral partnerships and policy instruments such as EU digitalization initiatives;

3. **Market and Integration Dimension** – facilitated by export of knowledge-intensive services and participation in international innovation networks.

The empirical evidence suggests that countries with well-developed ICT clusters—such as **Finland, Germany, and the Netherlands**—benefit from higher productivity growth, stronger innovation spillovers, and more resilient participation in global value chains. Conversely, regions with weaker digital infrastructure or fragmented governance frameworks (e.g., in parts of Eastern Europe) exhibit lower upgrading potential and slower integration into high-value segments.

Figure 2: Value added generated in ICT services in 2020.

Source: Author's Eurostat, 2023; Gancarczyk & Bohatkiewicz-Czaicka, 2025,

In generalization, these findings confirm that **innovation clusters in the ICT sector act as pivotal platforms for both regional and international upgrading**. Their success is determined not only by technological sophistication but also by systemic coordination between **industry, academia, and government**—the so-called **triple helix model**. Effective policy support, digital readiness, and the promotion of inter-firm cooperation are therefore essential for transforming ICT clusters into sustainable engines of economic growth.

The forthcoming **Figure 2** summarizes the key quantitative indicators of ICT value creation in Europe, illustrating the dominance of service-based activities and the upward shift of innovation clusters within international value chains. These results collectively reinforce the argument that Europe's digital economy—and by extension, its global competitiveness—is increasingly shaped by the strategic evolution of innovation clusters in the ICT domain.

Conclusion

This study reinforces the strategic importance of innovation clusters as key enablers of upgrading and competitiveness within international value chains (IVCs). The findings demonstrate that innovation clusters not only enhance firms' technological and absorptive capacities but also function as catalysts for regional and global integration. Through collaborative R&D, knowledge exchange, and network-based governance, clusters enable firms to capture higher value-added activities and strengthen their resilience in an increasingly dynamic and digitized global economy.

Empirical evidence from the ICT sector confirms that clusters embedded in innovation-driven ecosystems—characterized by high R&D intensity, public–private partnerships, and digital infrastructure—achieve superior upgrading outcomes. These clusters act as anchors for technological diffusion and knowledge spillovers, facilitating cross-sectoral innovation and sustained productivity growth. In contrast, regions with fragmented governance structures, limited absorptive capacity, and weak institutional support tend to remain in lower tiers of international value chains.

At the same time, the research identifies several structural barriers that constrain the full potential of innovation clusters. These include inconsistent policy coordination across governance levels, unequal access to innovation financing, insufficient digital and research infrastructure, and the limited participation of SMEs in transnational cluster networks. Overcoming these challenges requires a **multi-level policy approach** that combines innovation governance, digital transformation strategies, and internationalization support.

To this end, three broad policy directions emerge:

1. **Strengthening Innovation Capacity:** Governments should prioritize investments in R&D infrastructure, digital skills, and technology transfer mechanisms. Supporting the formation of research-oriented cluster consortia can accelerate innovation diffusion and commercialization.

2. **Enhancing Governance and Connectivity:** Developing transparent, network-based governance frameworks can facilitate collaboration between industry, academia, and government. Policies promoting open innovation and public–private partnerships will ensure greater coordination and efficiency.

3. **Fostering International Integration:** Targeted programs that promote cross-border cooperation, joint research projects, and participation in European and global cluster networks can enhance the global positioning of national clusters.

The generalization of findings emphasizes that innovation clusters serve as both **regional development engines** and **global value chain mediators**. Their success depends not solely on technological advancement but on the ability to embed innovation within systemic, institutional, and market contexts. By aligning cluster policies with broader economic and digital transformation agendas, governments can create sustainable pathways for long-term competitiveness and inclusive growth.

Looking forward, future research should focus on longitudinal analyses to assess the long-term impact of cluster-based innovation policies on regional upgrading and resilience. Particular attention should be given to the role of emerging technologies—such as artificial intelligence, green tech, and data-driven platforms—in reshaping value creation patterns within clusters. As global value chains evolve toward higher knowledge intensity and digital integration, innovation clusters will remain a cornerstone of sustainable, adaptive, and innovation-led economic development.

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ASSESSMENT OF STUDENTS' LEADERSHIP SKILLS AND DEVELOPMENT PERSPECTIVES

Tunzala MUSAYEVA

PhD in Psychology, Baku State University
E-mail: tunzala.rm@gmail.com
ORCID ID: https://orcid.org/0000-0003-3074-5364

Abstract

The purpose of this study is to identify leadership skills among university students. The research was conducted at Baku State University with the participation of 500 students, using the scaled test "I Am a Leader" by A.N. Lutoshkin to assess leadership potential. The test covers the following categories: self-management, goal awareness, problem-solving ability, creative thinking, influence on others, knowledge of organizational rules, organizational skills, and teamwork ability. The findings indicate that the core leadership skills are self-management, goal awareness, problem-solving, and teamwork; the development of these skills requires the presence of other supporting abilities. The results also suggest that organizing appropriate training and support programs is essential for enhancing and further developing students' leadership competencies.

Keywords: leadership, leadership skills, university students, educational process

INTRODUCTION

In the modern era, leadership skills are considered one of the key indicators of personal and professional development. In a globalized world, individuals are expected to possess not only theoretical knowledge but also complex competencies such as initiative, responsibility, decision-making ability, and social adaptation. In particular, the development of leadership qualities among students plays an important role in their future career success, teamwork abilities, social engagement, and achievement of personal goals (Barnes, 2020). In contemporary research, leadership is understood primarily as the capacity to set goals independently and to engage others in working towards shared objectives or common values (Grigoropoulos & Grigoropoulos, 2020; Kratzer et al., 2008). The concept of leadership is not limited to management and supervisory abilities. It also encompasses a wide range of skills, including self-awareness and self-management, setting goals and systematically achieving them, solving problems rationally, thinking creatively and critically, and effectively regulating social interactions (Daniels et al., 2019). Leaders do not merely adapt to existing circumstances; they also demonstrate proactive behavior that transforms and advances the situation.

The student period is considered the most favorable stage for the development of these qualities. During this time, young people discover their potential, establish social relationships, and define their personal values. Encouraging leadership skills within the university environment has a significant impact on students' academic achievements, teamwork, and overall social engagement (Musayeva, 2019). Thus, the study and development of leadership qualities in higher education institutions are highly relevant from both educational and socio-psychological perspectives.

MATERIALS AND METHODS

The study was conducted at Baku State University with a sample of 500 students. Participants were selected from various faculties and academic years, thus ensuring that the sample reflected diversity in terms of students' academic backgrounds and demographic characteristics. The "I Am a Leader" test (Lutoshkin, A.N.) was used to assess students' leadership qualities. The test measures several key areas of leadership: self-management, goal awareness, problem-solving ability, creative thinking, influence on others, knowledge of organizational rules, organizational skills, and teamwork ability.

The survey was administered in an extracurricular setting, and all participants provided consent to ensure that the information was completed honestly and accurately. Detailed instructions were given to participants to complete the test correctly and carefully. The collected data were coded and prepared for statistical analysis.

FINDINGS

Students' performance in leadership skills was summarized using descriptive statistics. Strengths and weaknesses in each leadership area were identified, and the core leadership skills as well as areas requiring further development were analyzed.

Table 1 presents the results of the "I Am a Leader" test. The test is divided into the following categories: self-management, goal awareness (knowing what I want), problem-solving ability, presence of a creative approach, influence on others, knowledge of organizational rules, organizational skills, and teamwork ability.

Results of the "I Am a Leader" Test for the Study Participants

Table 1.

	Low	Medium and High	
Self-management	33,4%	66,6%	100%
Goal awareness (knowing what I want)	13,4%	86,6%	100%
Problem-solving ability	14,6%	85,4%	100%
Presence of a creative approach	8%	92%	100%
Influence on others	17,4%	82,6%	100%
Knowledge of organizational rules	14,6%	85,4%	100%
Organizational skills	9,4%	90,6%	100%
Teamwork ability	2,6%	97,4%	100%

The results of the inter-scale correlation analysis of the "I Am a Leader" test are presented in Table 2. The test consists of eight scales designed to assess the following skills: self-management (A), goal awareness – knowing what one wants (B), problem-solving ability (C), presence of a creative approach (D), influence on others (E), knowledge of organizational rules (F), organizational skills (G), and teamwork ability (J). A statistically significant positive correlation ($p < 0.05$) was found between self-management (A) and all other skills: goal awareness (B), problem-solving ability (C), presence of a creative approach (D), influence on others (E), knowledge of organizational rules (F), organizational skills (G), and teamwork ability (J). This indicates that as self-management develops among the participants, all other skills tend to improve correspondingly.

According to the results of the correlation analysis, the goal awareness – knowing what one wants (B) scale shows a strong positive correlation with self-management (A), problem-solving ability (C), presence of a creative approach (D), influence on others (E), knowledge of organizational rules (F), organizational skills (G), and teamwork ability (J) ($p < 0.05$). This means that as participants become more aware of their goals and what they want, all the other aforementioned skills also tend to increase. Similarly, problem-solving ability (C) is strongly positively correlated with self-management (A), goal awareness (B), presence of a creative approach (D), influence on others (E), knowledge of organizational rules (F), organizational skills (G), and teamwork ability (J) ($p < 0.05$). Furthermore, as the presence of

a creative approach (D) increases, self-management (A), goal awareness (B), problem-solving ability (C), influence on others (E), knowledge of organizational rules (F), organizational skills (G), and teamwork ability (J) also show a statistically significant increase ($p < 0.05$). In the same way, the results indicate that an increase in influence on others (E) is associated with corresponding increases in self-management (A), goal awareness (B), problem-solving ability (C), presence of a creative approach (D), knowledge of organizational rules (F), organizational skills (G), and teamwork ability (J) ($p < 0.05$).

As participants' knowledge of organizational rules (F) increases, self-management (A), goal awareness – knowing what one wants (B), problem-solving ability (C), presence of a creative approach (D), influence on others (E), organizational skills (G), and teamwork ability (J) also increase significantly ($p < 0.05$). Similarly, improvements in organizational skills (G) are associated with corresponding increases in self-management (A), goal awareness (B), problem-solving ability (C), presence of a creative approach (D), influence on others (E), knowledge of organizational rules (F), and teamwork ability (J) ($p < 0.05$). Finally, as teamwork ability (J) develops, self-management (A), goal awareness (B), problem-solving ability (C), presence of a creative approach (D), influence on others (E), knowledge of organizational rules (F), and organizational skills (G) also show statistically significant growth ($p < 0.05$). "In general, the correlation analysis of the 'I Am a Leader' test shows that all scales are significantly positively correlated ($p < 0.05$).

Overall, the analysis of the indicators obtained from the test shows that the set of skills mentioned are interrelated and mutually correlated, playing a particularly important role in leadership activities. However, as can also be seen from the table, the correlations among these skills are not generally strong. According to the general classification scheme of correlation coefficients, a correlation is considered strong when $r > 0.70$. This criterion is met only for the correlation between goal awareness – knowing what one wants (B) and problem-solving ability (C). In other words, there is a strong and close correlation between these two skills. The correlation between the presence of a creative approach (D) and influence on others (E), on the other hand, is below moderate, indicating a moderate relationship ($r = 0.341$, i.e., $0.30 < r < 0.49$).

Furthermore, the correlations between the following pairs of skills are below moderate: goal awareness – knowing what one wants (B) and teamwork ability (J); problem-solving ability (C) and teamwork ability (J); self-management (A) and teamwork ability (J); presence of a creative approach (D) and teamwork ability (J); influence on others (E) and teamwork ability (J); presence of a creative approach (D) and organizational skills (G); self-management (A) and knowledge of organizational rules (F); self-management (A) and influence on others (E); self-management (A) and presence of a creative approach (D); goal awareness (B) and presence of a creative approach (D); problem-solving ability (C) and presence of a creative approach (D).

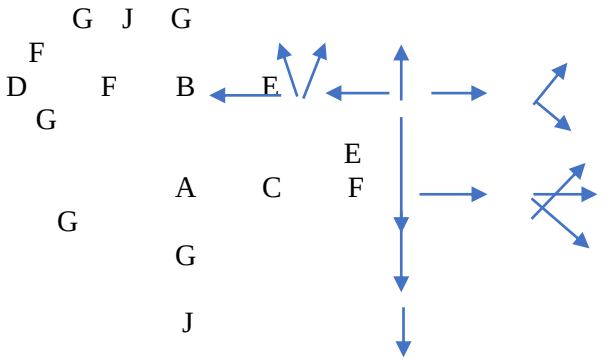
On the other hand, correlations between the following pairs are moderate ($0.50 < r < 0.69$): self-management (A) and goal awareness (B); self-management (A) and problem-solving ability (C); self-management (A) and organizational skills (G); goal awareness (B) and influence on others (E); goal awareness (B) and knowledge of organizational rules (F); goal awareness (B) and organizational skills (G); problem-solving ability (C) and influence on others (E); problem-solving ability (C) and knowledge of organizational rules (F); problem-solving ability (C) and organizational skills (G); presence of a creative approach (D) and knowledge of organizational rules (F); influence on others (E) and knowledge of organizational rules (F); influence on others (E) and organizational skills (G); knowledge of organizational rules (F) and organizational skills (G); knowledge of organizational rules (F) and teamwork ability (J); organizational skills (G) and teamwork ability (J).

The presence of corresponding correlations among the skills in question provides an opportunity to purposefully influence their development, which is of significant importance both scientifically and practically.

1. Strong correlation between skills: (r > 0.70)

B C

2. Moderate correlation between skills: (0.50 < r < 0.69)



3. Low correlation between skills: (0.30 < r < 0.49)

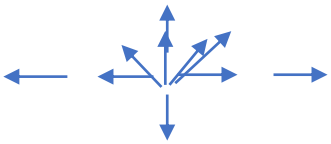
D F C

A E

D B J C D

D

G E



The presented schemes indicate that self-management (A), goal awareness – knowing what one wants (B), problem-solving ability (C), and teamwork ability (J) are considered core skills, and their development requires the presence of other supporting skills.

Results of the Inter-Scale Pearson Correlation Analysis of the "I Am a Leader" Test

Table 2.

		A	B	C	D	E	F	G	J
A	R		0,624**	0,639**	0,404**	0,394**	0,481**	0,529**	0,374**

	P		**0,000**	**0,000**	**0,000**	**0,000**	**0,000**	**0,000**	**0,000**
	N		500	500	500	500	500	500	500
B	R	0,624**		0,736**	0,402**	0,504**	0,572**	0,642**	0,422**
	P	**0,000**		**0,000**	**0,000**	**0,000**	**0,000**	**0,000**	**0,000**
	N	500		500	500	500	500	500	500
C	R	0,639**	0,736**		0,442**	0,541**	0,623**	0,616**	0,404**
	P	**0,000**	**0,000**		**0,000**	**0,000**	**0,000**	**0,000**	**0,000**
	N	500	500		500	500	500	500	500
D	R	0,404**	0,402**	0,442**		0,341**	0,506**	0,404**	0,367**
	P	**0,000**	**0,000**	**0,000**		**0,000**	**0,000**	**0,000**	**0,000**
	N	500	500	500		500	500	500	500
E	R	0,394**	0,504**	0,541**	0,341**		0,653**	0,611**	0,498**
	P	**0,000**	**0,000**	**0,000**	**0,000**		**0,000**	**0,000**	**0,000**
	N	500	500	500	500		500	500	500
F	R	0,481**	0,572**	0,623**	0,506**	0,653**		0,643**	0,549**
	P	**0,000**	**0,000**	**0,000**	**0,000**	**0,000**		**0,000**	**0,000**
	N	500	500	500	500	500		500	500
G	R	0,529**	0,642**	0,616**	0,404**	0,611**	0,643**		0,564**
	P	**0,000**	**0,000**	**0,000**	**0,000**	**0,000**	**0,000**		**0,000**
	N	500	500	500	500	500	500		500
J	R	0,374**	0,422**	0,404**	0,367**	0,498**	0,549**	0,564**	
	P	**,000**	**,000**	**,000**	**,000**	**,000**	**,000**	**,000**	
	N	500	500	500	500	500	500	500	

DISCUSSION AND CONCLUSION

The study revealed that as students progress to higher academic years, their leadership abilities begin to develop further, with the most significant difference observed between first-year and fourth-year students. Compared to first-year students, fourth-year students demonstrate more advanced development of leadership skills. Active participation in seminars for various subjects and in discussions during the presentation of independent work plays an important role in the formation of self-regulatory thinking mechanisms. We consider that, alongside other factors, the increase in educational level, the

enhancement of cognitive abilities, and changes occurring in personality development in higher years all play a significant role. Moreover, according to the study results, age-related characteristics also influence the formation of leadership qualities to varying degrees, which can be explained primarily by the growth in students' worldview and self-confidence. In addition, as students advance through the years and acquire knowledge in various subjects, these experiences create certain changes in their worldview, life perspectives, and future outlooks, which ultimately affect the development and formation of specific leadership qualities.

The analysis of the study results indicates that a set of skills—including self-management, goal awareness, problem-solving ability, presence of a creative approach, influence on others, knowledge of organizational rules, organizational skills, and teamwork—are interrelated and play a particularly important role in leadership activities. The existence of corresponding correlations among these skills provides an opportunity to purposefully influence their development, which is of significant importance both scientifically and practically. To foster the development of students' leadership qualities and ensure their adequate growth as future professionals, it is considered appropriate to establish a strong pedagogical team within the higher education institution, equipped with psychological knowledge, skills, and competencies. At the same time, it is also necessary to develop the pedagogical team as a socio-pedagogical system.

The study revealed that within the structure of leadership, some qualities are directly interrelated, while others are connected indirectly. In the case of direct relationships, the link between qualities manifests almost as a cause-and-effect relationship; that is, the presence of one quality necessarily implies the presence of another. For example, in the "I Am a Leader" test, which consists of eight scales, strong, moderate, and low correlations were identified among the skills. Based on these correlations, it can be noted that goal awareness – knowing what one wants (B) necessitates the presence of self-management (A), problem-solving ability (C), organizational skills (G), influence on others (E), and knowledge of organizational rules (F). Similarly, self-management (A) provides the foundation for problem-solving ability (C), presence of a creative approach (D), organizational skills (G), and knowledge of organizational rules (F). Furthermore, problem-solving ability (C) requires the presence of a creative approach (D), influence on others (E), and knowledge of organizational rules (F). Teamwork ability (J), in turn, supports the presence of a creative approach (D), organizational skills (G), and influence on others (E), while the presence of a creative approach (D) provides a basis for organizational skills (G) and influence on others (E). In the case of indirect relationships, however, the connections among qualities—that is, the sequence between causes and effects—are not necessarily obligatory.

The findings indicate that the development of leadership qualities in university students is most effective within a scientifically grounded pedagogical environment that allows for practical application. Teachers' engagement in creative activities enhances this process, while innovative and interactive teaching methods promote active learning, deepen professional knowledge, and enable students to apply theoretical concepts in practice. These approaches motivate students, foster participation in research and creative tasks, and guide them toward leadership development. They also contribute to essential skills such as adapting to complex situations, managing change, collaborating in groups, taking responsibility, leading discussions, and making informed decisions. Overall, integrating interactive and student-centered methods creates a supportive environment that nurtures analytical thinking, initiative, creativity, and perseverance—key qualities of effective leaders.

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ERGENLERDE PSİKOLOJİK DİSTRES, SALDIRGANLIK, UTANGAÇLIK VE İYİ OLUŞ ARASINDAKİ İLİŞKİNİN İNCELENMESİ

Mətanət ƏLİYEVA

Doktora Öğrencisi, Bakü Devlet Üniversitesi, SABAH Grupları

E-posta: Maaliyeva@ada.edu.az

ORCID ID: 0000-0001-7510-964X

Özet:

Bu çalışma, ergenlerde psikolojik distres, saldırganlık, utangaçlık ve psikolojik iyi oluş arasındaki ilişkiyi incelemektedir. Ergenlik, yoğun duygusal ve davranışsal geçişlerle karakterize edilen hassas bir dönemdir. Çalışmanın amacı, içsel kriz belirtileri olarak kabul edilen psikolojik distres, saldırganlık ve utangaçlığın psikolojik iyi oluşla nasıl ilişkili olduğunu belirlemektir. Araştırmada anket yöntemi kullanılmış; UPDŞ-10, Buss-Perry Saldırganlık Ölçeği, Ali Eryılmaz'ın Psikolojik İyi Oluş Ölçeği ve Çik & Buss Utangaçlık Envanteri gibi geçerliği kanıtlanmış ölçeklerden yararlanılmıştır. Bulgular, psikolojik distres ile saldırganlık ve utangaçlık arasında güçlü pozitif ilişki olduğunu; distresin iyi oluşu olumsuz etkilediğini göstermektedir. Ayrıca saldırganlık ve utangaçlığın, distres ile iyi oluş arasındaki ilişkide aracılık rolü oynadığı doğrulanmıştır.

Anahtar Kelimeler: Ergenler, psikolojik distres, saldırganlık, utangaçlık, iyi oluş

Abstract

This study investigates the relationship between psychological distress, aggression, shyness, and psychological well-being among adolescents. Adolescence is a sensitive period marked by intense emotional and behavioral transitions. The study aims to identify how manifestations of intrapersonal crisis—namely psychological distress, aggression, and shyness—are related to psychological well-being. A survey methodology was used, including validated scales such as the UPDŞ-10, Buss-Perry Aggression Questionnaire, Ali Eryılmaz's Psychological Well-Being Scale, and the Çik & Buss Shyness Inventory. Results indicate a strong positive correlation between psychological distress and aggression and shyness, while distress negatively affects well-being. The mediating role of aggression and shyness between distress and well-being is also confirmed.

Keywords: Adolescents, psychological distress, aggression, shyness, well-being

GİRİŞ

Ergenlik dönemi, insan yaşamında psikososyal açıdan en karmaşık ve kritik evrelerden biridir. Bu dönemde duygusal dalgalanmalar, kişiliğin şekillenmesi ve sosyal uyum süreçleri belirginleşir (Əliyeva, 2011). Ergenler bu süreçte sıklıkla psikolojik distres, saldırganlık ve utangaçlık gibi içsel gerilim belirtileriyle karşılaşmakta; bu durum psikolojik iyi oluşlarına doğrudan etki etmektedir(Yıldız & Duy, 2020).

Psikolojik distres—gerginlik, kaygı ve duygusal dengesizlik durumu—ergenlerin günlük işlevselliğini, akademik performansını ve sosyal ilişkilerini olumsuz etkileyebilir. Saldırgan davranışlar çoğu kez bu distresin dışavurumu olarak ortaya çıkar. Utangaçlık ise içe kapanma, sosyal kaygı ve başkalarının değerlendirmelerine aşırı duyarlılıkla karakterizedir(Kaya & Özdemir, 2022).
Bu araştırmanın amacı, ergenlerin içsel krizin belirtileri olan psikolojik distres, saldırganlık ve utangaçlığın psikolojik iyi oluş ile nasıl ilişkili olduğunu belirlemektir.

AMAÇ

Ergenlerde içsel krizin belirtileri sayılan psikolojik distres, saldırganlık, utangaçlık ve psikolojik iyi oluş arasındaki ilişkiyi belirlemek.

VARSAYIMLAR

Saldırganlık, ergenlerde psikolojik krizin temel özelliklerinden biri olarak ortaya çıkar ve psikolojik distres ile iyi oluş arasında aracılık eder.

Utangaçlık, psikolojik krizin başlıca göstergelerinden biridir ve distres ile iyi oluş arasında aracılık eder.

GEREÇ VE YÖNTEM

Bu araştırmada nicel yöntem kullanılmıştır. Çalışmada aşağıdaki psikolojik ölçme araçları uygulanmıştır:

• Çocuk Psikolojik Distres Ölçeği – 10 (UPDŞ-10) – De Stefano sürümü, Azerbaycanca uyarlanmış form.
• Buss-Perry Saldırganlık Ölçeği – Azerbaycanca uyarlanmış sürüm.
• Psikolojik İyi Oluş Ölçeği – Ali Eryılmaz tarafından geliştirilmiş ölçek.
• Çik ve Buss Utangaçlık Ölçeği.

Elde edilen verilerin istatistiksel analizi için IBM SPSS Statistics 22 paket programı kullanılmış; ilişki (Pearson korelasyon), regresyon ve aracılık etkisinin test edilmesine yönelik bootstrapping temelli analizler uygulanmıştır.

BULGULAR

Ergenlerde psikolojik distres, saldırganlık, utangaçlık ve iyi oluş arasında anlamlı ilişkiler var mıdır? Araştırmaya katılan ergenlerin değişkenleri arasındaki ilişkiler ağı incelenmiş ve değişkenler arası ilişkileri belirlemek amacıyla Pearson korelasyon analizi yapılmıştır; sonuçlar Tablo 1'de sunulmuştur.

Tablo 1. Değişkenlere Ait İlişkiler

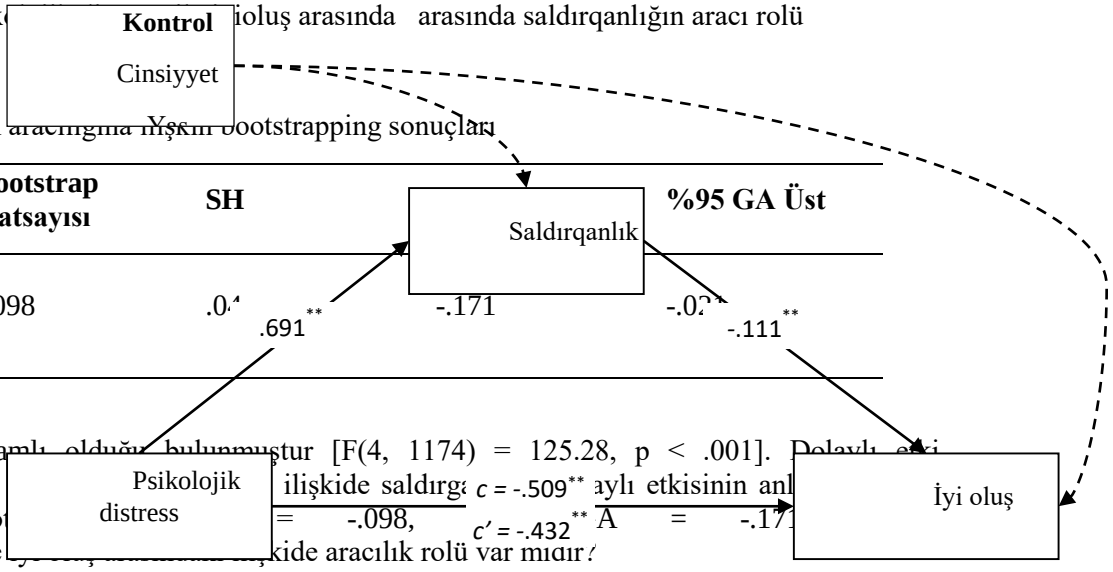
Değişkenler	**1**	**2**	**3**	**4**
1. Psikolojik distress	–			
2. Saldırganlık	.692**	–		
3. Utangaçlık	.482**	-.520**	–	
4. Psikolojik iyi oluş	-.534	-.392	-.287**	–

Not: ** p < .001

Saldırganlığın distres ile iyi oluş arasındaki ilişkide aracılık rolü var mıdır?

Varsayıma göre saldırganlığın, ergenlerde psikolojik distres ile psikolojik iyi oluş arasındaki ilişkide aracılık rolü olup olmadığı test edilmiştir. Bunu incelemek üzere Hayes (2018) tarafından geliştirilen regresyona dayalı (bootstrapping) aracılık analizi uygulanmıştır. Modellerde cinsiyet ve yaş kontrol değişkenleri olarak dahil edilmiştir. İlgili modele ait bulgular Şekil 1'de özetlenmiştir.

Şəkil 1. ** p < .01; Psix ioluş arasında arasında saldırqanlığın aracı rolü



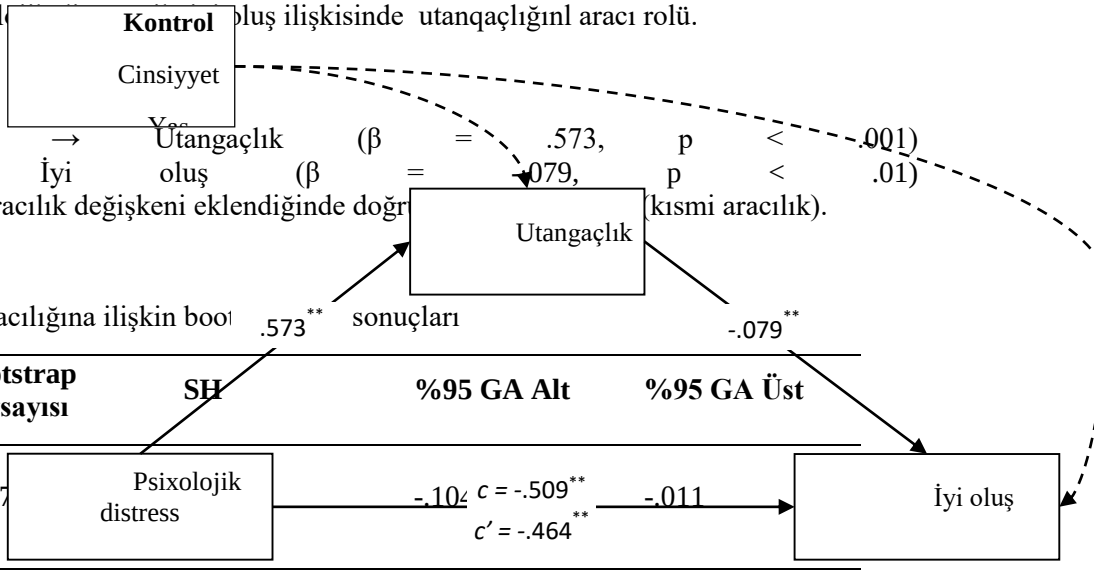
Tablo 2. Saldırganlığın aracılığına ilişkin bootstrapping sonuçları

Dolaylı Etki	Bootstrap Katsayısı	SH	%95 GA Üst
Distres → Saldırganlık → İyi oluş	-.098	.0	-.171 -.02

Kurulan modelin anlamlı olduğu bulunmuştur [F(4, 1174) = 125.28, p < .001]. Dolaylı etki incelendiğinde, distres ilişkide saldırg aylı etkisinin anl görülmektedir (boot = -.098, A = -.17 Utangaçlığın distres ile kide aracılık rolü var mıdır?

Diğer varsayıma göre utangaçlığın, ergenlerde psikolojik distres ile iyi oluş arasındaki ilişkide aracılık rolü incelenmiştir. Hayes (2018) modeli kullanılarak regresyona dayalı bootstrapping analizi yürütülmüş; cinsiyet ve yaş kontrol değişkenleri olarak eklenmiştir. İlgili modele ait bulgular Şekil 2'de özetlenmiştir.

Şəkil 2. ** p < .01; Psixol oluş ilişkisinde utanqaçlığınl aracı rolü.



Psikolojik distres → Utangaçlık (β = .573, p < .001)
Utangaçlık → İyi oluş (β = -.079, p < .01)
Toplam etki c = -.509; aracılık değişkeni eklendiğinde doğr (kısmi aracılık).

Tablo 3. Utangaçlığın aracılığına ilişkin boot sonuçları

Dolaylı Etki	Bootstrap Katsayısı	SH	%95 GA Alt	%95 GA Üst
Distres → Utangaçlık → İyi oluş	-.057		-.10	-.011

Kurulan modelin anlamlı olduğu bulunmuştur [F(4, 1174) = 123.85, p < .001]. Dolaylı etki incelendiğinde, utangaçlığın distres ile iyi oluş arasındaki ilişkiye dolaylı etkisinin anlamlı olduğu görülmektedir (bootstrap katsayısı = -.057, %95 GA = -.104, -.011).

TARTIŞMA VE SONUÇ

Genel olarak bulgular, psikolojik distres ile saldırganlık ve utangaçlık arasında güçlü pozitif ilişkiler olduğunu, distres düzeyi arttıkça saldırganlık ve utangaçlık göstergelerinin de yükseldiğini ortaya koymuştur. Bunun yanında, distresin psikolojik iyi oluş üzerinde olumsuz etkisi saptanmıştır. Ayrıca saldırganlık ve utangaçlığın, psikolojik distresin iyi oluş üzerindeki etkisinde aracılık rolü oynadığı görülmüştür. Bu sonuçlar, ergenlerin psikolojik savunma mekanizmalarının ve içsel dengelerinin anlaşılması açısından önem taşımaktadır.

TEŞEKKÜR

Yazar, bu araştırmanın gerçekleştirilmesindeki destekleri için Bakü Devlet Üniversitesi'ne ve çalışmaya katılan ergenlere teşekkür eder.

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MALİYE BÖLÜMÜ ÖĞRENCİLERİNDE EŞİTLİK, PAYLAŞIM VE KURUMSAL ÖĞRENME: ÜLTİMATOM OYUNU ÜZERİNE DENEYSEL BİR ANALİZ

Yıldırım Beyazıt ÇİÇEN

Doç. Dr, Gümüşhane University
E-mail: ybcicen@gumushane.edu.tr
ORCID ID: 0000-0002-3425-280X

Özet

Bu çalışma, Maliye bölümü öğrencilerinin eğitim süreci boyunca eşitlik ve paylaşım davranışlarındaki değişimi analiz etmeyi amaçlamaktadır. Davranışsal iktisat yaklaşımından hareketle, Maliye bölümü öğrencilerinin 1. ve 3. sınıf düzeylerindeki tercihleri Ültimatom Oyunu kullanılarak incelenmiştir. Araştırma, Eylül 2022'de Gümüşhane Üniversitesi İİBF Maliye Bölümü öğrencilerine sınıf ortamında çevrim içi anket paylaşımı yoluyla yürütülmüştür. Katılımcılara parasal (5000 TL) ve puan bazlı (25 puan) olmak üzere iki aşamalı paylaşım senaryosu sunulmuştur. Bulgular, sınıf düzeyi arttıkça eşitlik temelli davranışların azaldığını ve öğrencilerin daha rasyonel, stratejik kararlar almaya yöneldiğini göstermektedir. Toplulaştırılmış oranlar incelendiğinde, 3. sınıf öğrencileri 1. sınıfa göre hem daha az para teklif etmiş hem de daha az puan paylaşmıştır. Buna karşın, hem 1. sınıf hem de 3. sınıf öğrencileri kendi arkadaşlarına para paylaşımında puan paylaşımına göre daha cömert davranmıştır. Puan paylaşımı aşamasında bencillik eğilimi daha belirgin hale gelmiş, öğrencilerin performans temelli kaynakları paylaşırken daha bireyci bir tutum sergilediği gözlenmiştir. Sonuç olarak, Maliye eğitiminde ilerledikçe öğrencilerin eşitlik ve paylaşım davranışları, bilişsel öğrenme ve deneyimsel farkındalık etkisiyle daha stratejik ve çıkar temelli bir yapıya dönüşmektedir.

Keywords: Ültimatom oyunu, Maliye bölümü, Öğrenci, Paylaşım

GİRİŞ

İş birliği, koordinasyon, güvenlik ve adalet gibi ortaklaşa davranışların dinamik toplumsal sistemlerde nasıl ortaya çıktığı sorusu, iktisat, evrimsel biyoloji, fizik, bilgisayar bilimleri ve sosyal bilimler gibi birçok disiplinin ortak araştırma alanını oluşturmaktadır. Bu çalışmaların temel amacı, bireylerin etkileşimlerinden doğan davranış örüntülerinin hangi koşullar altında ortaya çıktığını ve belirli normlara doğru nasıl evrildiğini anlamaktır. Gerçek dünyada ekonomik etkileşimler simetrik değildir ve bireyler farklı rollere, pazarlık güçlerine, bilgi düzeylerine ve stratejik sezgilere sahiptir. Bu tür asimetriler, karar alma süreçlerinde rasyonel modelin ötesine geçen davranışsal tepkilerin ortaya çıkmasına zemin hazırlamaktadır (Cimpeanu vd., 2021).

Bu bağlamda Ültimatom Oyunu (ÜO) bireylerin adalet algılarını, karşılıklılık beklentilerini ve haksızlığa verdikleri tepkileri sistematik biçimde inceleyen en temel deneysel araçlardan biridir. Güth, Schmittberger ve Schwarze'nin (1982) çalışmasıyla literatüre giren ÜO, iki oyuncu arasındaki pazarlık sürecini soyut bir biçimde modellemektedir. Oyunculardan biri kendisine verilen kaynağı karşı tarafla paylaşmayı teklif etmektedir. Teklifi alan kendisine sunulan teklifi kabul ederse kaynak paylaştırılmakta, reddetmesi durumunda ise her iki oyuncu da kazanç elde edememektedir. Bu yapısı nedeniyle ÜO, maddi çıkar ile sosyal normlar arasındaki gerilimi doğrudan görünür kılmaktadır.

Klasik iktisadın öngördüğü "her pozitif teklif kabul edilir" sonucunun aksine, deneysel bulgular ÜO davranışının rasyonel modelden belirgin biçimde saptığını göstermektedir. Camerer ve Thaler (1995) ve Camerer (2003), tekliflerin çoğunlukla toplam kaynağın %40–50'si civarında olduğunu ve ayrıca %20'nin altındaki tekliflerin ise sıklıkla reddedildiğini ortaya koymaktadır. Engel'in (2011) 20.000 gözlemi içeren meta-analizinde elde edilen bulgular, bu örüntünün farklı kültürlerde de son derece kararlı olduğunu göstermektedir. Buna göre, bireyler sadece mutlak kazanca değil, kazanç dağılımının göreli adaletine de önem vermektedir ve bu sebeple adaletsizliği cezalandırmak için maddi kayıptan vazgeçebildiğini göstermektedir.

Sosyal tercih modelleri, ÜO'de gözlenen bu davranışların kuramsal temelini oluşturmaktadır. Fehr ve Schmidt (1999), bireylerin eşitsizlikten kaçınma eğiliminde olduğunu vurgularken, Bolton ve Ockenfels (2000) ise bireylerin faydasının hem kendi mutlak kazançlarına hem de bu kazancın başkalarıyla paylaşım düzeylerine bağlı olduğunu göstermektedir. ÜO bu nedenle ekonomik karar alma süreçlerinde sosyal normların, duygusal tepkilerin ve stratejik öngörülerin birlikte nasıl işlediğini gözlemlemek için literatürde güçlü bir araç olarak kullanılmaktadır.

Son dönemde ÜO çalışmalarında öne çıkan kritik sorulardan biri, kazanç türünün (örneğin para, puan, kredi, performans göstergesi) teklif ve kabul davranışlarını nasıl şekillendirdiğidir. Nguyen (2022), öğrencilerin para ve ders başarısını etkileyen durumları farklı şekilde değerlendirdiğini göstererek, kazanç türünün karar alma sürecinde belirleyici bir rol oynadığını ortaya koymaktadır. Çalışmada para paylaşımı görece daha cömert, puan paylaşımı ise belirgin biçimde daha bencil bulunmuştur. Buna karşılık düşük puan tekliflerinin para tekliflerine göre daha yüksek kabul oranına sahip olduğu görülmektedir. Bu sonuçlar, kazanç türünün hem teklif stratejisini hem de reddetme eşiğini sistematik biçimde etkilediğini göstermektedir.

Türkiye'de ÜO uygulamalarına dair çalışmalar sınırlıdır. Mevcut çalışmalar, üniversite öğrencilerinde teklif oranlarının değişkenlik gösterdiğini (Dilek & Kesgingöz, 2018; Boyacı & Sultan, 2016; Hatipoğlu, 2021), dindarlık tipolojileri ve kültürel normların davranışları etkileyebildiğini (Kırış & Dilek, 2021) ve duygusal/çevresel faktörlerin paylaşım kararlarında rol oynadığını (Cevizli & Bilen, 2021) göstermektedir. Bununla birlikte eğitim süreci ilerledikçe öğrencilerin ÜO davranışlarının nasıl değiştiğini inceleyen sistematik bir araştırma bulunmamaktadır.

Bu çalışma başlangıçta boylamsal bir tasarımla planlanmıştır. 2022 yılında ÜO uygulanan Maliye 1. sınıf öğrencilerinin, 2024 yılında 3. sınıfa geldiklerinde aynı oyunu tekrar oynamaları hedeflenmiştir. Böylece bireylerin zaman içindeki davranışsal evrimi, Nguyen (2022)'deki gibi kazanç türü farklılaştırmasına ek olarak tekrarlı ölçüm üzerinden karşılaştırılabilecekti. Ancak 2023 yılında meydana gelen Kahramanmaraş depremi ve 2024 döneminde Türkiye'de yaşanan iktisadi kriz nedeniyle bu ikinci uygulama gerçekleştirilememiştir. Bu nedenle çalışma, boylamsal bir analiz sunmamakta; bunun yerine mevcut örneklemde belirli bir zaman dilimine ait davranışsal bir kesit ortaya koymaktadır. Dolayısıyla analizler anlamlılık testleriyle desteklenen bir analizden ziyade, tanımlayıcı ve karşılaştırmalı niteliktedir.

Bu çerçevede araştırma iki bileşenden oluşmaktadır:

1) 5000 TL paylaşımı (klasik ÜO),
2) 25 bonus puan paylaşımı ((Nguyen, 2022) tasarımıyla uyumlu bir kazanç türü farklılaştırması).

Bu bağlamda kazanç türü ve eğitim düzeyinin öğrencilerin adalet, bencillik ve stratejik teklif davranışlarını nasıl şekillendireceği temel araştırma sorusudur.

DENEYSEL TASARIM

Deneysel tasarım, iki aşamalı bir karar verme yapısından oluşmaktadır ve her iki aşamada da öğrenciler yalnızca "teklif veren" rolündedir. Böylece teklif kararları hem kazanç türü hem de sınıf düzeyi açısından karşılaştırılabilir hâle getirilmiştir. Deney, Gümüşhane Üniversitesi İİBF Maliye Bölümü 1. sınıf ve 3. sınıf öğrencilerine ayrı ayrı uygulanmıştır. Uygulama sınıf ortamında Google Forms üzerinden gerçekleştirilmiş, her öğrenci anonim biçimde formu doldurmuş ve tüm katılım gönüllülük esasına göre yürütülmüştür. 1. sınıftan 43, 3. sınıftan 30 öğrenci katılım sağlamıştır.

Katılımcılardan demografik bilgiler olarak cinsiyet ve konaklama türü (devlet yurdu, özel yurt, apart, kiralık ev, aile evi) alınmıştır. Bu değişkenler deneyin temel analizi için kontrol amaçlı olarak istenmiştir ve oyunun yapısını etkilememektedir. Anketlerde tüm öğrenciler aynı senaryoları görmüş, ilgili soruları aynı sırayla yanıtlamış ve herhangi bir karşı tarafla doğrudan etkileşime girmemiştir. Böylece örneklem

grupları arasında klasik ÜO tasarımlarında görülen karşı taraf davranışından kaynaklanan heterojenlikler ortadan kaldırılmıştır.

Birinci Aşama: Para Paylaşım Oyunu

İlk aşamada öğrencilere, sınıftan rastgele seçilecek bir öğrenciyle paylaşmaları gereken 5000 TL verilmiştir. Bu 5000 TL, uygulamanın yapıldığı dönemdeki aylık asgari ücretin yaklaşık yarısına karşılık gelecek şekilde seçilmiştir. Böylece ÜO literatüründeki "kazancın anlamlı bir ekonomik değere sahip olması" kriteri korunmuş, öğrencilerin teklif stratejilerini gerçekçi sosyal tercihleri yansıtacak düzeyde ciddi bir miktar üzerinden yapmaları sağlanmıştır. Öğrencilere şu sorular iletilmiştir:

Size 5000 TL para verilmektedir. Sizden bu parayı sınıfta bir öğrenci arkadaşınızla paylaşmanız istenmektedir. Seçilecek kişi, sınıf içerisinden "rastgele" seçilecektir. Ama siz kimin seçildiğini bilmeyeceksiniz. Yakın bir arkadaşınız da olabilir, pek tanımadığınız birisi de olabilir.

Öğrenci arkadaşınıza paranın bir kısmını teklif edeceksiniz. Teklifi veren sizsiniz. Karşıdaki öğrenci, verdiğiniz teklifi kabul ederse, teklif edilen miktara göre 5000 TL paylaştırılacaktır. Ancak karşıdaki kişinin teklifi reddetmesi (beğenmemesi, az bulması vb. sebeplerle olabilir) durumunda, her ikinizde herhangi para alamayacaktır. Karşıdaki kişi de 5000 TL'nin paylaşıldığını bilmektedir. Karşıdaki kişiye teklifiniz ne olur?

- Tüm parayı kendime ayırırım. Karşı tarafa 0 TL teklif ederim.
- 1000 TL teklif ederim. 4000 TL'yi kendime ayırırım.
- 2000 TL teklif ederim. 3000 TL'yi kendime ayırırım.
- Parayı yarı yarıya bölüştürürüm. 2500 TL teklif ederim.
- 3000 TL teklif ederim. 2000 TL'yi kendime ayırırım.
- 4000 TL teklif ederim. 1000 TL'yi kendime ayırırım.
- Tüm parayı teklif ederim. Kendime para ayırmam.

Maliye 1. ve 3. sınıf öğrencilerinin bu oyundaki paylaşım istatistikleri Tablo 1'de verilmektedir:

Tablo 1: Para Paylaşımı

Teklif	**Maliye 1. sınıf para teklifi (%)**	**Maliye 3. sınıf para teklifi**
2500 TL altı	18,6	26,7%
2500 TL	69,8	60,0%
2500 TL üstü	11,7	13,4%
2500 TL ve altı	88,4	86,7%
2500 TL ve üstü	81,5	73,4%

Tablodaki istatistikler incelendiğinde yarı yarıya paylaşımın ağırlıkta olduğu görülmektedir. 1. sınıf öğrencilerin yaklaşık %70'i 2500 TL teklif ederken, 3. sınıf öğrencileri %60'ı bu teklifi vermektedir. 2500 TL ve üstü teklifler incelendiğinde de 1. sınıf öğrencilerin daha fazla teklif ettikleri görülmektedir (%81,5>%73,4). Bu durum 1. sınıf öğrencilerin para paylaşımında 3. sınıf öğrencilere göre daha cömert olduğunu göstermektedir.

1. sınıf öğrencilerinde yarı yarıya ve üzeri tekliflerin yüksekliği, oryantasyon ve adil olma arzusunun güçlü etkisine işaret ederken; 3. sınıf öğrencilerinde daha düşük teklif oranlarının nispeten yüksek

çıkması, eğitim sürecinde ilerleyen yıllarda akademik rekabet, fayda-maliyet analizi ve stratejik davranma eğilimlerinin daha belirgin hale geldiğini göstermektedir.

İkinci Aşama: Puan Paylaşım Oyunu

İkinci aşamada puan paylaşımı oyunu gerçekleştirilmiştir. Bu oyun final notunda kullanılacak 25 ek puan paylaşımı üzerine kurulmuştur. Öğrencilere para paylaşımı sorusu ardından aynı şekilde Google Forms üzerinden şu sorular iletilmiştir:

Size herhangi bir dersin finalinde kullanabileceğiniz 25 bonus (ek) puan vermektedir. Bu ek puan, finalde aldığınız nota eklenecektir. Sizden bu ek puanı sınıfta bir öğrenci arkadaşınızla paylaşmanız istenmektedir. Seçilecek kişi, sınıf içerisinden "rastgele" seçilecektir. Ama siz kimin seçildiğini bilmeyeceksiniz. Yakın bir arkadaşınız da olabilir, pek tanımadığınız birisi de olabilir.

Karşıdaki öğrenciye bonus puanın bir kısmını teklif edeceksiniz. Bu kişi, verdiğiniz teklifi kabul ederse, teklif edilen miktara göre 25 bonus puan aranızda paylaştırılacaktır. Ancak karşıdaki kişinin teklifi reddetmesi (beğenmemesi, az bulması vb. sebeplerle olabilir) durumunda, her ikinizde herhangi bir bonus puan alamayacaktır. Karşıdaki kişi de 25 bonus puanın paylaşıldığını bilmektedir. Karşıdaki kişiye teklifiniz ne olur?

- Tüm puanı kendime ayırırım. Karşı tarafı 0 puan teklif ederim.
- 5 puan teklif ederim. 20 puanı kendime ayırırım.
- 10 puan teklif ederim. 15 puanı kendime ayırırım.
- Puanı yarı yarıya paylaşırım. Teklifim 12,5 puan olur.
- 15 puan teklif ederim. 10 puanı kendime ayırırım.
- 20 puan teklif ederim. 5 puanı kendime ayırırım.
- 25 puan teklif ederim. Kendime puan ayırmam.

Tablo 2'de puan paylaşımına dair gelen cevapların istatistikleri verilmektedir.

Tablo 2: Puan Paylaşımı

Teklif	**Maliye 1. sınıf puan teklifi (%)**	**Maliye 3. sınıf puan teklifi (%)**
12,5 puan altı	27,9	33,4
12,5 puan	62,8	60,0
12,5 puan üstü	9,3	6,7
12,5 puan ve altı	90,7	93,4
12,5 puan ve üstü	72,1	66,7

İstatistikler incelendiğinde 1. sınıf ve 3. sınıf öğrencilerinin yarı yarıya bölüşme teklifi oranları birbirine yakındır. Ancak 12,5 puan ve üstü istatistikler incelendiğinde 3. sınıf öğrencileri sınıf arkadaşlarına 1. sınıfa göre daha az puan teklif etmektedir (%72,1>%66,7). Bu durum 1. sınıf öğrencilerin para paylaşımında olduğu gibi puan paylaşımında da 3. sınıf öğrencilere göre daha fazla paylaşım yaptığını göstermektedir.

Bu farklılaşmayı iki ayrı mekanizma ile açıklamak mümkündür. İlk olarak, yukarıdakine benzer biçimde 1. sınıf öğrencilerinin üniversite ortamında daha yeni oldukları için sosyal normlara uyma ve akranlarla olumlu ilişki kurma motivasyonu daha güçlüdür. Bu durum puan paylaşımında da daha cömert

davranışları ortaya çıkarmaktadır. İkinci olarak, 3. sınıf öğrencileri akademik başarı baskısını daha fazla hissettiklerinden, final notuna doğrudan eklenecek puanı parasal kazanca kıyasla daha kişisel ve stratejik değerlendirme eğilimindedir. Bu nedenle 3. sınıflarda yarı yarıya ve üstü tekliflerin azalması beklenen bir sonuçtur.

Sınıfların Kendi İçinde Değerlendirilmesi

Sınıfların kendi içerisinde para ve puan paylaşımı karşılaştırması da yapılması gereken diğer bir analizdir. Böylelikle sınıf içerisinde para veya puan paylaşımında belirgin bir fark olup olmadığı anlaşılacaktır. Bakıldığında 1. sınıf öğrencileri kendi arkadaşlarına daha fazla para, daha az puan teklif etmektedir (%81,5>%72,1). Benzer şekilde 3. sınıf öğrencileri kendi arkadaşlarına daha fazla para, daha az puan teklif etmektedir (%73,4>%66,7). Ayrıca görülmektedir ki 1. sınıf öğrencilerinde puan farkı 9.4 iken, 3. sınıf öğrencilerde puan farkı 5,7'dir.

Bu bulgular, sınıf içi karşılaştırmalarda hem 1. sınıf hem de 3. sınıf öğrencilerinin parayı puana kıyasla daha kolay paylaştığını göstermektedir. Bunun iki temel nedeni olabilir. Birincisi, puan türündeki kazançların öğrenciler tarafından kişisel başarı unsuru olarak görülmesidir. Ayrıca 1. sınıf öğrencilerinde para–puan farkının 3. sınıflara göre daha yüksek olması, üniversiteye yeni başlayan öğrencilerin akademik performans kaygısını daha az yoğun hissetmeleri ile açıklanabilir. Buna karşılık 3. sınıflarda farkın azalması, öğrencilerin zaman içinde puan paylaşımına karşı daha dengeli ancak hâlâ paraya kıyasla daha temkinli bir yaklaşım geliştirdiklerini göstermektedir.

SONUÇ

Bu çalışma, Maliye bölümü öğrencilerinin eğitim süreci boyunca eşitlik, paylaşım ve kazanç türü algılarının nasıl değiştiğini ÜO aracılığıyla incelemiştir. Bulgular hem para hem de puan paylaşımında yarı yarıya teklifin baskın davranış olduğunu, ancak eğitim düzeyi yükseldikçe bu davranışın daha stratejik ve daha temkinli bir yapıya dönüştüğünü göstermektedir. Özellikle 3. sınıf öğrencilerinin hem para hem de puan paylaşımında 1. sınıflara kıyasla daha düşük tekliflerde bulunması, akademik ve sosyal deneyimin ilerlemesine bağlı olarak eşitlik normlarının zayıfladığı ve tekliflerin kabul edilme olasılığını optimize etmeye çalıştıkları şeklinde yorumlanabilir.

Kazanç türleri karşılaştırıldığında, iki sınıf düzeyinde de para paylaşımının puana kıyasla daha yüksektir. Buna göre, parasal kazanç öğrenciler tarafından daha "paylaşılabilir", puan ise daha "kişisel ve performansa bağlı" bir kaynak olarak algılanmaktadır. Nitekim öğrencilerin final notuna doğrudan etki eden bir kaynağı paylaşırken daha bencil davranması, Nguyen (2022)'nin kazanç türü farklılaşmasının paylaşım düzeyini önemli ölçüde değiştirdiğine dair bulgularıyla uyumludur. Bu sonuç, üniversiteye yeni başlayan öğrencilerin sosyal normlara uyma ve akran ilişkilerini olumlu sürdürme eğiliminin daha güçlü olduğunu göstermektedir. Buna karşılık 3. sınıf öğrencilerinin özellikle deneyimi ve akademik başarı çabası etkisiyle daha hesapçı davranışlar sergilediğine işaret etmektedir.

Genel olarak çalışma, maliye eğitiminin yalnızca teknik bilgi kazandırmadığını, aynı zamanda öğrencilerin ekonomik karar alma kalıplarını, sosyal norm algılarını ve stratejik davranış biçimlerini dönüştürdüğünü göstermektedir. Bu yönüyle araştırma, Türkiye'de kamu maliyesi öğrencilerinin davranışsal gelişimini deneysel yöntemle inceleyen sınırlı literatüre hem yöntemsel hem de ampirik bir katkı sunmaktadır. Bulgular, eğitim sürecinin davranışsal iktisat perspektifinden değerlendirilmesine yönelik gelecekte yapılacak çalışmalar için güçlü bir temel oluşturmaktadır.

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A SYSTEMATIC REVIEW OF THE LITERATURE ON CORPORATE INCOME TAX AVOIDANCE AND THE FISCAL IMPLICATIONS OF BASE EROSION AND PROFIT SHIFTING: INSIGHTS FROM COUNTRY-LEVEL DATA ESTIMATES

Vasileios VLACHOS

International Hellenic University, Department of Economic Sciences
vlachosuk@ihu.gr
ORCID ID: 0000-0002-2629-3425
Athanasios VASILAKIS

International Hellenic University, Department of Economic Sciences
athvasil@ihu.gr
ORCID ID: 0009-0009-6126-6316

Abstract

The ability of multinational corporations to exploit gaps and mismatches in tax rules to shift profits to low or no-tax jurisdictions, has gained significant traction in the fields of tax policy and international taxation. This paper reviews the rapidly growing empirical literature on international tax avoidance and the fiscal and economic impacts of base erosion and profit shifting (BEPS). Based on several arguments in favor of the use of macro-level data, this paper surveys new evidence and extends earlier literature reviews and marks unresolved questions and areas that necessitate further exploration. First, the findings indicate that except from international tax competition, the volatility of a country's economic environment and the positive spillovers from FDI to exports are also putting downward pressure on corporate income tax rates. Second, the quality of governance is a key feature of tax heavens. Third, there is evidence supporting that international tax competition does not have the same effect on real and phantom FDI. Fourth, estimates of the size of BEPS indicate that lower- income countries experience the highest revenue losses as a share of GDP.

Keywords: base erosion and profit shifting (BEPS), tax avoidance, tax competition

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INTRODUCTION

Although the debate on the problem of base erosion and profit shifting (BEPS) by multinational corporations (MNCs) is not new (Hines, 2014), it regained interest which led to the political agreement reached by 139 countries (OECD, 2023) to enact a 15% global minimum corporate tax for MNCs with annual revenues over 750 million Euros (OECD, 2021). The problem of BEPS has been debated from different perspectives because of its multiple impact on the key actors in the economy. Corporate income tax avoidance (CITA) entails a firm keeping funds within the organization instead of remitting them to the government, resulting in increased firm profits (Wang et al., 2019). Unlike the effect on firm profits, the findings of the literature on the effect of CITA on firm (or shareholder) value are contradictory, because CITA reduces transparency to shareholders and involves long-term reputation losses, among others (Wang et al., 2019; Krieg and Li, 2021; Duhoon and Singh, 2023). CITA also affects the efficiency and equity of financial markets and societies (Slemrod & Yitzhaki, 2002). It represents more than a mere financial issue for tax authorities by corroding essential shared spaces crucial for regulatory compliance, organizational integrity, and society (Bird and Davis-Nozemack, 2018).

CITA erodes the corporate tax-base of several economies and the growing empirical literature indicates that tax competition and base erosion have been increasing over time (Beer et al., 2020). Although CITA is bad for government finances, profit shifting by large MNCs favors destination countries' economic growth (Economides and Nikilaishvili, 2023). As initiatives against tax avoidance falter, corporate income tax rates (CITRs) increasingly face pressure from tax competition (Leibrecht and Hochgatterer, 2012; Hakelberg and Rixen, 2021). A large tax elasticity of MNCs profits could elucidate why nations fiercely compete by adjusting their official tax rates to lure these profits.

Fiscal and economic impacts of BEPS encompass aspects such as taxable income, fiscal space, and host-country competitiveness. Aggregate country-level analyses utilizing macroeconomic data offer more precise estimations of the fiscal effects compared to those reliant on micro-level firm data. Although the latter provide insights into BEPS channels, they often rely on assumptions regarding firm behavior across countries and industries (Bradbury et al., 2018). Another issue is the coverage of firm-level data. For example, a limitation of Orbis data is that it is heavily EU-centric (Álvarez-Martínez et al., 2021) and Fuest et al. (2022, p. 460) indicate that the Orbis data only covers 35% of German MNCs' subsidiaries located in non-havens. Accordingly, Bilicka (2019) and Tørsløv et al. (2023, pp. 1502-1503) indicate that non-macro-level data underestimate the size of profit-shifting.

This paper builds on these arguments and extends earlier literature reviews (e.g. Vasilakis and Vlachos, 2025) by making the following contributions based on new evidence from the rapidly expanding empirical literature analyzing macro-level data. First, it indicates the significance of other factors putting downward pressure on CITRs except from international tax competition, such as economic volatility. Second, it highlights neglected factors, such as phantom FDI, which may change the current knowledge on CITA. Third, it indicates channels of CITA, such as royalty payments, which should be accommodated by future policies. Fourth, it reviews current methods and proposes techniques that could eliminate the inconsistency between the estimates of tax semi-elasticity in studies analyzing micro-level data and the studies analyzing macro-level data.

The rest of the paper is structured as follows. The findings of review studies on tax elasticity and the size of BEPS are discussed in section 2. Section 3 presents the method of the systematic review of the literature. Section 4 presents and discusses the findings. Section 5 concludes by presenting the implications of BEPS and tax elasticity estimates from country-level data for future research and policy.

TAX ELASTICITIES AND THE SIZE OF BEPS: FINDINGS OF REVIEW STUDIES

The most common measures of CITA in the accounting and finance literatures are based on effective tax rates and on the difference between financial reporting income and taxable income (Wang et al., 2019). The seven reviews of the empirical literature on international CITA discussed in this section (see Table 1; Dharmapala, 2014; Jacob, 2022) indicate that statutory CITRs are not good indicators to measure the impact of international corporate tax differences on investment. For example, Jacob (2022) aggregated the empirical evidence of 79 studies (published in accounting, economics and finance journals), indicates that higher corporate tax rates reduce corporate investment, FDI, and innovation expenditure, while rules such as bonus depreciation (tax incentives) increase investment expenditure. Effective CITRs are considered better indicators of the amount that firms pay in corporate taxes. Since taxable profit (or tax base) may be lower than actual profit (actual tax base) due to a variety of factors (tax breaks, tax deductions, etc.) the effective CITR is the ratio of actual taxes paid to actual profits (Janský, 2023). The effective average CITR is the average tax burden on investment and the effective marginal CITR is the difference in the cost of capital in the presence and in the absence of corporate tax. The average CITR represents taxes paid by firms divided by a measure of operating surplus.

Table 1 reports the estimated semi-elasticities of the base/benchmark meta-regressions of five review studies on CITA and tax competition. The semi- or tax elasticity measures the percentage change in FDI (de Mooij and Ederveen, 2003; 2008) or MNCs pre-tax profits (Heckemeyer and Overesch, 2017; Beer

et al., 2020) in response to a 1%-point change in the CITR. Table 1 also reports the semi-elasticity of tax competition effects (Heimberger 2021), which measures the percentage change in the CITR of one country in response to a 1%-point change in the CITR of another country. The results reported in Table 1 suggest that tax competition has caused the fall of CITRs over the last decades and that that the semi-elasticity for macro-studies is much larger than the effect identified in micro-studies. A brief discussion of the main findings follows.

De Mooij and Ederveen (2003) reviewed 25 empirical studies and their meta-regression findings indicate that (i) studies using data for the amount of FDI yield higher elasticities than those using other data (indices); (ii) FDI is more responsive to effective or average CITRs than to statutory CITRs; (iii) the typical semi-elasticity for a study with particular study characteristics is -2.4. De Mooij and Ederveen (2008) expanded the sample of de Mooij and Ederveen (2003) to 31 empirical studies and their meta-regression findings support (i) and (ii) of De Mooij and Ederveen (2003). However, their predicted semi-elasticities of alternative corporate tax measures differ from their previous work: higher for the case of the statutory CITRs and lower for case of the effective CITRs.

Heckemeyer and Overesch (2017) meta-regressed the findings of 27 empirical studies and found that the semi-elasticity of MNCs pre-tax profit is -0.786. This is the consensus estimate reported by Dharmapala (2014) in an earlier review of the empirical literature. Heckemeyer and Overesch (2017) did not report semi-elasticities of alternative corporate tax measures. However, under the consideration that some studies rely only on host country CITRs, they took into account the effect of composites of the host country's CITR differentials vis-a-vis other relevant countries worldwide. Heckemeyer and Overesch (2017) also found that predicted corporate tax effects on MNCs profits based on regression of firm-level micro-data are lower than those based on regression of firm-level micro-data aggregated for host countries. They argue that their findings indicate that aggregate estimates of the corporate tax effect on profit levels is inflated by picking up tax effects on investment and location choices rather than profit shifting.

Table 1: Predicted semi-elasticities of review studies

Review study	Semi-elasticity of…	Dependent variable
De Mooij and Ederveen (2003)	-2.4 (average CITR)	***FDI***
	-1.2 (statutory CITR)	
	-4.2 (effective marginal CITR)	
	-9.3 (effective average CITR)	
De Mooij and Ederveen (2008)	-2.4 (statutory CITR)	***FDI***
	-4.0 (effective marginal CITR)	
	-5.9 (effective average CITR)	
Heckemeyer and Overesch (2017)	-0.786 (CITR)	***MNCs pre-tax profits***
Beer et al. (2020)	-0.974 (CITR)	***MNCs pre-tax profits***
Heimberger (2021)	-0.8 (other countries' CITR)	***host country's CITR***

Source: Authors' elaboration

Beer et al. (2020) expanded the sample of Heckemeyer and Overesch (2017) to 37 studies and included more estimates in their meta-regressions. Their findings indicate that the semi-elasticity of MNCs pre-tax profit is -0.974. Beer et al. (2020) also did not report semi-elasticities of alternative corporate tax

measures. However, they accounted for differences in the dependent variable by distinguishing estimates that used the statutory, the average, and the effective average and marginal CITRs. Beer et al. (2020) also found that the semi-elasticity for macro-studies is much larger than the effect identified in micro-studies.

Heimberger (2021) meta-regressed the findings of 33 studies to examine the presence of CITR competition effects and the results indicate a semi-elasticity of -0.8. Heimberger (2021) also indicates that the competitive pressures vary from country to country, depending on domestic political and institutional factors and country size.

Review studies on CITA and tax competition have also estimated the size of BEPS. Riedel (2018) reviewed the literature on tax avoidance behavior of MNCs and indicates that they transfer from less than 5% to 30% or more of their income earned at high-tax affiliates to lower-tax entities. Beer et al. (2020) imputed the semi-elasticity of pre-tax income with respect to tax rate to be 1.5 for the year 2015 and used it to estimate the size of BEPS: 0.11% of GDP for the 15 largest economies and 0.07% of GDP for the whole world.

METHOD

The systematic approach to reviewing the literature and choosing which papers to incorporate is explicit and reproducible (Pickering and Byrne, 2014). The protocol adopted here is based on Page et al. (2021) and is presented in Figure 1. A search of the phrases “Base Erosion and Profit Shifting”, “Base Erosion” and “Profit Shifting”, “Base Erosion” or “Profit Shifting”, “Tax Avoidance” and “Base Erosion”, “Tax Avoidance” and “Profit Shifting” was performed in titles, abstracts and keywords of documents listed in Scopus and Web of Science (WoS) databases in April 2024. The particular phrases were selected because they concern international CITA and BEPS, as indicated by the review studies in the previous section. The results were 2,968 records in total. All documents were tabulated in a spreadsheet and duplicated records were removed, obtaining 1,787 records. A second screening was performed in order to apply the following inclusion criteria:

1. The document is a journal article (ensuring that it has been peer reviewed).

2. The journal is listed in the Academic Journal Guide 2021 published by the Chartered Association of Business Schools (ensuring that the journal has certain qualities). The particular guide was chosen because it was not based purely on a weighted average of journal metrics (Chartered Association of Business Schools, 2021).

3. The document performs a quantitative analysis (ensuring that it can be replicated) and the dependent variable is aggregated at the country level.

4. The document explores international tax competition, and/or CITA and/or the size of BEPS.

1,764 records did not meet these criteria and the remaining 23 journal articles were studied and categorized according to their data sample (period and location), dependent and independent variables (see Appendix Table) and their results regarding semi-elasticities and the revenue loss from BEPS.

FINDINGS

Countries attempt to attract FDI and MNCs by offering favorable tax rates and incentives. International tax competition can lead to both strategic tax changes and base spillovers, generating various externalities that impact not only the countries involved but also the global economy. Figure 2 illustrates the findings of the surveyed papers on downward pressure on CITRs and the CIT base. International tax competition explains the fall in statutory and effective CITRs and causes base spillover effects (Devereux et al., 2008; Crivelli et al., 2016; Cobham and Janský, 2018, Chiari, 2024). These effects are greater for less developed economies (Crivelli et al., 2016; Ghinamo et al., 2010; Cobham and Janský,

2018, Chiari, 2024). However, tax cutting alone cannot influence an economy's attractiveness to individuals and firms looking to minimize tax liability. Dharmapala and Hines (2009) indicate that the quality of governance is a critical characteristic of tax havens. Except from international tax competition, Ghinamo et al. (2010) indicate that the volatility of a country's economic environment is also putting downward pressure on CITRs, because it reduces inward FDI.[21] Von Brasch et al. (2023) indicate that the incentive for cutting corporate taxes is also explained by the positive spillovers from FDI to exports, when other countries do not reduce their corporate taxes.

CITRs play a significant role in influencing FDI and the location of MNCs. Both, the statutory (Von Brasch et al., 2023) and the effective CITRs (Clausing, 2016; Djankov et al., 2010) have an adverse impact on inward FDI and MNCs profits (Garcia-Bernardo and Janský, 2024). Pavel et al. (2021) indicate that the adverse impact of the effective CITR on inward FDI is greater than the respective of the statutory CITR in post-socialist EU countries. Pavel et al. (2021) report similar results for the case of cross-border payments for advisory services and indicate that aggressive tax planning indicators also have a positive effect. Janský and Palanský (2019) indicate that the reported rate of return on FDI (FDI income / FDI stocks) is lower due to profit shifting. Vicard (2022) indicates that countries with high CITRs generate an excess return on their net foreign assets (earn larger yields on their FDI assets than on their liabilities) due to profit shifting by MNCs. The results of Vicard (2022) indicate that an increase of the statutory CITR increases the FDI yield differential.

Damgaard et al. (2024) indicate that CITRs have an adverse impact on inward phantom FDI[22] (especially in less developed economies) and an effect that is not significantly different from zero on real inward FDI.[23] Albori et al. (2024) estimate that the share of phantom FDI stabilized at around 40% of total FDIs in 2019, after rising in 2010-2015. Albori et al. (2024) consider that all FDIs between pairs of offshore financial centers (tax havens) are phantom and do not report the estimated effects of CITRs on phantom FDI (thus not reported in Table 2). Driffield et al. (2021) link FDI motives to tax haven FDI in the case of South Korea and find that the domestic tax rate has little impact upon the choice to use an offshore financial center destination. Driffield et al. (2021) assume that the tax rates in other subsidiary locations could have a greater impact than the domestic tax rate on the decision to use an offshore financial center. Tørsløv et al. (2023) indicate that the excess profitability of subsidiaries in tax havens relative to subsidiaries in non-havens is a key determinant of the profitability of the affiliates of US MNCs.[24] Santacreu (2023) indicates that tax havens and countries with special tax regimes (Ireland, Luxembourg, the Netherlands, Singapore and Switzerland in the data sample) have a positive effect on bilateral royalty payments. The latter could reflect profit-shifting motives rather than the true value of the technology.

Table 2 presents the findings of the surveyed papers on international tax competition and the tax effects on international investments. The surveyed studies (with the exception of Deveraux et al., 2008) do not investigate the downward pressure on effective CITRs, which are considered better indicators of the amount that firms pay in corporate taxes (see section 2). The surveyed studies do not also investigate the impact of the effective CITRs on phantom FDI (in terms of both, tax haven and SPEs FDI). Other neglected issues concern the investigation of whether the effect of investment treaties (with the

[21] Ghinamo et al. (2010) estimate a structural model that simultaneously determines the CITR and FDI inflows which supports the hypothesis of tax competition: economic volatility in a country tends to deter FDI inflows and, by shrinking the available tax base, it negatively impacts the corporate tax rate.

[22] Special Purpose Entities (SPEs) FDI.

[23] However, their results do not represent conclusive evidence and are primarily based on estimates of the effect of CITRs on outward phantom FDI and total FDI.

[24] Tørsløv et al. (2023): Supplementary Appendix Section A.2.

exception of Pavel et al., 2021) and special tax regimes (with the exception of Santacreu, 2023) is different for real and phantom FDI.

Seven of the surveyed papers provide estimates of the size of BEPS. Table 3 presents their estimates of revenue losses from BEPS by income group and OECD membership, as a share of GDP. Crivelli et al. (2016) estimate the revenue loss from BEPS for 2013 to be 0.2% of GDP for both OECD and non-OECD countries in the short-run and 1% of GDP for OECD and 1.3% of GDP for non-OECD countries in the long-run. Cobham and Janský (2018) re-estimate the study of Crivelli et al. (2016) and indicate that the decreasing cost of BEPS as a share of GDP is due to the decreasing difference between the 'haven' and 'non-haven' tax rates. Cobham and Janský (2018, p. 218) estimate that low- and lower-middle-income countries face the highest revenue losses as a share of GDP and that high-income OECD countries face the lowest. Chiari (2024) expands the work of Crivelli (2016) and Cobham and Janský (2018) by analyzing a sample published in 2021. Chiari (2024) also estimates that low- and lower-middle-income countries face the average highest revenue losses as a share of GDP. Álvarez-Martínez et al. (2021) analyze the extent of BEPS in the EU, Japan and the US and their results are close to those of the abovementioned studies on high income countries.

The estimates of Janský and Palanský (2019) and Tørsløv et al. (2023) give a different picture of revenue losses from BEPS. In contrast to the findings of Cobham and Janský (2018) and Chiari (2024), the estimates of Janský and Palanský (2019) indicate that lower-middle and low-income countries face lower revenue losses as a share of GDP. As a result, Janský and Palanský (2019) estimate that high-income non-OECD countries face the highest revenue losses as a share of their GDP. Janský and Palanský (2019) also compare their results with those of Cobham and Janský (2018) and other studies, using only common subsamples of covered countries. Their estimates from this exercise are lower for developed countries and higher for developing countries. In contrast to the findings of Crivelli et al. (2016), the estimates of Tørsløv et al. (2023) indicate a higher revenue loss from BEPS as share of GDP for OECD countries. However, these estimates are based on the analysis of data covering a considerably smaller number of countries.

Table 2 – International tax competition and the tax effects on international investments

Study	Estimated effects	on
Djankov et al. (2010)	-0.226 (effective CITR)	Inward FDI
Damgaard et al. (2024)	-1.95 (statutory CITR)	Inward FDI
Von Brasch et al. (2023)	-1.4 (statutory CITR)	Inward FDI
Pavel et al. (2021)	-1.111 (statutory CITR)	Inward FDI
	-1.947 (effective CITR)	
Dharmapala and Hines (2009)	-0.042 (minimum of the average effective tax rate for US firms observed in the sample, and the country's statutory corporate tax rate)	Inward FDI from the US
Janský and Palanský (2019)	-0.158 (share of FDI from tax havens)	Rate of return on FDI
Vicard (2022)	0.13 (statutory CITR)	FDI yield differential (country level analysis)
	0.18 (statutory CITR)	

		FDI yield differential (country pair level analysis)
Clausing (2016)	-1.833 (effective CITR) average estimate of -2.92 (effective CITR)	Direct investment earnings MNCs profits
Garcia-Bernardo and Janský (2024)	-0.763 (effective CITR)*	MNCs profits
Tørsløv et al. (2023)**	1.298 (tax haven dummy)	Profits-to-wage ratio of the foreign affiliates of US MNCs
Driffield et al. (2021)	0.106 (statutory CITR)	Outward FDI to tax havens
Santacreu (2023)	1.818 (tax haven exporter) 1.109 (tax haven importer)	Bilateral royalty payments
Devereux et al. (2008)	0.678 (average of other countries' statutory CITR) 0.766 (average of other countries' effective CITR)	Statutory CITR Effective CITR
Ghinamo et al. (2010)	-0.235 (interest rate volatility)	Statutory CITR
Crivelli et al. (2016)	-0.0818 (statutory CITR) 0.801 (statutory CITR abroad)	CIT base Statutory CITR
Cobham and Janský (2018)	-0.0918 (statutory CITR, IMF data) -0.0926 (statutory CITR, GRD data)	CIT base
Chiari (2024)	0.26 (statutory CITR abroad)	CIT base

Notes: * Semi-elasticity estimate of the effective CITR plus an offset parameter, which Garcia-Bernardo and Janský (2024) included in order to avoid obtaining extremely high differences in the tax semi-elasticity for countries with similar but extremely low tax rates. ** Analysis of the publicly available tabulations of the US outward foreign affiliates statistics.

Source: Authors' elaboration

Garcia-Bernardo and Janský (2024) consider the logarithmic specification of the semi-elasticity model to be more accurate with respect to estimating the global scale of profit shifting. Their estimates indicate that lower-middle-income countries experience the highest revenue losses as a share of GDP. Garcia-Bernardo and Janský (2024) argue that the inconsistency between the relatively lower estimates of tax semi-elasticity in studies analyzing micro-level data and the higher estimates in studies analyzing macro-level data (see section 2) is due to the manner in which the relationship between profits and tax rates has been modelled using mostly linear and, far less frequently, quadratic functions.

Four of the surveyed papers indicate tools and directions aimed at enhancing tax compliance and improving the integrity of the international tax system. Hakelberg and Rixen (2021) indicate that

international cooperation on agreed minimum standards can prevent tax avoidance the way it led to an increase in dividend tax rates by reducing the risk of capital flight. Hebous et al. (2020) estimate the revenue implications of a destination-based cash-flow tax (DBCFT), whose tax base is more easily simulated through national accounts data than a CIT base. Hebous et al. (2020) estimate substantial differences between countries' revenues from the DBCFT, although DBCFT revenues are on a global scale similar as those of the CIT. Trade deficit countries would be expected to gain from DBCFT adoption, trade surplus countries would lose, and developing countries would gain. Unilateral DBCFT adoption by a country which is large and integrated would generate sizeable negative spillover effects that could prompt other countries to adopt a DBCFT.

Table 3: Revenue loss from BEPS (share of GDP)

Study	OECD	Non-OECD	High-income	Upper-middle-income	Lower-middle-income	Low-income
Crivelli et al. (2016)*: estimated loss in 2013.	0.207%	0.178%				
Cobham and Janský (2018)*: estimated average loss for the period of 1980-2013.	high income: 0.3% (IMF data) 0.2% (GRD data)		Non-OECD: 0.8% (IMF data) 0.7% (GRD data)	0.5% (IMF data) 0.4% (GRD data)	1.6% (IMF data) 1.4% (GRD data)	2.6% (IMF data) 2.3% (GRD data)
Janský and Palanský (2019): estimated loss in 2016.	high income: 0.16%		Non-OECD: 0.88%	0.38%	0.62%	0.59%
Chiari (2024): estimated average loss for the period of 1980-2019.	high income: 0.3%		Non-OECD: 0.5%	0.3%	2.5%	3.4%
Garcia-Bernardo and Janský (2024): estimated loss in 2017.			1.43%	1.2%	2.1%	0.7%
Álvarez-Martínez et al. (2021): estimated loss in 2012.			US 0.79%, Japan 0.67%, EU** 0.27%, total 0.54%			

Tørsløv et al. (2023)***: estimated loss in 2015.	1.04%*	0.86%* (7 countries)

Notes: * Short-run estimates in the cases of Crivelli et al. (2016) and Cobham and Janský (2018). ** Including the UK. *** Unweighted average of values in Table 3 (Tørsløv et al., 2023, p. 1523).

Source: Authors' elaboration

Dyrda et al. (2024) contribute to the debate regarding the structure of the global corporate tax system by indicating that when knowledge spillovers are an externality of multinational production and intangible investment, then optimal corporate taxes become significant due to profit shifting. Santacreu (2024) provides empirical evidence in support of the proposition of Dyrda et al. (2024): intellectual property ownership shifting is one of the biggest channels through which MNCs take advantage of differences in national tax regimes. The particular channel indicates that activities facilitating knowledge and technology transfer such as licensing agreements for the use of intellectual property, are as important as FDI in the generation of knowledge spillovers.

SUMMARY AND DIRECTIONS FOR FURTHER RESEARCH

Based on several arguments regarding the assumptions and the estimates of studies analyzing micro-level data (Bradbury et al., 2018; Bilicka, 2019; Tørsløv et al., 2023; Garcia-Bernardo and Janský, 2024) and the limitations of micro-level data sources (Álvarez-Martínez et al., 2021; Fuest et al., 2022), this paper surveys the rapidly growing empirical literature on CITA and BEPS, whose estimates are based on the analysis of macro-level data. First, the findings indicate that except from international tax competition, the volatility of a country's economic environment and the positive spillovers from FDI to exports are also putting downward pressure on CITRs, and that the quality of governance is a key feature of tax heavens. Second, there is also evidence supporting that international tax competition does not have the same effect on real and phantom FDI. Third, estimates of the size of BEPS indicate that lower-income countries experience the highest revenue losses as a share of GDP.

Although the CITA literature analyzing macro-level data has made considerable progress there are still several gaps and unresolved issues that future research should investigate. First, there is little evidence on the effects of international tax competition on real and phantom FDI: the existing evidence does not clarify the effect of CITRs and international tax agreements and treaties (which may reduce the size of CITRs between partners) on phantom FDI in its various forms (for example, tax haven and SPEs FDI). The analysis should be based on effective CITRs, which provide a clearer picture of the tax strategies employed by MNCs, revealing trends related to tax liability, compliance, and overall economic behavior that statutory rates alone may not capture (Garcia-Bernardo and Janský, 2024).

Second, the size of the MNCs' home country and the tax landscape of their subsidiaries, appears to be important in making decisions about profit allocation and tax optimization. Driffield et al. (2021) provide an interesting perspective by arguing that the effective CITRs in other subsidiary locations may exert a more significant influence than the domestic tax rate itself when MNCs consider using offshore financial centers. Heimberger (2021) posits that country size moderates the incentives for strategic CIT interactions, suggesting that larger countries may have different responses to tax competition compared to smaller ones. The intersection of country characteristics and subsidiary tax environments underscores the need for a nuanced approach to understanding tax behavior and the implications for global tax policy.

Third, future research in BEPS should focus on applying robust analytical models like the logarithmic specification of the semi-elasticity model (Garcia-Bernardo and Janský, 2024) across a more extensive data set that encompasses both developed and developing economies (Garcia-Bernardo and Janský, 2024 analyzed only OECD countries), alongside the estimation of average losses over different time

frames. While Chiari (2024) has made strides by estimating the average loss from 1980 to 2019, future research could benefit from refining this approach by considering varying economic contexts, tax regimes, and regulatory environments.

Further efforts that can enhance our understanding of BEPS' impact and guide effective national and international tax policies are the following. Countries adopt BEPS recommendations at different paces and with varying levels of commitment, leading to a patchwork of effectiveness. Future research should examine the effectiveness of BEPS Action Plan and assess how these measures are implemented in different jurisdictions and their impact on tax behavior. Future research should also analyze the implications of tax avoidance on global inequalities, by examining how tax policies affect developing countries and the broader implications for global tax justice. Finally, to fully understand the nuances of tax avoidance strategies, it is vital for future research to conduct in-depth case studies of specific countries. These studies should analyze how local political, economic, and social contexts shape tax strategies. Understanding these unique factors offers insights into how different jurisdictions can address tax challenges effectively and the broader implications for international tax policy.

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APPENDIX TABLE: DATA SAMPLES, DEPENDENT AND INDEPENDENT VARIABLES OF THE STUDIES REVIEWED[1]

Study	Sample	Dependent variables	Independent variables
Albori et al. (2024)	110 countries, 2009-2019.	Bilateral FDI dummy	Macroeconomic, social, and institutional variables.[2]
Chiari (2024)	152 countries, 1980-2019.	CIT base	Lagged CIT base, statutory CITR, average statutory CITR in other countries weighted by inverse distance, average haven statutory CITR in other countries weighted by tax havens, average statutory CITR in other countries weighted by GDP.
Clausing (2016)	Location of US MNCs, 1983-2012.	- Direct investment earnings - MNCs profits	Direct investment earnings analysis: effective tax rate, GDP, GDP per capita, distance with the US. MNCs profits analysis: effective tax rate, GDP, GDP per capita, distance with the US, plant/property/equipment, employment.

Cobham and Janský (2018)	173 countries, 1980-2013.	CIT base	CIT base (lagged), CITR, average statutory CITR in other countries weighted by GDP, average statutory CITR in other countries weighted by inverse distance, average haven statutory CITR in other countries weighted by tax havens.
Crivelli et al. (2016)	173 countries, 1980-2013.	- CIT base - Statutory CITR	CIT base analysis: CIT base (lagged), statutory CITR, (A) average statutory CITR in other countries weighted by GDP, (B) average statutory CITR in other countries weighted by inverse distance, (C) average haven statutory CITR in other countries weighted by tax havens. CITR analysis: statutory CIT rate (lagged), A, B, C above.
Damgaard et al. (2024)	116 countries, 2013-2017.	- Share of outward and inward FDI to SPEs - FDI, real FDI, FDI excluding small offshore financial centers	SPEs FDI analysis: statutory CITR, GDP per capita. FDI analysis: statutory CITR.
Devereux et al. (2008)	21 OECD countries, 1982-1999.	- Statutory tax rate - Effective tax rate	Weighted averages of values of other countries' statutory tax rate, weighted averages of values of other countries' effective tax rate.
Dharmapala and Hines (2009)	208 countries (tax haven analysis) and 55 countries (FDI analysis), 2004.	- Tax havens dummy - U.S. FDI stock	Tax haven analysis: Governance index. FDI analysis: Governance index; tax rate faced by US firms.
Djankov et al. (2010)	85 countries, 2004.	- Gross fixed capital formation - FDI inflows - No. of business establishments - Rate of new business registration	Statutory CITR, first-year effective CITR, five-year effective CITR, labor tax, other taxes, VAT and sales tax, personal income tax top marginal rate, no. of tax payments, time to comply with taxes.
Driffield et al. (2021)	Industry-level FDI flows from South Korea, 1980-2017.	Tax haven FDI	Lagged tax haven FDI, Lagged market / efficiency / resource / technology seeking FDI, statutory CITR.

Garcia-Bernardo and Janský (2024)[3]	38 OECD countries, 2017.	MNCs profits[4]	Effective CITR, effective CITR squared, offset parameter + effective CITR, tangible assets, wages.
Ghinamo et al. (2010)[5]	OECD countries, 1983-2003.	- Statutory CITR - FDI inflows	Statutory CITR: Statutory CITR (lagged), FDI inflows, government expenditure/GDP. FDI inflows analysis: Statutory CITR, government expenditure/GDP, GDP, openness, productivity, interest rate volatility, political instability, property rights protection.
Hakelberg and Rixen (2021)	35 OECD countries, 2000-2017.	Tax rate on dividends or corporate profits	Dividend dummy.
Hebous et al. (2020)	80 countries, 2002-2011.	- Difference between actual corporate income tax revenues and estimated DBCFT revenues - CIT revenue - DBCFT revenue	Difference between revenues analysis: Trade balance, investment (GFCF of corporations), resource rents, GDP per capita. CIT revenue analysis: Lagged CIT revenue, output gap, GDP growth. DBCFT revenue analysis: Lagged DBCFT revenue, output gap, GDP growth.
Janský and Palanský (2019)	112 countries, 2009-2016.	Rate of return on FDI (total FDI income to total FDI stock)	Share of FDI from tax havens, share of FDI from tax havens × income level, share of FDI from tax havens × region.
Pavel et al. (2021)	10 EU post-socialist countries, time period not mentioned.	- FDI stock between states - Destination's payment for advisory services	FDI analysis: unit labour cost difference between states, statutory corporate tax rate difference between states, adjacence dummy, origin's GDP, SPEs FDI dummy, origin's aggressive tax planning dummies. Advisory services analysis: FDI stock between states, origin's GDP, origin's statutory corporate tax rate, origin's aggressive tax planning dummies.
Santacreu (2023)	61 countries, 1995-2012.	Bilateral royalty payments	Distance, common language, R&D spending exporter, GDPpc exporter, remoteness importer, GDP importer, IPR protection importer, production structure importer, FDI importer, tax haven exporter, tax haven importer.

Tørsløv et al. (2023)	OECD countries, 7 developing non-OECD countries, tax havens, 2015.	Profits-to-wage ratio	Share of wages paid by foreign firms × profitability of foreign firms, share of wages paid by local firms × profitability of local firms.
Vicard (2022)	Country analysis: 76 countries, 2001-2015. Country pairs analysis: 30 declaring countries (maximum of 151 partner countries), 2006-2016.	FDI yield differential	Country level analysis: Statutory tax rate, tax haven dummy. Country pair level analysis: Corporate tax differentials, tax haven dummies for country and partner.
Von Brasch et al. (2023)	55 countries, 1990-2020.	Inward FDI stock[6]	Statutory CITR.

Source: Authors' elaboration.

Notes: 1) Control variables not reported. Although reviewed, the studies of Álvarez-Martínez et al. (2021) and Dyrda et al. (2024) are based on general equilibrium models that fit their data to a set of equations, which are not presented here. Santacreu (2024) is a comment on Dyrda et al. (2024) and is also not presented here.

2) Albori et al. (2024, p. 4) state the use of 42 FDI determinants. 3) This is the regression for estimating the tax semi-elasticities using the OECD data. 4) MNCs with consolidated annual group revenue of €750 million and above. 5) The variables refer only to Ghinamo et al. (2010) estimation of a structural model that allows for simultaneous determination of the corporate tax rate and the FDI flow into a country. 6) Von Brasch et al. (2023) estimate a bivariate pooled panel SVAR model.

APPLICATION OF ARTIFICIAL INTELLIGENCE IN PUBLIC SERVICES: DIGITAL HEALTHCARE

Nazim İbadov

PhD in Philosophy, Associate Professor
E-mail: ibadov.nazim1@gmail.com
ORCID ID: 0000-0002-8881-0686
Sunay Aliyeva

Master's Student
E-mail: sunayaliyeva2003@gmail.com
ORCID ID: 0009-0003-3279-2428

Abstract

In the modern era, the application of artificial intelligence (AI) in public administration and public service delivery has become one of the key global priorities. Digital transformation has elevated state–citizen relations to a qualitatively new level, significantly increasing the accessibility, efficiency, and transparency of public services. AI technologies create substantial opportunities for the rapid processing of requests, the personalization of services, the analysis of large-scale data, and the development of evidence-based decision-making mechanisms.

At the same time, the implementation of AI in public services is accompanied by a range of new challenges. These include the protection of personal data and cybersecurity risks, inadequacies in ethical and legal frameworks, technological dependency, concerns about the transparency of AI-driven decisions, as well as issues related to digital inequality and social consequences. Addressing these problems requires the improvement of the relevant regulatory and legal framework, the strengthening of security mechanisms, and the establishment of effective public oversight tools.

International experience demonstrates that leading examples such as Estonia, Singapore, and the European Union base the adoption of AI not only on technological innovation but also on strong institutional frameworks. In Azerbaijan, the successful model of the ASAN Service and the "Digital Azerbaijan" strategy have created a solid foundation for the integration of AI into public administration and public service delivery. In this context, the use of AI technologies contributes not only to enhancing citizen satisfaction but also to promoting flexibility, transparency, and a culture of innovative governance within state policy.

The study concludes that the application of AI in public services presents vast opportunities while also introducing new governance challenges. Achieving a balanced approach to these challenges should be considered a priority direction in the state's long-term development strategy, taking into account both technological and ethical-legal dimensions.

Keywords: artificial intelligence, public administration, public services, digital transformation, opportunities, challenges

INTRODUCTION

Artificial intelligence (AI) technologies act as a transformative factor in the field of public administration and the provision of public services. The process of digital transformation has fundamentally changed the administrative mechanisms of states, enhancing the efficiency, accessibility, and transparency of services provided to citizens. In particular, over the past decade, the widespread use of AI algorithms has expanded the possibilities for rapid processing of requests, service personalization, large-scale data analysis, and evidence-based decision-making. The application of AI in public

administration is not merely a technical innovation but marks the beginning of a qualitatively new stage in the philosophy of governance. These technologies simplify the interaction between citizens and government institutions, reduce corruption risks, ensure the efficient use of public resources, and strengthen governmental accountability. However, issues such as data privacy, cybersecurity, ethical and legal gaps, technological dependency, and digital inequality have also emerged. Therefore, the integration of AI into public administration and public services requires a comprehensive and systematic approach.

The relevance of this topic is evident at both the international and national levels. The leading experiences of Estonia, Singapore, the United States, and the European Union demonstrate that AI serves as an essential tool for improving the quality of public services and increasing citizen satisfaction. Azerbaijan has also made significant progress in this field within the framework of its digital development policy in recent years. The "ASAN Service" model and the "Digital Azerbaijan" strategy have created a strong foundation for the modernization of public services and for ensuring their fast, transparent, and effective delivery through the application of AI technologies.

The purpose of this study is to analyze the potential opportunities and challenges associated with the implementation of AI in public service delivery, to examine international and national practices comparatively, and to identify prospects for future development. Research in this field shows that while AI offers numerous opportunities, its application also raises important ethical, legal, and social concerns. If public administration fails to adequately respond to these challenges, digital inequality may deepen, citizens' trust in the government may weaken, and technological dependency may pose additional risks.

The scientific novelty of this paper lies in the fact that the application of AI in public administration and public services is analyzed for the first time in a comparative context, considering both international and Azerbaijani experiences. It examines not only the technological opportunities but also the social, legal, and ethical challenges associated with AI adoption. This approach helps to establish a theoretical and practical foundation for a more balanced and sustainable use of AI in public governance. The research employs various methodological approaches: the analytical method was used to study theoretical literature and international documents, comparative analysis was applied to evaluate the experiences of different countries, a systemic approach was adopted to examine AI's role in public services comprehensively, and contextual analysis was conducted to explore its social, ethical, and legal aspects. The synthesis and generalization of the results have been structured into a conceptual framework.

In conclusion, the application of AI in public service delivery opens up vast opportunities while simultaneously presenting new governance challenges. The theoretical analysis of these challenges and the identification of possible solutions are of great importance for the development of effective public policy.

MATERIALS AND METHODS

This study is based on a qualitative and analytical research design. Various academic sources, policy papers, and international reports related to the application of artificial intelligence (AI) in public administration and public services were reviewed. The analytical method was used to examine theoretical literature and identify key concepts such as digital transformation, AI-driven governance, and ethical-legal implications.

A comparative analysis approach was applied to assess international practices, particularly the experiences of Estonia, Singapore, and the European Union, in contrast with Azerbaijan's model of the ASAN Service and the "Digital Azerbaijan" strategy. The systematic method was employed to explore the integration of AI technologies into governance processes in a holistic manner, while the contextual analysis technique was used to evaluate social, ethical, and legal aspects of AI adoption.

Finally, synthesis and generalization methods were utilized to structure the obtained findings into a conceptual framework, forming the basis for the study's conclusions and recommendations.

FINDINGS

The findings of the study indicate that the application of artificial intelligence (AI) in public administration and public services has become a driving force for improving efficiency, transparency, and accessibility in governance. AI-based technologies enable the automation of administrative processes, rapid data analysis, and the delivery of personalized services to citizens. These innovations have reduced bureaucratic barriers, improved the quality of decision-making, and strengthened accountability mechanisms in the public sector.

The research also highlights that AI applications in the public sector extend beyond operational efficiency to areas such as public security, taxation, health services, and communication with citizens. The implementation of AI-based chatbots, data-processing systems, and predictive analytics has enabled governments to provide faster and more accurate responses to citizens' needs. In particular, AI-supported systems in healthcare — including digital diagnosis, telemedicine, and epidemic prediction tools — demonstrate the transformative potential of digital governance.

The study shows that Estonia, Singapore, and the European Union serve as exemplary models in integrating AI technologies into state systems, combining technological innovation with strong institutional and legal frameworks. In Azerbaijan, initiatives such as the ASAN Service and the "Digital Azerbaijan" strategy have created a solid foundation for the integration of AI into public governance and service delivery, offering transparency, citizen satisfaction, and efficiency.

However, the analysis also revealed a number of serious challenges associated with AI implementation. These include privacy and data protection risks, cybersecurity threats, algorithmic bias, and the ethical and legal accountability of AI decisions. The increasing automation of government services also raises concerns about employment reduction in the public sector and the potential deepening of digital inequality. In healthcare specifically, issues such as data security, bias in medical algorithms, ownership of health data, and lack of global regulatory standards were identified as critical barriers.

Despite these challenges, the study emphasizes that with proper governance mechanisms, strong ethical oversight, and equitable access to digital technologies, AI can significantly enhance public welfare, improve healthcare outcomes, and contribute to the long-term sustainability of public administration.

Application of Artificial Intelligence in the Public Sector

In recent years, artificial intelligence (AI) has gained increasing significance across various sectors, particularly in public administration and public services. Rapid technological advancements have encouraged government institutions to implement AI technologies to enhance the efficiency, effectiveness, and quality of public services. In response to the demand for a more agile, transparent, and citizen-oriented bureaucracy, many countries have begun deploying AI systems to optimize operations in public administration, data processing, and direct citizen interaction (1).

AI technologies enable the automation of tasks that previously required human intervention, such as document processing, managing citizen complaints, and providing real-time information related to public services. At the same time, AI's ability to analyze large volumes of data at high speed allows government agencies to proactively identify social trends, better understand the needs of society, and structure decision-making processes based on data-driven insights (2). Thus, AI in public administration not only improves operational efficiency but also enhances the quality of public services, ensures transparency, and significantly contributes to increasing citizen satisfaction.

In recent years, the application of AI in the public sector has led to significant progress in various countries. For instance, AI-based "chatbots" used in public information services enable citizens to

receive prompt responses to administrative inquiries, eliminating the need to wait in long queues at government offices. Automated data processing systems are applied in areas such as tax administration, population registration, and business licensing, significantly shortening procedures that previously took weeks or even months (3).

Moreover, AI has been integrated into security and public order systems. Facial recognition technologies for detecting legal violations and predictive systems for crime based on big data are widely used in this domain. The implementation of these technologies not only ensures more efficient operations but also helps identify potential threats at earlier stages. Additionally, AI is extensively applied in public healthcare systems for analyzing epidemiological data, early diagnosis of diseases, and managing hospital services, thereby enhancing the quality and efficiency of public health services (4). Such technological advancements accelerate the work of public servants, improve the quality of outcomes, and simultaneously make citizens' lives easier.

On the other hand, although AI offers numerous benefits for public services, its implementation presents significant challenges, particularly in ethical and governance terms. The application of AI in government raises various issues related to data privacy, algorithmic transparency, and potential bias in decision-making. Numerous cases demonstrate that if AI algorithms are not properly designed, they may reflect or even amplify social injustices. For example, AI systems used in recruitment processes may exhibit bias against certain groups if the historical data used for training contain such biases (5). In the policing sector, facial recognition technology is frequently criticized for varying accuracy levels, which can lead to misidentifications and risks of legal injustice.

Another concern is the oversight and accountability of decisions made by AI systems. Often, even the public and government officials find it challenging to understand how an AI system arrives at certain decisions, which raises concerns regarding non-transparent and unaccountable processes. Furthermore, the deployment of AI in public services has complex social and economic impacts. One of the major concerns is the potential loss of jobs in the government sector due to mass automation. Many administrative tasks previously performed by public servants can now be automated by AI-based systems, potentially replacing certain positions. Although there is an argument that AI could create new jobs in technology and data analytics, this transition is not always easy for employees working in traditional bureaucratic systems over long periods (6).

Another challenge concerns the government's readiness in terms of infrastructure and human resource capacity to optimally manage AI technologies. Not all countries, especially developing ones, have adequate digital infrastructure to adopt AI on a large scale. Additionally, many bureaucrats and government employees still lack sufficient technological skills to adapt to AI-based systems, resulting in frequent barriers to the adoption and effective use of this technology in public services (7).

Digital Health and Artificial Intelligence Technologies

Simply put, artificial intelligence (AI) is not human intelligence but a process through which computers perform tasks typically carried out by healthcare workers—such as providing screening services, delivering training, monitoring, and other similar medical services. Today, AI tools play an important role in people's daily lives as well as in more specialized fields. Automated machine learning and deep learning are emerging areas within AI. In machine learning, models are developed using programmed algorithms, enabling the system to provide instructional content—either in video or written form—tailored to the user's specific questions or needs.

One of the most recognized new technologies used for health education services is the AI system S.A.R.A.H., which employs a generative approach and is supported by the World Health Organization. This system can provide educational and healthcare services to users 24/7 in eight languages.

Another example is AI based on the BrewAI platform. This system allows non-experts in machine learning to input data via a simple user interface to predict disease outbreaks. In the field of biological threat preparedness and response, the EPIWATCH platform is another example, offering early epidemic warnings before detection by conventional healthcare systems.

Recent studies indicate a growing trend in AI-based interventions in public health, with significant advancements in diagnostics, disease prediction, and telemedicine applications. For instance, a review by Abbasgholizadeh Rahimi et al. highlights the role of AI in community-based primary healthcare, emphasizing the use of machine learning models for risk assessment and adherence to treatment protocols.

Despite the practical use of AI tools in clinical settings, the adoption of new technologies in healthcare, especially in primary healthcare services, remains limited. Evidence shows that machine learning models and other AI tools can be applied for early cancer detection, predicting high blood pressure risks, assessing the health of older adults, and managing various respiratory diseases. Systematic reviews indicate that machine learning models are among the most commonly used technologies for healthcare service providers.

In low- and middle-income countries (LMICs), integrating digital health technologies is considered a promising area of reform; however, significant challenges exist. Despite the potential to expand access to services and improve the quality of care, resistance from stakeholders benefiting from the status quo remains a key barrier. The development of digital technologies alters power relations between patients and healthcare providers, necessitating adjustments in healthcare policies and institutional roles. Furthermore, inequities in access to technology raise questions of fairness. Therefore, equitable distribution of digital health benefits is achievable only if policymakers and healthcare managers establish effective implementation mechanisms.

The application of AI in primary healthcare (PHC) in LMICs adds additional complexities. A primary concern is ensuring the privacy and security of personal data. Digitizing health data increases the risks of leaks and unauthorized access. Ethical considerations also become prominent, including potential breaches of patient confidentiality, conflicts between medical service provision and commercial interests, and changes in privacy and accountability expectations when third parties are involved in doctor–patient interactions.

Ownership and governance of data remain contentious, as interests often conflict among government agencies, the private sector, and individuals. Moreover, economic constraints in low-income countries make the sustained implementation of AI technologies challenging. Funding from external donors is often temporary, and domestic investment capacity is limited. Resistance to technological change—especially from actors benefiting from the status quo—further compounds these difficulties. Another critical issue is the integration and interoperability of AI systems with existing healthcare infrastructure, which, if inadequate, may create additional inefficiencies instead of the intended improvements.

Nevertheless, when implemented with proper governance, robust security mechanisms, and policies based on equitable access principles, AI can enhance disease management, improve patient outcomes, and expand access to healthcare services.

The human factor is also a crucial component in AI implementation. In this context, the knowledge, skills, educational background, and digital literacy of end-users are particularly important. Additionally, the scope of behavioral changes required to build trust in AI systems and raise awareness should be assessed. Employers' acceptance of the limitations of these technologies and their ability to correctly interpret AI outputs are key conditions for successful implementation.

In conclusion, the main challenge in integrating AI and machine learning (ML) technologies into the PHC vision is ensuring their alignment with a human-centered approach. These limitations are not

primarily due to the technical capacity of AI/ML but rather to social factors, knowledge, attitudes, and behavioral intentions toward the technology. Therefore, targeted policy measures are needed to address existing gaps. These measures should focus on clarifying values and aligning with PHC principles, ultimately enabling the global realization of AI/ML technologies' benefits in healthcare.

Risks of Artificial Intelligence in Healthcare

Artificial intelligence (AI) systems utilize large-scale databases and complex algorithms to enhance the accuracy of medical decision-making. However, this process poses significant risks regarding the security, privacy, and protection of sensitive patient information. In the modern era, the interest of pharmaceutical and insurance companies in this data, coupled with increasing cyberattacks targeting government institutions, further heightens the vulnerability of such information. These situations demonstrate that safeguarding AI databases is not only a technological issue but also an ethical and legal one.

During the collection and processing of medical data, underrepresentation of certain ethnic groups, genders, or social classes can lead to biases in algorithms. In such cases, AI outputs may not fully reflect the overall public health landscape. Biased datasets can result in incorrect diagnoses, inappropriate treatment recommendations, and ultimately violations of patient rights. Furthermore, reluctance by healthcare institutions to share patient data can exacerbate this problem.

Another serious threat is "data poisoning," where datasets are deliberately manipulated by inserting incorrect or misleading information. This compromises the results of AI systems, undermines the validity of clinical trials, and can even affect insurance claims. In such cases, neither the technology nor the implementing organization fully assumes responsibility for erroneous decisions.

Errors in AI algorithms can affect not just a single patient but thousands simultaneously. Nevertheless, there are currently no unified international standards for validating the reliability of these algorithms. One of the most trusted methods in medicine—the double-blind trial—remains an open question in terms of its application to AI systems.

If AI produces an incorrect result, determining liability—whether it lies with the physician, hospital, device manufacturer, or the company that developed the algorithm—raises complex legal disputes. Therefore, establishing ethical and legal frameworks for AI use in healthcare is essential.

Integrating AI technologies into medical practice also presents challenges in terms of workforce capacity. Most healthcare professionals currently lack the necessary knowledge and experience to work effectively with these systems. Consequently, improper implementation of AI may lead to additional errors and safety risks.

Moreover, the introduction of AI in healthcare changes the nature of physician–patient relationships. If a physician does not fully understand the decision-making mechanisms and evaluation criteria of an AI system, effective communication with patients becomes difficult, potentially leading to mistrust and anxiety.

AI also plays a significant role in the information environment, not just clinical decision-making. In recent years, the use of AI has contributed to the spread of false medical information and disinformation. AI-generated content, including completely fabricated news and social media posts, can create confusion in society and influence human behavior and decision-making. A prominent example is the global disinformation campaign against vaccines. Individuals with limited medical knowledge may misinterpret such information, resulting in incorrect decisions. Unfortunately, in some cases, these false narratives can even influence the opinions of healthcare professionals themselves.

DISCUSSION AND CONCLUSION

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ÇERÇEVELEME ETKISI VE KAYNAK GÜVENIRLIĞI ARASINDAKI İLIŞKI ÜZERINE BIR İNCELEME

Serpil SUMER ADİN

Doç.Dr, Atatürk Üniversitesi Oltu Beşeri ve Sosyal Bilimler Fakültesi Finans ve Bankacılık Bölümü
E-mail: serpil.sumer@atauni.edu.tr
ORCID ID: 0000-0001-8452-0393

Özet

Risk ve belirsizlik altında karar veren bireylerin kararlarını etkileyen pek çok faktör bulunmaktadır. Çerçeveleme etkisi de bu faktörlerden biridir. Çerçeveleme etkisine (yanılgısı) göre bilginin sunuluş şekli bireyin kararlarını etkilemektedir. Kahneman ve Tversky , bireylerin kazanç alanında risk almaktan kaçındıklarını kayıp alanında ise risk almayı tercih ettiklerini belirtmişlerdir. Ayrıca bireyler kesinlik ifadesi içeren alternatifleri olasılık ifadesi içeren alternatiflere kıyasla daha çok tercih etmektedir. Bilginin ya da mesajın nasıl sunulduğu kadar, kim tarafından iletildiğinin de tutum ve davranışlar üzerinde etkisi bulunmaktadır. Bilginin ya da mesajın kim tarafından sunulduğu ise kaynak güvenilirliği ile ilişkilidir. Günümüzde bilgiye erişimin hızlı ve kolay olması bilgi kaynaklarının çoğalmasına yol açmıştır. Dijital çağda bilgiye erişim kolaylaşmasına rağmen bilgi kirliliği ile birlikte manipülasyon riski artmıştır. Bu çalışma, bireylerin karar verme süreçlerinde çerçeveleme yanılgısının etkisini ve bu etkinin kaynak güvenilirliği ile olan ilişkisini incelemeyi amaçlamaktadır. Bu amaç doğrultusunda finans eğitimi alan öğrencilere çeşitli alternatifler sunularak tercih yapmaları istenmiştir. Katılımcılara sunulan alternatifler farklı türde çerçeveleme (olumlu/olumsuz) ve kaynak güvenilirliği (yüksek/düşük) kombinasyonuyla sunulmuştur. Çalışmada finans ve bankacılık öğrencilerinin örneklem olarak tercih edilmesinin nedeni finans ve bankacılık öğrencilerinin finans ile ilgili dersler almalarıdır. Çalışma sonucunda öğrencilerin kesin kazan ifadesi içeren alternatiflerde öğrencilerin risk almaktan kaçındıkları, güvenir olarak tanımadıkları kaynakları tercih etme eğiliminde oldukları belirlenmiştir..

Anahtar Kelimeler: Çerçeveleme Etkisi, Kaynak Güvenilirliği, Bilişsel Önyargılar, Karar Verme

GİRİŞ

Bireylerin karar verme süreçlerini etkileyen duygusal ve bilişsel faktörler bulunmaktadır. Çerçeveleme etkiside bilişsel karar verme süreci üzerinde etkisi olan bilişsel faktörlerden biridir. Çerçeveleme etkisi, alternatiflerin sunum şekli ve gerçekleşme olasılığını ifade etmektedir (Alper ve Ertan, 2008). Kahneman ve Tversky 'nin 1979 yılında yaptıkları çalışmada ilk olarak çerçeveleme etkisinden bahsetmişlerdir. Kahneman ve Tversky (1984), bireylerin kazanç alanında risk almaktan kaçındıklarını kayıp alanında ise risk almayı tercih ettiklerini belirtmişlerdir. Ayrıca bireyler kesinlik ifadesi içeren alternatifleri olasılık ifadesi içeren alternatiflere kıyasla daha çok tercih etmektedir. Çeşitli alternatifler arasında seçim yapan bireyler kayıp riskinden korkarak içgüdüsel olarak kazanç ifadesi içeren alternatiflere yönelerek daha az riskli alternatifleri tercih etmektedir (Ergör, 2017; Gümüş, Erhan ve Kılıç, 2019).

Bilginin ya da mesajın nasıl sunulduğu kadar, kim tarafından iletildiğinin de tutum ve davranışlar üzerinde etkisi bulunmaktadır. Kaynak güvenilirliği, mesajın iletildiği kişi veya kurumun uzmanlık ve dürüstlük düzeyiyle ilgilidir (Hovland & Weiss, 1951). Günümüzde bilgiye erişimin hızlı ve kolay olması bilgi kaynaklarının çoğalmasına yol açmıştır. Dijital çağda bilgiye erişim kolaylaşmasına rağmen bilgi kirliliği ile birlikte manipülasyon riski artmıştır. Finansal anlamda kaynak güvenilirliği, kullanılan verinin doğruluğu, bütünlüğü ve güncelliğini ifade etmektedir. Veri kaynakları resmî finansal raporlar, piyasa verileri, sosyal medya gibi pek çok farklı kaynaktan veriler elde edilmektedir.

Bu çalışma, bireylerin karar verme süreçlerinde çerçeveleme yanılgısının etkisini ve bu etkinin kaynak güvenilirliği ile olan ilişkisini incelemeyi amaçlamaktadır. Bu amaç doğrultusunda finans eğitimi alan öğrencilere çeşitli alternatifler sunularak tercih yapmaları istenmiştir. Katılımcılara sunulan alternatifler

farklı türde çerçeveleme (olumlu/olumsuz) ve kaynak güvenilirliği (yüksek/düşük) kombinasyonuyla sunulmuştur. Çalışmada finans ve bankacılık öğrencilerinin örneklem olarak tercih edilmesinin nedeni finans ve bankacılık öğrencilerinin finans ile ilgili dersler almalarıdır. Çalışma sonucunda öğrencilerin kesin kazan ifadesi içeren alternatiflerde öğrencilerin risk almaktan kaçındıkları, güvenilir olarak tanımadıkları kaynakları tercih etme eğiliminde oldukları belirlenmiştir.

YÖNTEM VE BULGULAR

Bu çalışma, bireylerin karar verme süreçlerinde çerçeveleme yanılgısının etkisini ve bu etkinin kaynak güvenilirliği ile olan ilişkisini incelemeyi amaçlamaktadır. Bu amaç doğrultusunda davranışsal finans eğitimi alan öğrencilere çeşitli alternatifler sunularak tercih yapmaları istenmiştir. Alternatifler oluşturulurken Demir'in 2010 yılında yaptığı çalışmadan yararlanılmıştır. Çalışmada deney yöntemi kullanılarak veriler elde edilmiştir.

Davranışsal finans dersini alan 20 öğrenci çalışmanın kapsamını oluşturmaktadır. Katılımcılara sunulan alternatifler farklı türde çerçeveleme (olumlu/olumsuz) ve kaynak güvenilirliği (yüksek/düşük) kombinasyonuyla sunulmuştur. Çalışmada elde edilen sonuçlar aşağıda sunulmuştur.

Şekil 1. Cinsiyete İlişkin Bilgiler

Şekil 1'de katılımcıların cinsiyet bilgilerine ait veriler sunulmuştur. Katılımcıların %45 erkek %55'i ise kadındır.

Katılımcılara sunulan alternatifler ve cevapları aşağıda sunulmuştur.

Alternatif 1. A ve B vakıflarının verdiği burslar şu şekildedir: A vakfı başvuran herkese 1000 TL burs veriyor. B vakfı ise aylık 4000 TL burs veriyor. Sadece 1 vakfın bursuna başvurabilirsiniz. A bursunu seçersen kesin çıkacak ve aylık 1000 TL alacaksın B bursunu seçersen % 25 olasılıkla 4000TL'lik burs çıkacak. % 75'lik ihtimalle hiç burs çıkmayacak. Siz olsaydınız hangi bursu seçerdiniz?

Şekil 2. Alternatif 1'e Verilen Cevaplar

Şekil 2'ye göre çalışmaya katılan katılımcıların %67'si A vakfını tercih ederken, %33'ü B vakfını tercih etmiştir. Katılımcıların yarısından fazlasının A vakfını seçmesinin altında yatan nedenin A vakfının kesin burs verme durumu olduğu düşünülmektedir. Nitekim çerçeveleme etkisinde bireylerin hem kazanç hem de kesinlik içeren ifadeleri seçme eğiliminde olduğu literatürde vurgulanmaktadır.

Alternatif 2. Yeni bir yatırım fonu, son 3 yılda yatırımcılarına %80 oranında kazanç sağlamıştır. (Bu bilgi Sermaye Piyasası Kurulu'nun (SPK) resmi raporundan alınmıştır).

Şekil 3. Alternatif 2'ye Verilen Cevaplar

Şekil 3'e göre katılımcıların tamamı kendilerine sunulan alternatifte yer alan yatırım fonuna yatırım yapmayı tercih etmişlerdir. Yatırım fonunun hem kazanç sağlama oranının hem de bilginin kaynağının güvenilir olmasının katılımcıların yatırım tercihlerini atkilediği düşünülmektedir. Katılımcılara alternatifler sunulduktan sonra kaynağa olan güvenlerini belirlemek için "Bu bilginin kaynağına güvenirim" ifadesi sunulmuştur.

Şekil 4. Bilginin Kaynağına Duyulan Güven

Şekil 4'e göre katılımcıların hemen hemen hepsi alternatifte yer alan bilginin kaynağına güvenmektedir.

Alternatif 3. Yeni bir salgının ortaya çıkması ve bu salgında 600.000 kişinin ölmesi bekleniyor. Eğer aşı olunursa üçte bir olasılıkla kimse ölmeyecek ve üçte iki olasılıkla 600.000 kişi ölecek. (Bu bilgi Sağlık Bakanlığı'ndan alınmıştır.)

Şekil 5. Alternatif 3'e Verilen Cevaplar

Şekil 5'e katılımcıların %60'ı aşı olmayı tercih etmemekte, %40'ı ise aşı olmayı tercih etmektedir. Katılımcıların bilginin kaynağına güvenmelerine ragmen aşı olmayı tercih etmemelerinin altındaki neden merak eidlmiş ve katılımcılarla görüşme yapılmıştır. Yapılan görüşme sonucunda katılımcıların aşı olamyı tercih etmemelerinin nedeninin yakın geçmişte dünya çapında yaşanan Covid salgınının bıraktığı etkidir.

Şekil 6. Bilginin Kaynağına Duyulan Güven

Katılımcıların %75'i Alternatif 3'ün bilgi kaynağına güvendiklerini belirtmişlerdir.

Alternatif 4. Sürdürülebilirliği destekleyen yeni fonların olduğu yeni bir yatırım fonu, son 3 yılda yatırımcılarının yalnızca %20'si kayıp yaşamıştır. (Bu bilgi sosyal medyada paylaşılan bir gönderiden alınmıştır.)

Şekil 7. Alternatif 4'e Verilen Cevaplar

Şekil 7'ye göre katılımcıların %60'ı yatırım fonunu tercih etmemektedir. Katılımcılar tarafından fonun tercih edilmemesinin altında yatan nedenin alternatifin hem kayıp ifadesi içermesi hem de bilgi kaynağının güvenilir bulunmaması olduğu düşünülmektedir. Nitekim Şekil 8'de de sunulduğu gibi katılımcıların büyük çoğunluğu (%85) bilgi kaynağına güvenmemektedir.

Şekil 8. Bilgi Kaynağına Duyulan Güven

Şekil 8'e göre katılımcıların çoğu Alternatif 4'ün sunulduğu bilgi kaynağına güvenmemektedir.

SONUÇ

Çalışma sonucunda öğrencilerin kesin kazanç ifadesi içeren alternatiflerde risk almaktan kaçındıkları, güvenir olarak tanımadıkları kaynakları tercih etme eğiliminde oldukları belirlenmiştir. Güvenilir kaynaklardan gelen olumlu çerçeveli mesajlar, bireylerin karar verme süreçleri üzerinde olumlu etki yaratırken; düşük güvenilirliğe sahip kaynakların mesajları eleştirel biçimde değerlendirilmektedir. Çalışmada elde edilen sonuç Kahneman ve Tversky (1984) 'nin yaptığı çalışma ile tutarlılık göstermektedir. Çalışmadan elde edilen sonucu kısaca özetlemek gerekirse kesin kazanç ifadesi içeren alternatifler tercih edilirken olasılık ifadesi içeren alternatifler tercih edilmemiştir. Ayrıca güvenilir olarak kabul edilen kaynaklar da alternatif tercihini de etkilemiştir.

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INFORMATION SECURITY POLICY OF THE REPUBLIC OF AZERBAIJAN: LEGAL NORMS AND REFORMS

Sanubar BABASHOVA

Doctor of Philosophy in Political Science, lecturer
babashovasanubar@bsu.edu.az
ORCID ID: 0000-0003-4867-6934

Abstract

Information security is one of the important elements of national security policy. The effective functioning of the elements of national security in a unified form depends on the provision of information and the use of information resources. Since the Republic of Azerbaijan gained independence, ensuring information security has been one of the priority areas. Many laws have been adopted and reforms have been implemented in this direction. However, since the boundaries of information security are wide and activities in this direction are subject to foreign interference, problems still persist.

Keywords: information security, mass media, cybercrime, digital technologies, information and telecommunications systems.

INTRODUCTION

Information security is one of the important elements of national security policy. The effective functioning of the elements of national security in a unified form depends on the provision of information and the use of information resources. After gaining independence, one of the main problems of national security of Azerbaijan was related to the formation of a unified information policy and ensuring its security, as well as the creation, protection and management of the national information environment. Systematic information interference and ideological propaganda activities by foreign forces led to the emergence of serious anti-national and anti-state tendencies in some social and national-ethnic groups of the Azerbaijani population and created a threat to the foundations of an independent state, civil solidarity and unity. They also used religious, ideological, information and propaganda means to influence the domestic and foreign policy of Azerbaijan. In those years, many information technologies - telephone, satellite communications, the internet and other information transmission systems, information tools used by the ministries of national security and defense - were mainly under the control of major powers and actors operating under their influence. The Republic of Azerbaijan, which had just regained its independence, faced important tasks such as the formation of a unified information activity and security policy, and the preparation and implementation of a unified strategy for national information activity.

MATERIALS AND METHODS

During the research, the Constitution of the Republic of Azerbaijan, the Law of the Republic of Azerbaijan “On Information, Informatization and Information Protection”, the Law “On National Security”, “On Mass Media”, “the “Strategy of the Republic of Azerbaijan on Information Security and Cybersecurity for 2023-2027” and their relevant clauses were analyzed. The main analysis methods are document study, comparative analysis, event analysis, and content analysis.

FINDINGS

The new Constitution of the Republic of Azerbaijan adopted in 1995 clearly states the freedom of speech, thought and information, the right of everyone to receive and disseminate information, and the inadmissibility of any censorship of the mass media. Since the 1990s, wide opportunities have been created in Azerbaijan to ensure freedom of speech and information, to form a democratic, pluralistic press, to establish its legal and normative basis, and to ensure its economic independence. By the Decree of the President of Azerbaijan dated August 6, 1998, the Main Department for the Protection of State Secrets in the Press and Other Mass Media under the Cabinet of Ministers was abolished. The abolition of censorship conditioned the implementation of the future pluralistic information policy of Azerbaijan as a democratic society. Other measures envisaged in the Decree ensured the development of independent mass media, freedom of speech, information and opinion of citizens, as enshrined in international law and the Constitution of Azerbaijan, and complemented the information policy of the country.

In 1999, a new Law of the Republic of Azerbaijan "On Mass Media" was adopted, and in 2001-2002, in close cooperation with international organizations, the legislative base in this area was fully improved and brought into line with international standards. In 2000, the Ministry of Press and Information, which performed the function of controlling the activities of mass media, was abolished.

The Press Council was established on March 15, 2003, at the First Congress of Journalists of the country with the participation of approximately 180 leading mass media outlets. The Press Council is the body that carries out self-regulation of the media in Azerbaijan. The purpose of the Press Council is to exercise public control over journalists' compliance with the requirements of the legislation and professional principles in their professional activities, to strengthen relations and trust between state bodies and the public and the press, and to create wider opportunities for freedom of speech, thought and information. The Council examines options for pre-trial resolution of conflicts occurring in the fields of activity of media organizations, receives and investigates complaints received regarding the behavior of the editorial staff, and makes decisions on this issue. The Azerbaijan Press Council has been a member of the World Association of Press Councils and the European Alliance of Press Councils since 2005. The Chairman of the Council is represented on the Board of Directors of the World Association of Press Councils. Members of the Board of Directors participate in the annual meetings of these organizations held in different regions of the world and make reports.

Azerbaijan's modern information security and safety policy is ensured by legal, organizational-technical and economic methods. Legal methods involve the development and adoption of regulatory legal acts regulating relations in the information sphere, normative methodological documents related to information security and safety. Organizational-technical methods include the elimination of technical devices, programs, etc. that pose a threat to the normal functioning of information and telecommunication systems. Economic methods are related to the implementation of economic measures in the field of information security and safety and their financing.

In April 1998, the Law of the Republic of Azerbaijan “On Information, Informatization and Information Protection” was adopted. It regulates the formation of information resources on the basis of the collection, processing, storage, search, dissemination of information, the creation and use of information systems, technologies, means of their provision, the relations arising in connection with the protection of information and has become important in determining the rights of subjects participating in information processes. In December 1999, a new democratic Law of the Republic of Azerbaijan “On Mass Media”, which was brought into line with the main requirements of the European Convention on Human Rights and Fundamental Freedoms, was adopted. The Law fully guaranteed all democratic information and free press requirements, free speech and independent activity.

In 2002, jointly with the Council of Europe, the Law "On Television and Radio Broadcasting", which fully met international standards, was developed and adopted. After that, in 2003, an independent state body was established to ensure the organization of activities in the field of electronic media in accordance with democratic norms and to regulate the activities of the National Television and Radio Council. The Council is subject only to the law in its activities.

In December 1999, the Law of the Republic of Azerbaijan "On Mass Media" was adopted. The law defines the general rules for searching, obtaining, preparing, transmitting, producing and distributing mass information in the Republic of Azerbaijan, as well as the organizational, legal and economic foundations of the activities of the press, information agencies, television and radio organizations, aimed at implementing the right of citizens to receive complete, truthful and operational information. Mass information is free in the Republic of Azerbaijan. Freedom of mass information is based on the state guaranteeing the right of citizens to search, obtain, prepare, transmit, produce and distribute information legally. The establishment, ownership, use and management of mass media, the search, obtaining, preparing, transmitting, producing and distributing mass information cannot be restricted except in cases provided for in the legislation of the Republic of Azerbaijan on mass media.

Article 53 of the Law on "the Activities of representatives of foreign mass media in the territory of the Republic of Azerbaijan" states that the legal status and professional activities of foreign correspondents and other representatives of foreign mass media accredited in the Republic of Azerbaijan are regulated by the legislation of the Republic of Azerbaijan and relevant intergovernmental agreements. Representative offices of foreign mass media in the Republic of Azerbaijan are opened with the consent of the relevant executive authority, unless otherwise specified in intergovernmental agreements. Accreditation of foreign correspondents in the Republic of Azerbaijan is carried out by the relevant executive authority in accordance with Article 50 of this Law. The status of a journalist established by this Law applies to foreign correspondents accredited in the Republic of Azerbaijan. Foreign correspondents not accredited in the Republic of Azerbaijan in accordance with the established procedure shall enjoy the rights and bear the duties applicable to representative offices of foreign legal entities.

The same restrictions may be imposed in response to the attitude towards a mass media correspondent of a state that has imposed special restrictions on the professional activities of correspondents of mass media of the Republic of Azerbaijan in its territory.

The Law of the Republic of Azerbaijan "On Mass Media" was amended and supplemented in November, December, and April 2002.

Article 7 of the Law of the Republic of Azerbaijan "On National Security" lists the following as the main threats to the national security of the Republic of Azerbaijan in the information sphere:

7.9.1. backwardness in the field of information technologies and the existence of obstacles to entering the world information space;

7.9.2. attempts against freedom of information;

7.9.3. attempts to reveal state secrets;

7.9.4. information aggression by other countries, distortion of the realities of Azerbaijan in the international arena;

7.9.5. attempts against the information system and its resources.

Article 20 of the Law of the Republic of Azerbaijan "On National Security" reflects "ensuring the national security of the Republic of Azerbaijan in the information sphere". It is noted here that ensuring national security in the information sphere of the Republic of Azerbaijan is the implementation of a

complex of measures aimed at protecting state, public and individual information resources, as well as protecting national interests in the information sphere. It was also noted that the main measures taken to ensure national security in the information sphere of the Republic of Azerbaijan are the following:

20.2.1. Creation and strengthening of a national system in the field of protection of information, as well as state information resources in the Republic of Azerbaijan;

20.2.2. Collection of objective and preventive information in order to implement information support for decision-making by state bodies and officials;

20.2.3. Development of information infrastructure;

20.2.4. Improvement of legal mechanisms for the protection of state secrets;

20.2.5. Fight against cybercrimes;

20.2.6. Ensuring information security and freedom.

In September 2005, the purpose of the Law of the Republic of Azerbaijan "On Access to Information" was to determine the legal basis for ensuring the right to access information, established by Article 50 of the Constitution of the Republic of Azerbaijan, freely, without hindrance and on equal terms for all, on the basis of the principles of an open society and a democratic legal state, as well as to create conditions for citizens to monitor the performance of public duties.

On 30 September 2009, the Republic of Azerbaijan acceded to "the Convention on Cybercrime", signed in Budapest in November 2001, with a declaration and reservations. Considering that the aim of the Council of Europe is to achieve unity among its members, the member states of the Council of Europe and other signatory states agreed:

- Recognizing the importance of strengthening cooperation with other States Parties to this Convention:

- Convinced of the need to pursue as a priority a common policy in the field of criminal law aimed at protecting society from cybercrime, including through the adoption of appropriate legislative acts and the strengthening of international cooperation;

- Recognizing the significant changes brought about by the penetration of digital technologies into our lives, the interconnection of computer networks and their globalization;

- Concerned about the danger of computer networks and electronic data being used to commit crimes and of evidence of such crimes being stored on or transmitted through such networks;

- Recognizing the need for cooperation between States and the private sector in combating cybercrime and the need to protect legitimate interests in the use and development of information technologies;

- Considering that effective combating cybercrime requires broad, efficient and regular international cooperation in the field of criminal law (and others)... .

In December 2021, the Law of the Republic of Azerbaijan "On Media" was adopted. In accordance with paragraphs 1, 10 and 13 of Part I of Article 94 of the Constitution of the Republic of Azerbaijan, the Law establishes the organizational, legal and economic foundations of activities in the field of media, as well as the general rules for obtaining, preparing, transmitting, producing and broadcasting mass information.

Article 11 of the Law "On Media" (Activities of branches and representative offices of foreign media entities in the Republic of Azerbaijan, representatives of foreign media) 11.2. Branches and representative offices of foreign media entities in the Republic of Azerbaijan shall be opened in the cases

provided for in international treaties to which the Republic of Azerbaijan is a party, and the procedure for their activities shall be regulated by those treaties.

11.1. The legal status and professional activities of foreign journalists and other foreign media representatives accredited in the Republic of Azerbaijan are regulated by the normative legal acts of the Republic of Azerbaijan and international treaties to which the Republic of Azerbaijan is a party.

11.2. Branches and representative offices of foreign media entities in the Republic of Azerbaijan are opened in the cases stipulated by international treaties to which the Republic of Azerbaijan is a party, and the procedure for their activities is regulated by those treaties.

According to such bilateral treaties, the activities of Azerbaijani journalists and media entities of a media entity of one country in the territory of Azerbaijan must be adequate to the activities of Azerbaijani journalists and media entities in the territory of that country. The suspension of the activities of Sputnik Azerbaijan and BBC News Azerbaijani in February 2025 was related to this issue. The decision was made in order to ensure parity in the activities of Azerbaijani state media abroad and foreign journalists in our country. The number of journalists of "Sputnik-Azerbaijan" working in Baku should be equal to the number of journalists of AZERTAC in Russia. While AZERTAC has only one correspondent in Russia, Sputnik Azerbaijan has an entire editorial office (about 40 people) operating in Baku. It is planned that the same parity approach will be applied to BBC Azerbaijani.

In this process, amendments and additions were made to the law "On Media", which are aimed at preventing future misunderstanding. The draft law on amendments to the Civil Code, the Code of Administrative Offenses, the laws "On Media" and "On State Registration and State Register of Legal Entities" was approved in the third reading. The draft law was included in the agenda of the session of the Milli Majlis held on July 14. According to the document, the concept of "media entity" in the Law "On Media" has been expanded to include branches and representative offices of foreign media entities in Azerbaijan. It is envisaged that the procedure for the activities of branches and representative offices of foreign media entities in Azerbaijan will be regulated by international agreements, and a requirement is introduced for the branch and representative office that will operate in our country to apply for inclusion in the Media Register after registering with the State Tax Service (STS). At the same time, the expression "foreign journalists" is replaced with the expression "foreign media representatives".

The draft also established a norm prohibiting the publication and dissemination of false information. In relation to news agencies, the minimum number of contracts for obtaining (providing) information with accredited journalists and other entities in foreign countries is determined, as well as requirements for the minimum ratio of information they produce are established. A norm is added that the names of media entities (editorial offices) should not be the same or similar to the names of other media entities, and that expressions that are contrary to public order, morality and ethics, and that may mislead users should not be used in their names. In order to prevent the activities of newspapers that are not in the Media Register and publish blackmailing, slanderous, biased materials, and false information, their publication and dissemination is prohibited. The illegality of media activities carried out without being in the Media Register is directly established.An amendment is made to attribute to the powers of the Media Development Agency the responsibility of taking measures on materials prohibited from publication and dissemination in the media in relation to online resources of all media entities, including branches and representative offices of foreign media entities.

There has been a long-standing gap in the legislation of the Republic of Azerbaijan regarding the activities of foreign media entities in the country. Article 11 of the Law "On Media" (and its amendments) serves to eliminate this gap.

In August 2023, the "Strategy of the Republic of Azerbaijan on Information Security and Cybersecurity for 2023-2027" was adopted by the decree of the President of the Republic of Azerbaijan. The strategy states that protecting the information space of the Republic of Azerbaijan from modern threats is one of

the main directions of national security. The dynamic development of information and communication technologies (hereinafter referred to as ICT), which is the driving force of the country's socio-economic progress, requires the analysis of existing and emerging risks in this area, the specification of protection objects, the functional stability of the information infrastructures to which they belong, the rights and legitimate interests of the subjects using these infrastructures, the implementation of preventive and remedial measures at a certain level to ensure the continuity of activities, and the continuous improvement of information security management tools.

The Strategy, which specifically notes that ensuring information security and cybersecurity has become a key issue both at the national and international levels in a rapidly globalizing world, emphasizes that the primary goal in this area is to protect the interests of people, society and the state. The factors that led to the adoption of the Strategy also include the recent expansion of technologically diverse attacks against the information space of Azerbaijan, including its components.

The strategy states that the practical activities carried out in the direction of forming and developing a national ecosystem in the field of cybersecurity have led to a significant improvement in the position of our country in international rankings. Azerbaijan improved its position by 15 points in the "Global Cybersecurity Index 2020" rating compiled by the International Telecommunication Union, ranking 40th among 194 countries with 89.31 points. The "Strategy of the Republic of Azerbaijan on Information Security and Cybersecurity for 2023-2027" serves to increase the level of national information security in order to ensure the safe use of modern ICT by the state, society and people, to organize the identification and implementation of measures to ensure the security of state and private networks, critical information infrastructures, as well as to create more favorable conditions for the protection of personal data, and to observe human rights and freedoms established by the Constitution of the Republic of Azerbaijan [Azərbaycan Respublikasının informasiya təhlükəsizliyi və kibertəhlükəsizliyə dair 2023 – 2027-ci illər üçün Strategiyası].

The Strategy addresses such urgent and extremely important issues as the development of "cloud" services, intensive awareness against "ransomware" attacks, the increase in "insider" threats, and the need for widespread use of "multi-factor authentication" methods to combat cyber threats, once again demonstrating the importance of the Strategy in the development of the country and in our lives. The Strategy also highlights the importance of creating infrastructure based on modern information technologies in the liberated territories, the implementation of the "Smart City" and "Smart Village" concepts as the main conditions for regional stability and development, and the importance of applying appropriate solutions based on "big data", "cloud", and "machine learning" technologies in this area.

During the Second Karabakh War and the post-war period, foreign forces also carried out interventions and cyberattacks in our information space. Cyberattacks Cyberattacks were mainly carried out by Armenia. During the Patriotic War, DDOS attacks were organized by Armenia. The attacks mainly targeted the Internet information resources of state institutions, the banking sector, media sites and individual users. Many cyber threats were successfully prevented as a result of a flexible, operational and effective fight.

Paragraph 6.5 of the Strategy states that cybercrime is increasing all over the world and, sometimes carried out through organized international groups, covers almost all countries with developed ICT infrastructure. The expansion of the use of modern technological tools in the Republic of Azerbaijan is also accompanied by the threat of cybercrime. Cybercrime can be large-scale and extensive, and can also result in disruption of critical infrastructures and information systems, theft of personal data, endangering people's privacy and causing moral harm to them. The lack of physical borders of cyberspace creates ample conditions for cybercriminals to carry out dangerous activities such as terrorism, sabotage, espionage, transnational organized crime, which are an international problem, by using the opportunities of this space.

DISCUSSION AND CONCLUSION

Thus, the above-mentioned laws, strategies and reforms prove that a number of important and necessary steps have been taken to establish a special information space and ensure information security after the restoration of our independence. However, the continuation of threats to our information space, such as external interference and cyberattacks, in recent years makes it necessary to continue innovative measures and reforms in the direction of information security.

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This study makes reference to the Law on Media, the National Cybersecurity Strategy of the Republic of Azerbaijan, and the Law on Cybercrime. The author acknowledges the importance of these legal and strategic documents in providing the regulatory and conceptual framework that informed the analysis and discussion presented in this article.

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GASPIRALI'NIN "DİLDE, FİKİRDE, İŞTE BİRLİK" İLKESİ IŞIĞINDA TÜRK DEVLETLERİ TEŞKİLATI'NDA ORTAK MALİYE MODELİ OLANAKLARI İNCELEMESİ

Ahmet TAŞKIN
Maliye Anabilim Dalı Yüksek Lisans Öğrencisi, Alaaddin Keykubat Üniversitesi
E-posta: ahmetfurkantaskin13@gmail.com
ORCID: 0009-0002-4088-5010

Doç. Dr. Mustafa Alpin GÜLŞEN
Alaaddin Keykubat Üniversitesi
E-posta: alpin.gulsen@alanya.edu.tr
ORCID: 0000-0002-2860-4469

Özet

Bu çalışma, Türk Devletleri Teşkilatı'na (TDT) üye ülkelerin ekonomik ve mali göstergelerinde 2018–2024 döneminde ortaya çıkan değişimleri inceleyerek, Gaspıralı'nın "Dilde, Fikirde, İşte Birlik" ilkesinin özellikle "iş'te birlik" boyutunun sayısal olarak ne ölçüde gerçekleştiğini değerlendirmektedir. Çalışmada belge tarama yöntemi uygulanmış; TDT'nin yayımladığı *Turkic Economic Outlook* raporları ile *Report on Turkic Economies 2024* gibi kurumsal veri kaynaklarında yer alan karşılaştırılabilir nicel göstergeler esas alınmıştır. Bulgular, TDT çerçevesinde ekonomik yakınlaşmanın belirgin biçimde hızlandığını, buna karşın mali yakınsamanın henüz sınırlı olduğunu göstermektedir.

Analiz sonuçlarına göre, TDT içi mal ihracatı 2018'deki **17,9** milyar dolardan 2023'te 38,3 milyar dolara çıkarak %114 artmış, böylece örgüt içi ticaretin toplam ihracat içindeki payı %4,4'ten %6,8'e yükselmiştir. Doğrudan yabancı yatırım bağları da benzer bir ivme göstermiş; 2022 itibarıyla TDT içi yatırım stoku 28 milyar dolar düzeyine ulaşarak tüm DYY stokunun %5,1'ini oluşturmuştur. Bu veriler, ekonomik düzlemde "iş'te birlik" ilkesinin özellikle ticaret ve yatırım ilişkileri üzerinden ölçülebilir biçimde güçlendiğini ortaya koymaktadır.

Maliye göstergeleri ise daha karmaşık bir tablo sunmaktadır. Ülkelerin ortalama bütçe açığı 2020'de GSYH'nin %4,2'si düzeyindeyken 2023'te %2,6 seviyesine gerilemiş ve kamu borcu/GSYH oranları genel olarak düşüş eğilimine girmiştir. Bununla birlikte, bütçe dengesi varyansı ve borç oranları arasındaki farklılıklar ülkeler arasında mali yakınsamanın henüz oluşmadığını göstermektedir. Sayısal testler, mali göstergelerde belirgin bir β-yakınsaması bulunmadığını; ülkelerin bütçe ve borç profillerinin kısa dönemde uyumlanmaktan ziyade ayrıştığını işaret etmektedir.

Sonuç olarak, çalışma Türk Devletleri arasında ekonomik entegrasyonun güçlü bir ivme kazandığını, ancak mali entegrasyonun henüz erken aşamada bulunduğunu göstermektedir. Ekonomik ilişkilerin genişlemesi ve kurumsal iş birliği adımlarının artması, gelecekte ortak maliye modeli için gerekli zemini güçlendirse de mevcut veriler bu modelin kısa vadede hayata geçirilmesinin mümkün olmadığını ortaya koymaktadır. Buna rağmen TDT ülkelerinin ticaret, yatırım ve bütçe disiplinindeki uyum trendleri, uzun vadeli bölgesel mali bütünleşme hedefi açısından olumlu bir yönelime işaret etmektedir.

Anahtar Kelimeler: Türk Devletleri Teşkilatı, Ortak Maliye Modeli, Ekonomik Entegrasyon.

Abstract

This study analyzes the changes in the economic and fiscal indicators of the member states of the Organization of Turkic States (OTS) between 2018 and 2024, assessing the extent to which Gasprinski's principle of *"Unity in Language, Thought, and Deed"*—particularly its component of *"unity in deed"*—has been realized in quantitative terms. Employing the document analysis method, the study draws on comparable numerical indicators presented in institutional sources such as the *Turkic Economic Outlook* reports issued by the OTS and the *Report on Turkic Economies 2024*.

The analysis demonstrates that intra-OTS merchandise exports increased from USD 17.9 billion in 2018 to USD 38.3 billion in 2023, reflecting a 114% rise. Consequently, the share of intra-organizational trade in total exports expanded from 4.4% to 6.8%. Foreign direct investment relations show a similar upward trajectory; by 2022 the intra-OTS FDI stock had reached USD 28 billion, accounting for 5.1% of the total inward FDI stock. These developments indicate that the principle of "unity in deed" has become increasingly observable in measurable terms, particularly through trade and investment channels.

Fiscal indicators, however, present a more heterogeneous and complex pattern. Although the average budget deficit of member states declined from 4.2% of GDP in 2020 to 2.6% in 2023, and public debt-to-GDP ratios exhibited an overall downward trend, cross-country disparities persist. Variations in budget balance performance and debt ratios suggest that fiscal convergence has not yet taken shape within the OTS. Statistical tests further confirm the absence of significant β-convergence in fiscal indicators, implying that, in the short run, the fiscal profiles of member states tend to diverge rather than align.

In sum, the study provides evidence that economic integration among the Turkic States has gained substantial momentum, whereas fiscal integration remains in its formative stage. While expanding economic relations and strengthened institutional cooperation contribute to building the long-term foundations of a potential common fiscal framework, the current data indicate that the implementation of such a model is not feasible in the short term. Nonetheless, the observed trends in trade, investment, and improvements in budget discipline signal a favorable trajectory for deeper fiscal cohesion and future regional fiscal integration.

Keywords: Organization of Turkic States, Common Fiscal Model, Economic Integration,

GİRİŞ

Türk dünyasında son otuz yılda ivme kazanan bölgesel bütünleşme girişimleri, başlangıçta daha çok kültürel ve siyasal iş birliği başlıkları etrafında şekillenmiş; zamanla ekonomik, finansal ve kurumsal entegrasyon boyutunu da içerecek şekilde genişlemiştir. Türk Devletleri Teşkilatı'nın (TDT) kurulması ve giderek kurumsal bir çatıya kavuşması, bu dönüşümün kurumsal yansıması olarak değerlendirilebilir. Diğer yandan, İsmail Gaspıralı'nın "Dilde, Fikirde, İşte Birlik" ilkesi, söz konusu entegrasyon arayışlarına yalnızca tarihsel bir referans değil, aynı zamanda kurumsal ve işlevsel bütünleşmenin normatif çerçevesini sunan düşünsel bir zemin teşkil etmektedir. Bu bağlamda, TDT çatısı altında ortak bir maliye modelinin geliştirilmesi fikri hem güncel bölgesel entegrasyon dinamiklerinin hem de Gaspıralı'nın entegrasyon felsefesinin kesişim kümesinde konumlanmaktadır.

Bu çalışmanın temel amacı, Gaspıralı'nın "Dilde, Fikirde, İşte Birlik" ilkesini yalnızca sembolik bir söylem unsuru olarak değil, TDT'de tasarlanabilecek olası bir ortak maliye modelinin düşünsel çerçevesi ve normatif referans kaynağı olarak yeniden okumaktır. Bu çerçevede çalışma, (i) TDT'nin mevcut ekonomik ve kurumsal yapısının ortak maliye modeline ne ölçüde elverişli olduğunu analiz etmeyi, (ii) son dönemde geliştirilen ekonomik ve finansal iş birliği mekanizmalarının hangi açılardan "ortak maliye modeli "ne geçiş için kurumsal öncüller oluşturduğunu tartışmayı ve (iii) mevcut göstergeler, raporlar ve teorik yaklaşımlar ışığında TDT'de kademeli bir mali entegrasyonun olanak ve sınırlarını analitik biçimde ortaya koymayı hedeflemektedir. Çalışma, bu yönüyle hem entegrasyon

teorileri literatürüne hem de TDT'ye ilişkin güncel politika tartışmalarına kavramsal bir katkı sunmayı amaçlamaktadır.

Kapsam bakımından çalışma, ağırlıklı olarak TDT üyesi ülkelerin kurumsal yapılanmaları, makroekonomik göstergeleri, ticaret ve ulaştırma altyapıları, finansal entegrasyon araçları ve bu alanlarda kabul edilen strateji belgeleri ve raporlar üzerinden yürütülmektedir. Bu doğrultuda, akademik makaleler, TDT ve ilgili kurumlarca yayımlanan resmî belgeler ve entegrasyon teorileri literatürü başlıca veri kaynaklarını oluşturmaktadır. Yöntemsel olarak çalışma, nitel bir çerçevede doküman analizine dayanmaktadır; nicel veriler ise daha çok TDT'nin ekonomik ve mali entegrasyon kapasitesine ilişkin tartışmanın zemininin güçlendirilmesi amacıyla kullanılmaktadır.

Çalışma kurgusu ise giriş bölümünün ardından ikinci bölümde, Gaspıralı'nın "Dilde, Fikirde, İşte Birlik" ilkesinin entegrasyon felsefesine etkisi ele alınmakta; ilkenin üç katmanlı yapısının (dilde, fikirde ve işte birlik) güncel TDT yapılanması ve entegrasyon teorileriyle nasıl kesiştiği tartışılmaktadır. Üçüncü bölümde, TDT'nin mevcut ekonomik ve kurumsal yapısı incelenmekte; örgütün organları, strateji belgeleri, 2040 Vizyonu, ulaştırma ve enerji projeleri ile finansal iş birliği mekanizmaları üzerinden bölgesel entegrasyon kapasitesi analiz edilmektedir. Dördüncü bölüm, doğrudan çalışmanın amacını oluşturan "Ortak Maliye Modeli Olanakları "na ayrılmış olup, TDT bünyesinde geliştirilen finansal ve kurumsal araçların (merkez bankaları iş birliği, Türk Yatırım Fonu, dijital finans ve ticaret kolaylaştırma girişimleri vb.) ortak maliye modeline geçiş açısından nasıl bir "ön entegrasyon zemini" oluşturduğu tartışılmaktadır. Beşinci bölümde, elde edilen bulgular ışığında TDT'de ortak maliye modeline yönelik yapısal, kurumsal ve siyasal zorluklar değerlendirilmekte; makroekonomik farklılıklar, yönetişim kapasitesi, ticaret ve ulaştırma altyapısındaki asimetriler ile egemenlik hassasiyetleri tartışılmaktadır. Son olarak sonuç bölümünde, çalışma genelinde ulaşılan bulgular sentezlenmekte ve TDT bağlamında Gaspıralı'nın ilkesine dayalı kademeli bir ortak maliye modelinin hangi koşullar altında sürdürülebilir olabileceğine ilişkin genel değerlendirmeler ile politika düzeyinde öneriler sunulmaktadır.

Gaspıralı'nın İlkesinin Entegrasyon Felsefesine Etkisi

İsmail Gaspıralı'nın "Dilde, Fikirde, İşte Birlik" ilkesi, Türk dünyasının modern dönemdeki bütünleşme arayışlarını duygusal bir söylem düzeyinin yanısıra kurumsal entegrasyon mantığı açısından da belirleyen tarihsel bir referans noktasıdır. İlke, ortak dil üzerinden zihinsel uyumu, ortak düşünsel zemin üzerinden stratejik yönelim birliğini ve nihayetinde ortak eylem üzerinden kurumsal ve pratik entegrasyonu ima eden üç katmanlı bir bütünleşme felsefesine işaret etmektedir. Bu açıdan bakıldığında, ilkenin günümüzde Türk Devletleri Teşkilatı'nın (TDT) inşa etmeye çalıştığı kurumsal yapı ile arasında kavramsal bir süreklilik olduğu görülmektedir.

TDT'nin tarihsel gelişimi ve konumlanışı incelendiğinde, entegrasyon felsefesinin dil, tarih ve kimlik boyutlarında zaten güçlü bir zemin üzerine oturduğu görülmektedir. Bu açıdan Akçapa (2023:476) Türk dünyasındaki entegrasyon çabalarının dil, tarih ve kimlik temelleri üzerine inşa edildiğini; ancak bu çabaların "ayakları yere basan" ve tüm paydaşların çıkarlarını gözeten bir evreye evrilmesi gerektiğini vurgulamaktadır. Bu tespit, Gaspıralı'nın ilkesinin birinci ve ikinci bileşeninin (bir diğer ifadeyle dilde ve fikirde birlik ilkelerini) TDT bağlamında kimlik temelli dayanışmadan iş/çıkar temelli, fonksiyonel entegrasyona geçişin normatif arka planını oluşturduğunu göstermektedir. Ortak dil ve kültür, Gaspıralı'nın öngördüğü şekilde, bugün TDT için hem meşruiyet kaynağı hem de ilerleyen iş birliği için birleştirici sermaye işlevi görmektedir. Diğer yandan, Gaspıralı'nın "işte birlik" vurgusu, entegrasyon felsefesinin sadece söylemde değil, somut kurumsal tasarımlar ve ortak politikalar üzerinden de hayata geçirilmesi gereğini öne çıkarmaktadır. Korkmaz ve Soğukoğlu Korkmaz (2024: 472-475), TDT'yi içinde bulunduğu coğrafyada stratejik bir birlik olarak konumlandırmakta ve örgütün ekonomik, finansal ve kurumsal kapasite inşasına dönük yeni mekanizmalar geliştirdiğini belirtmektedir. Yazarların vurguladığı üzere, Merkez (Ulusal) Bankalar Konseyi, Banka Birlikleri Konseyi, Fintek İş Birliği Platformu ve Türk Yatırım Fonu gibi yapılar, üye devletlerin ekonomik ve finansal alanda

eşgüdümlü hareket etmesini sağlayacak kurumsal araçlar olarak tasarlanmaktadır. Bu çerçevede, Gaspıralı'nın "işte birlik" ilkesi, TDT'nin kurumsal inşasını ve özellikle iktisadi ve mali alandaki eşgüdüm çabalarını meşrulaştıran tarihsel/fikrî bir arka plan olarak okunabilir.

Entegrasyon teorileri açısından bakıldığında, Gaspıralı'nın ilkesi ile TDT'nin güncel kurumsal yapılanması arasında ilginç bir kesişim alanı ortaya çıkmaktadır. Tekir (2023: 1084), TDT'yi yeni-işlevselcilik ve devletler-arasıcılık teorileri bağlamında değerlendirirken, örgütün hem işlevsel alanlardaki iş birliğinden doğan "spill-over" etkilerini hem de üye devletlerin egemenlik kaygılarını gözeten devletlerarası müzakere dinamiklerini birlikte barındırdığını tespit etmektedir. Gaspıralı'nın ilkesinin, "fikirde birlik" boyutuyla ortak stratejik vizyon üretimini, "işte birlik" boyutuyla ise seçilmiş alanlarda derinleşen iş birliğini önceleyen bu hibrit entegrasyon modeline tarihsel bir düşünsel zemin sunduğu söylenebilir. Böylece ilke hem kimlik temelli dayanışmayı hem de işlevsel, tedricî ve egemenlik hassasiyetlerini gözeten entegrasyon adımlarını birlikte teşvik eden normatif bir çerçeve haline gelmektedir.

TDT literatüründe özellikle vurgulanan hususlardan biri, Türk dünyasının sahip olduğu stratejik avantajların, ortak hareket kapasitesiyle birleştiğinde entegrasyonun çok boyutlu bir sinerji üretebileceğidir. Nitekim Korkmaz ve Soğukoğlu Korkmaz (2024: 472), Türkiye'nin bölgesel gücü ile enerji ve hammadde zenginliğine sahip diğer Türk devletlerinin potansiyellerinin birlikte düşünüldüğünde, ortaya çıkan ilişkinin "sinerji yaratacak" boyutta olduğuna işaret etmektedir. Bu değerlendirme, Gaspıralı'nın ilkesinin üçüncüsü olan "işte birlik" bileşeninin günümüz entegrasyon felsefesinde somut karşılığını bulduğu noktalardan biridir: Ortak tarih ve kimlikten doğan sembolik birliktelik, ortak projeler, yatırım fonları, ulaşım koridorları ve mali koordinasyon mekanizmaları üzerinden daha sistemli bir sinerjiye dönüştürülmeye çalışılmaktadır. Bu bağlamda, TDT'de tasarlanacak olası bir ortak maliye modelinin entegrasyon felsefesi açısından Gaspıralı'nın ilkesiyle uyumlu olarak üç düzeyde okunabilir. Birincisi, "dilde birlik" boyutu, mali terminolojinin, istatistik sınıflandırmalarının ve raporlama standartlarının yakınsamasını; başka bir deyişle ortak bir mali dilin inşasını gerekli kılmaktadır. İkincisi, "fikirde birlik" boyutu, maliye politikalarının temel ilkeleri, fiyat istikrarı, mali disiplin, kalkınma öncelikleri ve bölgesel yeniden dağıtım mekanizmaları konusunda ortak bir normatif çerçevenin oluşturulmasına işaret etmektedir. Üçüncüsü ise "işte birlik" boyutu, Türk Yatırım Fonu örneğinde olduğu gibi eşit sermaye ve eşit oy hakkına dayalı mali araçlar, ortak fonlar ve eşgüdümlü mali kurumlar üzerinden somut kurumsal mimarinin inşasıyla ilişkili olduğu söylenebilir. Dolayısıyla Gaspıralı'nın tarihsel ilkesinin, TDT'de ortak maliye modeline giden yolda hem kimlik temelli dayanışmayı hem de kurumsal ve teknik entegrasyon adımlarını aynı anda besleyen bir entegrasyon felsefesi olarak yeniden anlamlandırıldığı söylenebilir.

3. **Türk Devletleri Teşkilatı'nın Ekonomik ve Kurumsal Yapısı**

Türk Devletleri Teşkilatı (TDT), Türk dünyasında siyasal, ekonomik ve kurumsal entegrasyon süreçlerinin tek bir stratejik çatı altında yeniden ölçeklendirildiği bölgesel bir yönetişim modeli olarak giderek daha belirgin bir konum edinmektedir. Bu dönüşümün kurumsal düzeyde görünür hâle geldiği önemli bir aşama, 2021 İstanbul Zirvesi ile TDT'ye geçiş sürecidir. Bu zirveyle teşkilatın adından ziyade ekonomik yönetişim kapasitesini şekillendirecek olan karar alma mekanizmaları da yeniden düzenlenmiştir. Tekir (2023:1089)'in belirttiği gibi Devlet Başkanları Konseyi, Dışişleri Bakanları Konseyi, Aksakallar Konseyi, Kıdemli Memurlar Komitesi ve Sekretarya gibi organlar, TDT'nin devletlerarası iş birliğini kurumsal olarak yeniden tanımlayan bütüncül bir mimari ortaya koymaktadır. Bu kurumsal altyapı, ekonomik entegrasyonun stratejik ölçeğini belirleyen temel zemin niteliğindedir. Türk dünyasının toplam 1,1 trilyon dolarlık GSYH'ye ve 560 milyar dolarlık dış ticaret hacmine sahip olmasına rağmen, iç ticaret hacminin bu potansiyeli yansıtmaktan uzak olduğu görülmektedir. Tekir'in aktardığı Türkiye-TDT ülkeleri arasındaki 7,57 milyar dolarlık ticaret hacmi (2020) (Tekir, 2023, s. 1088), mevcut entegrasyon düzeyinin bölgesel ekonomik kapasite ile uyumlu olmadığını göstermektedir. Buna karşın Çınar ve Uzun (2023:141-156)'un vurguladığı genç nüfus, enerji

altyapıları, ulaştırma koridorları ve geniş coğrafyanın sunduğu stratejik avantajlar, entegrasyonun hızlanması için güçlü bir potansiyel ortaya koymaktadır. Bu nedenle TDT'nin ekonomik yapısındaki dönüşüm, mevcut rakamlarla sınırlı bir değerlendirme olmayıp uzun vadeli yapısal kapasite analizi gerektirmektedir.

Finansal ve ekonomik iş birliğinin kurumsal düzeyde güçlendiği en önemli alanlardan biri, merkez bankaları arasındaki entegrasyon sürecidir. 2024 Bişkek Zirvesi'nde imzalanan Mutabakat Zaptı ile Türk Devletleri Üye Ülkeleri Merkez (Ulusal) Bankaları Konseyi'nin kurulması, para politikasında bölgesel koordinasyonun ilk kurumsal çerçevesini oluşturmuştur (Korkmaz & Korkmaz, 2024, s. 485). Konseyin düzenli veri paylaşımı, finansal istikrar raporlamalarının uyumlaştırılması ve ödeme sistemlerinin standardizasyonu gibi işlevleri üstlenecek olması, bölgesel para politikası iletişiminin uzun vadede daha uyumlu bir zemine taşınacağını göstermektedir. Aynı çalışmada yer alan Fintek İş Birliği Platformu girişimi ise dijital ekonomi ve finans teknolojilerinin ortak bir altyapı üzerinden kurgulanmasına yönelik tamamlayıcı bir nitelik göstermektedir. "Dijital İpek Yolu" vizyonunun bu bağlamda kurumsal bir çerçeveye kavuşması, ekonomik bütünleşmenin teknoloji boyutunu da güçlendirmektedir (Korkmaz & Korkmaz, 2024, s. 486–487). Finansal kurumsallaşmanın en somut boyutunu oluşturan Türk Yatırım Fonu ise TDT'nin ekonomik dönüşüm kapasitesini ileriye taşıyan yapısal bir araç niteliğindedir. 2023 Ankara Olağanüstü Zirvesi'nde kabul edilen kuruluş anlaşmasıyla fon, özellikle KOBİ odaklı finansman modelleri ve altyapı yatırımlarının ortak finansmanı üzerinden bölgesel ekonomik bütünleşmenin ana kaldıraçlarından biri hâline gelmiştir (Korkmaz & Korkmaz, 2024, s. 486-488). Söz konusu çalışmalarda vurguladığı gibi fonun ticaret hacmini artırma, ortak yatırım projelerine ivme kazandırma ve istihdam yaratma kapasitesi, TDT'nin uzun vadeli ekonomik yaklaşımının temel bileşenidir.

TDT'nin ekonomik bütünleşmesine yön veren bir diğer çerçeve, 2040 Vizyonu 'dur. Bu belge, orta ve uzun vadeli kurumsallaşma hedeflerine oldukça önemli bir yön tayin etmektedir. Belgede (i) serbest ticaret bölgelerinin oluşturulması, (ii) gümrük mevzuatının uyumlaştırılması ve (iii) ortak ekonomik alan oluşturulması gibi hedefler yer almaktadır (Yılmaz (2024: 114-117). Asadov (2023) da bu yapısal dönüşümü destekleyen mekanizmalara vurgu yapmaktadır. Ticaret Kolaylaştırma Komitesi'nin işlevselleştirilmesi, elektronik ticaret altyapılarının uyumlaştırılması ve dijital dönüşümün hızlandırılması bu sürecin teknik boyutunu oluşturmaktadır. Bu bağlamda "Ortak Ekonomik Alan" hedefi, TDT ülkelerinin ekonomik yönetişimde mevzuat, standardizasyon ve uygulama düzeyinde yakınsama sağlamasını amaçlayan uzun vadeli bir entegrasyon rotasını oluşturduğu söylenebilir. Diğer taraftan Kazakistan'ın Türkistan bölgesinde önerdiği TURAN Special Economic Zone (TURANCEZ) ise ekonomik entegrasyonu üretim, lojistik ve yatırım üzerinden hızlandırabilecek yenilikçi bir model olarak öne çıkmaktadır (Huseyn, 2023, s. 21). Aynı raporda yer alan Türk Yeşil Finans Konseyi ve Türk Ülkeleri Ticaret Araştırma Merkezi önerileri, ekonomik yönetişimin finans, sürdürülebilirlik ve ticari istihbarat alanlarında da kurumsal bir derinlik kazandığını göstermektedir. Bu girişimlerin ortak özelliği, TDT'nin ekonomik iş birliği araçlarını farklı boyutlara taşıması ve kurumsal olarak çeşitlendirmesidir. Benzer şekilde ulaştırma alanındaki entegrasyon ise TDT ekonomisinin mekânsal bütünleşme potansiyelini belirleyen temel unsur konumundadır. Özellikle Hazar geçişli ulaştırma ağlarının güçlendirilmesi ve liman otoriteleri arasındaki koordinasyonun artırılması, Orta Koridor'un küresel tedarik zincirleri içindeki stratejik önemini artırmaktadır (Yalçın, 2024: 82). Orta Koridor'un güçlendirilmesi, yalnızca transit taşımacılık kapasitesini artırmakla kalmamakta; aynı zamanda TDT'nin Avrasya ticaret akımlarındaki konumunu kalıcı biçimde yukarı taşımaktadır. Bu nedenle ulaştırma, ticari entegrasyonun tamamlayıcı değil; kurucu bir bileşeni olarak değerlendirilmektedir. Bununla birlikte enerji iş birliği ise TDT'nin ekonomik entegrasyonunun üçüncü ayağını oluşturmaktadır. TANAP'ın 75 milyar metreküpü aşan gaz akışı sağlaması ve Azerbaycan-Türkiye enerji projelerinin yüksek yatırım hacmine ulaşması, enerji güvenliği boyutunun TDT kapsamında somut bir bölgesel kapasiteye dönüştüğünü göstermektedir (Museyibov ve Satiji 2024, 51). Dijital Ekonomi Ortaklık Anlaşması (DEPA) ve Hizmet Ticareti ile Yatırım Kolaylaştırma Anlaşması müzakereleri de enerji, dijital dönüşüm ve lojistik alanlarında yönetişim uyumunu derinleştiren tamamlayıcı araçlar olarak ifade edilebilir.

4. Ortak Maliye Modeli Olanakları

Türk Devletleri Teşkilatı'nın (TDT) son yıllarda geliştirdiği ekonomik ve kurumsal mekanizmalar, fiilen "ortak maliye modeli" ne giden bir yol haritası ortaya koymakla birlikte, bu modelin (bildiğimiz kadarıyla) henüz herhangi bir belgede ifade edilmediği görülmektedir. Mevcut düzenlemeler bir arada okunduğunda, bölge için tam teşekküllü bir mali birlikten ziyade, kademeli bir mali entegrasyonun şekillenmekte olduğu söylenebilir. Bu çerçeve, (i) ortak yatırım ve kalkınma fonları, (ii) finansal piyasalar ve bankacılık alanında yakınsama, (iii) ticaret ve yatırımın kolaylaştırılması yoluyla vergi tabanının genişletilmesi ve (iv) maliye politikası koordinasyonunu mümkün kılacak veri ve kurum altyapısının güçlendirilmesi eksenlerinde ilerlemektedir.

Öncelikle, TDT strateji belgeleri ve sektörel raporları, örgüt içi ekonomik entegrasyonun çekirdeğini ticaret kolaylaştırma, yatırım ortamının iyileştirilmesi ve "ortak ekonomik alan" vizyonu etrafında kurgulamaktadır. "Gasimli (2023)'nin editörlüğünü yaptığı Turkic States Economy" kitabında özetlenen 2022–2026 Stratejisi, ekonomik iş birliğinin odak noktasını ticaretin kolaylaştırılması, hizmetler ve yatırımlar alanında serbest ticaret anlaşmalarının araştırılması, ticari prosedürlerin dijitalleştirilmesi, şeffaf kural setlerinin oluşturulması ve ticarete ilişkin bilgi değişiminin kurumsallaştırılması olarak tanımlamaktadır. Aynı strateji, özel sektör iş birliğini güçlendirmek, Türk Ticaret ve Sanayi Odası'nın rolünü artırmak ve büyük ölçekli yatırım fırsatlarını desteklemek gibi hedeflerle, maliye politikasının gelir tarafını doğrudan etkileyen bir üretim ve yatırım tabanı oluşturmayı amaçlandığı anlaşılmaktadır. Bu yönelim, ortak maliye modelinin yalnızca bütçe ve vergi başlıklarıyla sınırlı kalamayacağını; üretim yapısının, ticaret ve yatırım ağlarının da modelin ayrılmaz unsurları olduğunu göstermektedir. Bununla birlikte finansal iş birliği boyutu, ortak maliye modelinin kurumsal altyapısı açısından belirleyici bir öneme sahiptir. Korkmaz ve Korkmaz'ın TDT'nin bankacılık ve finans boyutuna ilişkin çalışması, hem Merkez (Ulusal) Bankaları Konseyi hem de Fintek İş Birliği Platformu gibi mekanizmalar üzerinden para ve finans alanında koordinatif bir çerçeve kurulduğunu ortaya koymaktadır (Korkmaz & Korkmaz, 2024).Merkez bankaları arasındaki bu kurumsal yapı, orta vadede döviz kuru rejimleri, ödemeler dengesi, sermaye hareketleri ve finansal istikrar politikalarının daha uyumlu yürütülmesini kolaylaştırabilecek bir "makro-finansal diyalog platformu" sunmaktadır. Aynı zamanda, "Dijital İpek Yolu" vizyonu etrafında şekillenen fintek iş birliği, ödeme sistemlerinin entegrasyonu ve dijital para mimarilerinde ortak standartlar geliştirilmesi açısından, gelecekte maliye politikası ile para politikası arasında daha koordineli bir çerçeve kurulmasına zemin hazırlayacağı düşünülmektedir. Diğer taraftan Türk Yatırım Fonu ise ortak maliye modelinin "ortak bütçe benzeri" işlev görebilecek en somut bileşeni olarak öne çıkmaktadır. Ankara'daki 2023 Olağanüstü Zirve'de kabul edilen anlaşmayla kurulan fonun, KOBİ'lere yönelik finansman, ortak altyapı projelerinin desteklenmesi ve bölge içi yatırımların artırılması gibi hedeflerle tasarlandığı görülmektedir. Bu bağlamda fon, klasik anlamda bir "ortak bütçe" olmasa da bölgesel mali kapasitenin belirli öncelikler doğrultusunda havuzlandığı ve dağıtıldığı yarı-mali bir araç gibi işlev gördüğü söylenebilir. Bu hedefler, bir yandan finansal entegrasyonu derinleştirirken; diğer yandan ortak maliye modelinin dayandığı parasal ve mali bileşenlerin birlikte tasarlanmasına imkân tanımaktadır. Özellikle ulusal para birimlerinin kullanımının artması ve finansal piyasalar arası entegrasyon, orta vadede ortak borçlanma araçları ve bölgesel tahvil piyasaları gibi yeni mali enstrümanların geliştirilmesine de imkân tanımaktadır.

5. Tartışma

Türk Devletleri Teşkilatı'nın (TDT) ekonomik bütünleşme potansiyeli üzerine yürütülen değerlendirmeler, örgütün kurumsal olarak hızla güçlendiğini ancak yapısal farklılıklar, ticaret altyapısı, kurumsal yönetişim ve mali uyum alanlarında da bütünleşmeye ihtiyaç duyduğunu göstermektedir. TDT ülkelerinin toplam 1,1 trilyon dolarlık GSYH'sine rağmen üye ülkeler arası ticaretin sınırlı düzeyde kalması, entegrasyonun henüz başlangıç aşamasında olduğunu da gösterdiği söylenebilir. Bu durum özellikle Türkiye'nin diğer Türk devletleriyle 2020 yılı itibarıyla yalnızca 7,57 milyar dolarlık bir dış

ticaret hacmine sahip olmasıyla doğrulanmaktadır. Ekonomik potansiyel ile fiili entegrasyon arasındaki bu fark, TDT'nin mali bütünleşme perspektifindeki tartışmaların merkezinde yer almaktadır.

Makroekonomik farklılıklar da tartışmayı doğrudan şekillendiren bir başka unsurdur. Özellikle Kazakistan ve Kırgızistan'ın ticaret kolaylaştırma göstergelerinde dikkat çekici performans açıkları bulunması, üye ülkeler arasında homojen olmadığını göstermektedir. OECD Ticaret Kolaylaştırma Göstergeleri'ne göre Kazakistan'ın "yönetişim ve tarafsızlık" alanında 0,25 gibi düşük bir skor elde etmesi; mevzuat ve diğer kurumların koordinasyonu gibi alanlarda da belirgin iyileşme gereksinimi bulunması, bölgesel entegrasyonun altyapıdan kurumsal düzeye uzanan çok boyutlu zorluklar içerdiğini göstermektedir. Kırgızistan'da benzer şekilde kurumlar arası koordinasyon alanlarındaki düşük göstergeler, ortak maliye modeli tartışmalarında teknik kapasite farklılıklarının göz önünde bulundurulması gerektiğini ortaya koymaktadır. Bununla birlikte ticaret ve yatırım ilişkilerindeki yeni eğilimler, TDT'nin bütünleşme kapasitesini artıran dinamikleri de ortaya koymaktadır. Ukrayna savaşı sonrasında bölge ülkelerinin dış ticaret hacimlerinde gözlemlenen artış -örneğin 2022 yılında Azerbaycan'ın ticaret hacminin %72 artması- Orta Koridor'un stratejik öneminin hızla yükseldiğini göstermektedir. Orta Koridor'un, Azerbaycan'dan Gürcistan ve Türkiye'ye uzanan hat üzerinden Avrupa–Asya ticaretini hızlandırıcı etkisi, TDT'nin bütünleşme tartışmalarında ulaştırma altyapısını ele almayı zorunlu kılmaktadır. BTK Demiryolu, Trans-Kazakistan demiryolu ve Hazar'daki liman modernizasyonları gibi projeler, bölgesel ticaret akımlarını artırma potansiyeli taşımaktadır. Bu ulaştırma tabanlı iş birliğinin ekonomik entegrasyon üzerindeki etkisi, mikro düzeyde de somutlaşmaktadır. Özellikle Azerbaycan ve Türkmenistan arasında 2022'de başlatılan düzenli feribot seferleri, Hazar geçişli lojistiğin maliyet ve zaman etkinliğini artırmaya dönük önemli bir adımdır. Bu tür bölgesel altyapı hareketlerinin ortak maliye modeli için önemi, gümrük gelirlerinin uyumu, transit vergilendirme politikalarının standardizasyonu ve kamu yatırımlarının eşgüdümü gibi maliye politikalarının teknik uyum alanlarına doğrudan yansımasıdır.

Tartışmanın bir başka boyutu, TDT üyelerinin farklı siyasi ve kurumsal yönetişim geleneklerine sahip olmasıdır. Özbekistan'ın uzun süre dış politikada "mustaqillik" (bağımsızlık) anlayışıyla hareket ederek entegrasyon girişimlerine temkinli yaklaşması, ortak maliye modeli vizyonunun erken dönemlerde sınırlı kalmasının önemli nedenlerinden biridir. Ancak Mirziyoyev dönemiyle birlikte Özbekistan'ın dış politikada daha proaktif ve entegrasyona açık bir çizgiye geçmesi, TDT'nin kurumsal genişlemesinin mali entegrasyon tartışmaları açısından da yeni fırsatlar doğurduğunu göstermektedir.

Bütün bu bulgular ışığında tartışmanın merkezi sorusu şudur: TDT, verilerin gösterdiği yapısal çeşitlilik ve kurumsal farklılıklara rağmen ortak maliye modeline doğru ilerleyebilir mi? Mevcut veriler, kısa vadede tam kapsamlı bir mali birlik oluşturmanın kurumsal kapasite ve yönetişim farklılıkları sebebiyle güç olduğunu göstermektedir. Ancak ticaret kolaylaştırma politikalarının standardizasyonu, yatırım fonlarının ortaklaştırılması, ulaştırma altyapısında ortak projelerin çoğalması ve Özbekistan gibi ülkelerin entegrasyona daha açık hâle gelmesi, kademeli, çok aşamalı ve teknik uyuma dayalı bir mali modelin uygulanabilir olduğunu göstermektedir. Dolayısıyla TDT'nin entegrasyon süreci, Avrupa Birliği örneğinde olduğu gibi yukarıdan aşağı "kurumsal bütünleşme" yerine, aşağıdan yukarı ekonomik yakınsama ve sektörel uyum üzerinden ilerleyen bir modeldir. Bu çerçevede TDT'nin ekonomik büyüklüğü, stratejik konumu, ulaşım koridorları, enerji kaynakları ve ortak kültürel zemini, ortak maliye modelinin orta vadede uygulanabilirliğini destekleyen güçlü argümanlar sunmaktadır

SONUÇ

Bu çalışma, İsmail Gaspıralı'nın "Dilde, Fikirde, İşte Birlik" ilkesini, Türk Devletleri Teşkilatı (TDT) çerçevesinde tasavvur edilebilecek ortak maliye modeli olanaklarıyla birlikte ele alarak, normatif bir entegrasyon ideali ile güncel kurumsal gerçeklik arasındaki kesişim alanını tartışmaktadır. Elde edilen bulgular, Gaspıralı'nın ilkesinin, yalnızca tarihsel ve sembolik bir referans olmanın ötesine geçerek hem kimlik temelli dayanışmayı hem de işlevsel, tedricî ve egemenlik hassasiyetlerini gözeten bir

entegrasyon mantığını destekleyen düşünsel bir çerçeve sunduğunu göstermektedir. "Dilde birlik", ortak bir mali dil, sınıflandırma ve istatistik standardizasyonunu; "fikirde birlik", maliye politikası ilkelerinde normatif uyumu; "işte birlik" ise somut kurumsal araçlar, fonlar ve eşgüdümlü mali kurumlar üzerinden hayata geçirilen pratik entegrasyonu işaret etmektedir.

TDT'nin ekonomik ve kurumsal yapısına ilişkin inceleme, örgütün son yıllarda belirgin bir kurumsallaşma ve işlevselleşme sürecine girdiğini, ancak bölgesel ekonomik kapasite ile fiili entegrasyon düzeyi arasında hâlen önemli bir fark bulunduğunu ortaya koymuştur. Bir yandan Devlet Başkanları Konseyi'nden Merkez Bankaları Konseyi'ne, Türk Yatırım Fonu'ndan 2040 Vizyonu'na uzanan kurumsal yapı, TDT'yi klasik bir kültürel dayanışma platformunun ötesine taşıyarak bölgesel bir yönetişim modeli hâline getirmiştir. Diğer yandan Türk dünyasının 1,1 trilyon dolarlık GSYH ve ciddi bir dış ticaret hacmine rağmen iç ticaret ve üretim zinciri entegrasyonunun sınırlı düzeyde olması, ortak maliye modeline geçişin ancak ekonomik derinleşmeyle birlikte anlamlı olabileceğini göstermektedir. Bu bulgu, çalışmanın başındaki temel sorunsalı doğrular niteliktedir: Ortak maliye modelinin sürdürülebilirliği, yalnızca kurumsal irade ile değil, aynı zamanda reel ekonomik yakınsama ile mümkündür.

Ortak maliye modeli olanakları bağlamında değerlendirildiğinde, TDT'nin bugün itibarıyla "tam teşekküllü bir mali birlik"ten çok "kademeli bir mali entegrasyon" sürecinde olduğu söylenebilir. Merkez (Ulusal) Bankalar Konseyi, Fintek İş Birliği Platformu, Türk Yatırım Fonu, ticaretin kolaylaştırılması gündemi, "Ortak Ekonomik Alan" hedefi ve dijital ekonomi girişimleri; tek bir maliye otoritesine dayalı bir entegrasyon yerine, fon temelli, proje odaklı, teknik alanlarda yakınsama üreten bir modelin inşa edilmekte olduğuna işaret etmektedir. Finansal piyasalar arası iş birliği, ulusal para birimleriyle ticaret, ortak yatırım projeleri ve ulaştırma–enerji entegrasyonu, orta vadede ortak borçlanma araçları, bölgesel tahvil piyasaları ve daha kurumsal mali koordinasyon mekanizmaları için "ön entegrasyon" işlevi görebilecek kapasiteye sahiptir. Bununla birlikte çalışma, TDT'de olası bir ortak maliye modelinin önünde önemli sınırlılıkların bulunduğunu da göstermiştir. Üye ülkeler arasındaki makroekonomik farklılıklar, kamu maliyesi performansındaki asimetriler, OECD Ticaret Kolaylaştırma Göstergeleri'nin işaret ettiği kurumsal kapasite açıkları, ulaştırma ve lojistik altyapısındaki dengesizlikler ve dış ekonomik bağımlılık, kısa vadede bağlayıcı ve kapsamlı bir mali birlik modelinin hayata geçirilmesini güçleştirmektedir. Ayrıca Özbekistan örneğinde görüldüğü gibi, dış politikadaki "bağımsızlık" vurgusundan entegrasyona daha açık bir çizgiye geçiş dahi belirli bir zaman ve uyum sürecini gerektirmektedir. Dolayısıyla egemenlik hassasiyetleri, yalnızca teorik düzeyde değil, pratik kurumsal tasarım açısından da dikkate alınması gereken belirleyici bir parametre olarak öne çıkmaktadır.

Sonuç olarak, TDT bağlamında ortak maliye modeli olanakları, ne romantik bir birlik idealine indirgenebilecek kadar soyut ne de kısa vadeli bir teknik tasarımla sınırlanabilecek kadar basittir. Çalışmanın bulguları, bölgesel ekonomik potansiyel, kurumsal gelişmişlik düzeyi, ulaştırma ve enerji entegrasyonu, finansal iş birliği mekanizmaları ve entegrasyon felsefesi birlikte değerlendirildiğinde, Gaspıralı'nın ilkesine dayalı, kademeli ve çok düzeyli bir ortak maliye modelinin orta ve uzun vadede hem mümkün hem de bölgesel istikrar ve refah açısından rasyonel bir hedef olduğunu göstermektedir. Bu hedefin başarısı ise teknik tasarım kadar, siyasi irade, kurumsal süreklilik ve ortak stratejik vizyonun sürdürülebilirliğine bağlı olacaktır.

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ARA DÖNEMLERDE ENFLASYON DÜZELTMESİ UYGULANMAMASININ ERTELENMİŞ VERGİ ÖLÇÜMÜNE ETKİSİ: FONKSİYONEL PARA BİRİMİ TL DIŞI OLAN İŞLETMELER ÜZERİNE BİR DEĞERLENDİRME

Süleyman Özkan KAYAGİL

Dr.,
E-mail: ozkankayagil@gmail.com
ORCID ID: 0000-0001-9584-668X

Özet

Türkiye'de Vergi Usul Kanunu'nun mükerrer 298. maddesi ve geçici 33. maddesi uyarınca belirli mükellef grupları için enflasyon düzeltmesi zorunludur. Bununla birlikte Gelir İdaresi Başkanlığı'nın yayımladığı 582 Sıra Nolu Vergi Usul Kanunu Genel Tebliği ile belirli mükellefler için enflasyon düzeltmesinin geçici vergi dönemlerinde uygulanmayacağı uygun görülmüştür. Geçici vergi dönemlerinde enflasyon muhasebe uygulaması yapılmaması, finansal tablolarını ara dönemler itibariyle hazırlamak zorunda olan işletmelere ait yasal kayıtlarda yer alan vergiye esas değerlerin, enflasyona göre düzeltilmemiş kalmasına neden olmaktadır. TMS/TFRS'ye göre finansal tablo yayımlamakla yükümlü işletmeler açısından bu durum, TMS 12 (Ertelenmiş Vergiler) kapsamında ertelenmiş vergi varlık ve yükümlülüklerinin ölçümünü etkilemektedir. Özellikle fonksiyonel para birimi Türk lirası dışında olan işletmelerde, kur değişiminin etkileri ve enflasyon düzeltmesinin birlikte ele alınmaması, ara dönem finansal tablolarında ertelenmiş vergi tutarlarının olduğundan fazla veya eksik raporlanmasına neden olma ihtimalini içermektedir. Bu durumun ara dönem finansal raporlara göre karar alacak kullanıcılar açısından önemli olması nedeniyle bu çalışmada enflasyon düzeltmesinin ara dönemlere uygulanmamasının ertelenmiş vergi ölçümüne etkisi incelenmiş ve fonksiyonel para birimi farklı olan işletmeler açısından olası hatalı raporlama riskleri tartışılmıştır.

Anahtar Kelimeler: Enflasyon Düzeltmesi, Ertelenmiş Vergi (TMS 12), Fonksiyonel Para Birimi (TMS 21)

THE IMPACT OF NOT APPLYING INFLATION ADJUSTMENT IN INTERIM PERIODS ON DEFERED TAX MEASUREMENT: AN EVALUATION OF ENTITIES WITH NON-TL FUNCTIONAL CURRENCIES

Süleyman Özkan KAYAGİL

Phd,
E-mail: ozkankayagil@gmail.com
ORCID ID: 0000-0001-9584-668X

Abstract

In Türkiye, certain groups of taxpayers are required to apply inflation adjustment in accordance with Article 298 (repeated) and Provisional Article 33 of the Tax Procedure Law. Nevertheless, under the General Communiqué No. 582 on the Tax Procedure Law, the Revenue Administration decided that certain taxpayers would not be required to apply inflation adjustment during provisional tax periods. The absence of inflation accounting practices during provisional tax periods causes the tax-basis values recorded in the statutory books of entities that are required to prepare interim financial statements to remain unadjusted for inflation. For entities obliged to publish financial statements in accordance with TMS/TFRS, this situation affects the measurement of deferred tax assets and liabilities under TMS 12 Income Taxes. In particular, for entities whose functional currency is other than the Turkish lira, the failure to consider the effects of exchange rate changes together with inflation adjustment may lead to the overstatement or understatement of deferred tax amounts in interim financial statements. Given the significance of this issue for users who make decisions based on interim financial reports, this study examines the impact of not applying inflation adjustment to interim periods on the measurement of deferred taxes and discusses the potential misstatement risks for entities with a different functional currency.

Keywords: Inflation Adjustment, Deferred Tax Measurement (IAS 12), Functional Currency (IAS 21)

SERMAYE YETERLILIĞI ORANININ BELIRLEYICILERI: TÜRK BANKACILIK SEKTÖRÜNDE TODA–YAMAMOTO NEDENSELLIK ANALIZI

Halit YALÇIN

Dr. Öğr. Üyesi, Bilecik Şeyh Edebali Üniversitesi, Osmaneli Meslek Yüksekokulu, Dış Ticaret Bölümü
E-mail: halit.yalcin@bilecik.edu.tr
ORCID ID: 0000-0002-5035-1525

Öz

Bankacılık sektörünün aracılık görevlerini etkin ve verimli bir şekilde yürütebilmesinde risk yönetimi ve öz sermaye düzeyi dolayısıyla da sermaye yeterlilik oranı kritik öneme sahiptir. Nitekim Basel kriterlerinde, risk esaslı asgari sermaye gerekliliğine uyulması gerektiği açıkça belirtilmiştir. Sermaye yeterlilik oranı, temel bir finansal sağlamlık göstergesidir. Dolayısıyla sermaye yeterliliği rasyosu üzerinde etkili olan finansal rasyoların ortaya çıkarılması, bankalar tarafından uygulacak stratejilerin belirlenmesinde katkı sağlayacaktır. Buradan hareketle bu çalışmada sermaye yeterliliği rasyosunun belirleyicileri incelenmiştir. Çalışma, yöntemsel sağlamlık, uzun dönemli veri seti ve bağımsız değişkenlerin seçimi bakımından ilgili literatürdeki çalışmalardan farklılaşmaktadır. Türk bankacılık sektörüne ilişkin seçili rasyolar arasındaki nedensellik ilişkileri 2003Q1:2025Q1 dönemi için Toda-Yamamoto nedensellik testi ile analiz edilmiştir. Türk bankacılık sektörüne ilişkin öz kaynaklar/toplam varlıklar, öz kaynaklar–duran varlıklar/toplam varlıklar, finansal varlıklar (net)/toplam varlıklar ve net bilanço pozisyonu/öz kaynaklar değişkenlerinden sermaye yeterlilik oranına yönelik nedensellik ilişkileri araştırılmıştır. Analiz sonuçlarında, bağımsız değişkenlerin tamamından sermaye yeterlilik oranına, istatistiksel bakımdan anlamlı bir nedensellik ilişkisinin olduğu tespit edilmiştir. Elde edilen sonuç, Türkiye'de bankacılık sisteminin sermaye yapısının kendi bilanço dinamiklerinden etkilendiğini göstermektedir.

Anahtar Kelimeler: Para Politikası, Para-Banka, Sermaye Piyasaları.

DETERMINANTS OF THE CAPITAL ADEQUACY RATIO: A TODA–YAMAMOTO CAUSALITY ANALYSIS FOR THE TURKISH BANKING SECTOR

Halit YALÇIN

Assistant Professor (PhD), Bilecik Şeyh Edebali University, Osmaneli Vocational School, Department of Foreign Trade.
E-mail: halit.yalcin@bilecik.edu.tr
ORCID ID: 0000-0002-5035-1525

Abstract

Risk management and capital adequacy ratio are of critical importance for the banking sector to perform its intermediary functions effectively and efficiently. Indeed, the Basel criteria clearly state that risk-based minimum capital requirements must be met. The capital adequacy ratio is a fundamental indicator of financial soundness. Therefore, identifying the financial ratios that affect the capital adequacy ratio will contribute to determining the strategies to be implemented by banks. Based on this, this study examines the determinants of the capital adequacy ratio. The study differs from related literature in terms of methodological robustness, long-term data set, and selection of independent variables. The causality relationships between selected ratios related to the Turkish banking sector were analyzed with the Toda-Yamamoto causality test for the period 2003Q1:2025Q1. Causal relationships from the variables of equity/total assets, equity–fixed assets/total assets, financial assets (net)/total assets, and net balance sheet position/equity to the capital adequacy ratio were investigated for the Turkish banking sector. The

analysis results revealed that there is a statistically significant causal relationship between all independent variables and the capital adequacy ratio. The results show that the capital structure of the banking system in Türkiye is affected by its own balance sheet dynamics.

Keywords: Monetary Policy, Money-Banking, Capital Markets.

GİRİŞ

Bankacılık sektörü, fon ihtiyacı olanlar ile fon fazlası olanlar arasında finansal aracılık işlemlerini yürütmektedir. Gelişen teknoloji ile birlikte finansal piyasalarda yaşanan değişiklikler finansal ürün çeşitliliğini artırmıştır. Bu durum bankacılık sektörünün yapısında değişikliklere neden olmuştur. Finansal piyasalarda yaşanan değişimler beraberinde risklerin de çeşitlenerek artış göstermesine yol açmıştır. Bankacılık sektörünün etkin ve verimli bir şekilde faaliyetlerini gerçekleştiriebilmesinde ortaya çıkan risklerin başarılı bir şekilde yönetilmesi önem arz etmektedir. Bu bağlamda bankacılık sektörünün sermaye yapılarını mevcut ve muhtemel riskleri tolere edebilecek düzeyde kurmaları şoklar karşısındaki dayanıklılıklarını artırmalarına katkı sağlayacaktır. Nitekim, bankaların sermaye yeterliliklerinin değerlendirilmesine ve ölçülmesine yönelik olarak standartlar bulunmaktadır.

Basel Bankacılık Denetim Komitesi 1974 yılında G10 ülkelerinin katılımı ile üye olan ülkelerin bankacılık ile ilgili birikimlerini ve bilgilerini paylaşmalarını sağlayacak bir yapı olarak teşkil edilmiştir. Söz konusu komite, birbirinden farklı ülkelerdeki sermaye yeterliliğine ilişkin standartları tekdüzeleştirmeyi hedefleyen uzlaşısını (Basel-I) 1988 yılında yayınlamıştır. İlerleyen dönemde bankacılık alanında ve finansal piyasalarda yaşanan gelişmeleri kapsayacak şekilde Basel-II uzlaşısı 2004 yılında (Basel III Uzlaşısı ve Basel IV Uzlaşısı sırasıyla 2010 ve 2017 yılllarında) yayımlanmıştır. Söz konusu standartlar finansal istikrarın artırılması amacı ile uluslararası seviyede bankaların uygulama, denetim ve düzenlemelerini güçlendirmek ve üye ülkeler arasında mukayese edilebilir bir bankacılık düzenleme çerçevesi oluşturmayı hedeflemektedir (BDDK).

Basel I kriterleri, finansal istikrarı sağlamak ve bankaların finansal kırılganlığa ve krizlere karşı olan dayanıklılığını artırmak amacıyla belirlenen kriterlerdir. Söz konusu kriterler, bankaların risk üstlenme katsayılarının belli bir değeri aşmamasını ve kredi vermede belirli olan esasları uygulamasını önermektedir. Bankaların sermaye yeterliliği ile ilgili uluslararası standartlar belirlenmiştir. Ancak Basel I kriterlerinin, risk yönetiminde tek bir ölçüye bağlı olması ve ağırlıklı olarak sermaye odaklı olması gibi sebepler söz konusu kriterlerin yerini, Basel II kriterlerine bırakmasında etkili olmuştur (Arslan 2007: 51-52). Basel komitesi, iktisadi ve düzenleyici sermaye gerekliliklerini daha uyumlu hale getirmek amacıyla Basel Uzlaşısı'nı revize etmektedir. Basel II'nin önemli yeniliklerinden biri, kredi derecelendirmelerin düzenleyici sermaye standartlarına eklenmesidir. Bu sayede ticari olan kredilere kredi riski seviyesine göre farklılaştırılmış sermaye gereklilikleri getirilmiştir. Basel I ile karşılaştırıldığında Basel II altında yüksek riskli olan kredilerin daha fazla azaltıldığı gözlenmektedir. Ancak bankanın toplam kredilendirmeyi Basel I kriterleri altında mı yoksa revize edilmiş haline göre mi daha fazla azalttığı, faktörlerin karmaşık etkileşimine bağlıdır. (Jacques 2008: 89).

Basel II kriterlerinde üzerinde durulan risk kategorileri kapsamında piyasa, kredi ve operasyonel risk olarak üç grupta ele alınabilmektedir. Basel II'nin getirmiş olduğu bir yenilik olarak, sermaye yeterliliği oranının paydasına kredi ve piyasa riskine ek olarak operasyonel risk eklenmiştir. Böylece sermaye yeterliliği oranı; öz kaynakların, kredi riski, piyasa riski ve operasyonel riskin toplamına oranı haline gelmiştir (Şendoğdu, 2010: 6). Ayrıca Basel I ve Basel II kriterleri (1988, 2004) firmaların risk esaslı asgari sermaye gerekliliğine uymaları gerektiğini; yani bankanın sermayesinin risk ağırlıklı varlıklarının en az %8'i kadar olması gerektiğini belirtmiştir (Ho ve Hsu: 2010: 265). Sermayenin finansal sıkıntılara karşı bir tampon olduğu yönündeki geleneksel anlayıştan hareketle, başarısılık olasılığını en düşük düzeye indirmek için bankalar, Basel sermaye uzlaşılarının gerektirdiği şekilde yeterli sermaye bulundururlar (Octavia ve Brown 2008: 4).

Sermaye yeterliliğinin hesaplamalarının temelinde bankaların öz kaynak ile üstlendikleri riskler arasında bir denge kurulması ve söz konusu dengenin sürdürülmesi yer almaktadır. Türkiye'de Bankacılık Düzenleme ve Denetleme Kurumu (BDDK), bankaların denetim gözetim otoritesidir. Sermaye yeterliliği ile ilgili uluslararası düzenlemeleri Türkiye'ye uyarlamakta ve uygulamaktadır. Bu kapsamda Türk bankacılık sektöründe bulunan bankaların sermaye yeterliliği oranı gözlenmektedir (Hazar vd., 2018: 136).

Türkiye ekonomisinde yaşanan Kasım 2000 ve Şubat 2001 krizleri bankacılık sistemine ilişkin risklerin yönetilmesi süreçlerininin ve kontrol mekanizmalarının kritik öneme sahip olduğunu açıkça göstermiştir. Nitekim krizlerin ardından BDDK etkin bir şekilde işletilmiş ve bankacılık sektörüne ilişkin sıkı tedbirler alınmıştır. Türkiye ekonomisinde fon arz ve talep edenler arasındaki köprü işlevini yerine getiren bankalar finansal sistemin en büyük parçasını oluşturmaktadır. Bu nedenle bankacılık sistemindeki risklerin yönetilmesinde ortaya çıkan aksaklıklar, finansal sektörde başlayan bir krizi tetikleyebilir. Bu durum finansal sektörden reel ekonomiye etki eden bir ekonomik bunalıma yol açabilir. Dolayısıyla Türk bankacılık sektöründe risklerin yönetilmesine ilişkin önemli bir gösterge olan sermaye yeterlilik oranının belirleyicilerinin tespit edilmesi kritik öneme sahiptir. Buradan hareketle çalışmada sermaye yeterlilik oranının belirleyicileri araştırılmıştır.

Bu çalışmanın temel amacı, Türk bankacılık sisteminde sermaye yeterliliğini belirleyen içsel finansal dinamikleri tespit etmektir. Modelde yer alan bağımsız değişkenler; öz kaynaklar/toplam varlıklar, öz kaynaklar–duran varlıklar/toplam varlıklar, finansal varlıklar (net)/toplam varlıklar ve net bilanço pozisyonu/öz kaynaklar bankaların risk alma kapasitelerini, aktif kompozisyonunu, likidite pozisyonunu ve öz kaynak yeterliliğini temsil etmektedir. Söz konusu değişkenler aracılığıyla bu çalışmada, sermaye yeterliliği oranının bilanço yapısı, finansal istikrar ve varlık kalitesi göstergeleri ile olan içsel ilişkileri bütüncül bir biçimde analiz edilmiştir. Çalışmada bağımsız değişkenlerden sermaye yeterlilik oranına yönelik nedensellik ilişkileri çeyreklik veriler ile 2003Q1-2025Q1 dönemi için Toda-Yamamoto nedensellik testi ile gerçekleştirilmiştir. Bu çalışma, yöntemsel sağlamlık, uzun dönemli veri seti ve bağımsız değişkenlerin seçimi bakımından ilgili literatürdeki çalışmalardan ayrışmaktadır. Çalışma, sermaye yeterliliği üzerinde etkili olan finansal rasyoları ampirik olarak ortaya koymakta, finansal sağlamlık politikalarının tasarımına ve sektörel risk yönetimi yaklaşımlarına özgün bir katkı sunmaktadır. Çalışma giriş bölümü ile birlikte beş bölümden oluşmaktadır. Literartür incelemesi başlığı altında sermaye yeterlilik oranı ile ilgili yapılan amprik çalışmaların özetleri sunulmuştur. Veri ve metodoloji bölümünde veri seti ve yöntem tanıtılmış, bulgular başlığında ampirik analize ilişkin sonuçlar raporlanmıştır. Sonuç bölümünde ise analiz neticesinde elde edilen bulgular değerlendirilmiştir.

LİTERATÜR İNCELEMESİ

Çalışmanın bu bölümünde ilgili literatürde yapılan araştırmaların özetleri sunulmuştur. Ulusal literatürde sermaye yeterlilik oranı ile finansal rasyolar arasındaki ilişkileri analiz eden çalışmalardan olan Okuyan (2013), Türk bankalarının sermaye yeterlilik oranları (SYO) üzerinde etkili olan faktörleri panel yöntemler ile analiz etmiştir. Çalışmada SYO ile büyüklük, risk, kredi oranı ve mevduat oranı arasında negatif bir ilişki, aktif getirisi ile iktisadi büyüme arasında ise pozitif bir ilişki olduğu belirtilmiştir. Afşar ve Karaçayır (2018) çalışmalarında SYO'nun belirleyicilerini panel veri yöntemi ile test etmişlerdir. Çalışmada SYO'yu mevduat, aktif büyüklük ve kredi oranının negatif yönde, aktif getirinin ise pozitif yönde etkilediğini tespit etmişlerdir. Hazar vd., (2018) sermaye yeterliliği oranı üzerinde etkili olan bilanço kalemlerini tespit etmeyi amaçlamışlardır. Değişkenler arasındaki ilişkiler path analizi ile araştırılmıştır. Çalışmada beklenilenin aksine bağımlı ve bağımsız değişkenler arasındaki etkileşim düşük olarak tespit edilmiştir. Çalışmada bankaların riskleri yükseliş gösterirken öz kaynaklarını da yükseltmeleri nedeniyle risklerin etkilerini düşürdüleri ifade edilmiştir. Ayrancı (2021) özel ve kamu sermayeli mevduat bankalarına yönelik olarak sermaye yeterliliğini etkileyen unsurların belirlenmesinde panel regresyon analizini kullanmıştır. Analiz neticesinde; likidite yeterlilik oranı, aktif

kârlılığı, mevduat seviyesi ve yasal öz kaynak/risk ağırlıklı kalemler toplamı rasyolarının SYO'yu pozitif yönde etkilediği ve takipte olan alacaklar (brüt)/toplam nakdi olan krediler rasyosunun anlamlı ve negatif yönde etkilediği tespit edilmiştir.

Medetoğlu (2023) seçili bankaların SYO ile finansal rasyoları (ortalama öz kaynak kârlılığı, likit aktifler/toplam aktifler, donuk alacaklar/toplam krediler, toplam krediler/toplam mevduat, alınan krediler/toplam varlıklar, toplam mevduat/toplam varlıklar ve öz kaynaklar /toplam aktifler) arasındaki ilişkileri panel veri analizi ile incelemiştir. Analiz sonucunda SYO ile tüm finansal rasyolar arasında anlamlı bir ilişkinin olduğu ifade edilmiştir. Külekçi ve Ayrancı (2023) seçili mevduat bankalarının SYO ile kârlılıkları arasındaki ilişkileri korelasyon analizi yöntemi ile incelemişlerdir. Net faiz marjı ile SYO arasında negattif yönlü anlamlı bir ilişkinin olduğu ve aktif kârlılığı ile SYO arasında ise anlamlı bir ilişkinin gözlenmediğini belirtmişlerdir. Aydın ve Kaplan (2024) SYO üzerinde etkili olan faktörleri panel veri analizi ile incelemişlerdir. Çalışmada toplam kredi/toplam varlık ve likidite oranlarının SYO üzerinde negatif etkili olduğu ve net faiz marjı, takipteki kredi oranı ile toplam mevduat/toplam varlık oranının pozitif etki gösterdiği tespit edilmiştir. Özel (2024) SYO ile kredi mevduat ve takibe dönüşüm oranı değişkenleri arasındaki ilişkileri eşbütünleşme testi ile analiz etmiştir. Eşbütüleşme testi sonucunda göre değişkenler arasında uzun dönemli bir ilişkinin var olduğu tespit edilmiştir. Ayrıca kredi mevduat rasyosunun SYO ile negatif, takibe dönüşüm rasyosunun SYO ile pozitif ilişkili olduğu belirtilmiştir.

İlgili alanda yapılan uluslararası çalışmalardan olan Aymen (2013) çalışmasında, sermaye ve finansal performansın, bankacılık sektöründe iki önemli unsur olduğunu ve bankaların sistemik şoklarla başa çıkma kabiliyetlerinin bir göstergesi olduğu sonucuna ulaşmıştır. Buradan hareketle çalışmada, sermaye ve finansal performans arasındaki ilişkiyi ampirik olarak incelemek için statik bir panel kullanmış ve sermayeyi öz sermaye/toplam varlıklar oranına, finansal performansı ise 3 ölçüte (ROA (aktif getirisi), ROE (öz sermaye getirisi) ve NIM (net faiz marjı) göre yaklaşık olarak belirlemiştir. Tunus'ta 19 bankayı kapsayan bir örneklem üzerinde yaptığı çalışmada, sermaye ve finansal performans (ROA, ROE, NIM) arasındaki ilişkinin pozitif olduğunu tespit etmiş ancak yalnızca sermaye ve aktif getirisi arasındaki ilişkinin istatistiksel olarak anlamlı olduğu sonucuna ulaşmıştır. Ikpefan (2013) çalışmasında, Nijerya'da ticari bankalarda banka SYO'larının banka performansı üzerindeki olası belirleyici gücünü ve ayrıca işletme giderlerinin sermaye getirisi üzerindeki etkisini araştırmıştır. En küçük kareler regresyon yöntemi ile yapılan analizde sermaye yeterliliği oranları ile bankaların sermaye yeterliliğini (temerrüt riskini) ölçen ortakların fonu/toplam varlıklar oranının ROA üzerinde negatif etkiye sahip olduğunu ve yine işletme giderleri endeksi ile analize dâhil edilen yönetimin etkinliği rasyosunun SYO ile negatif ilişkili olduğu sonucuna ulaşmıştır.

Dao ve Nguyen (2020) Vietnam bankacılık sektöründe faaliyet gösteren 16 ticari banka için, SYO ve ROE değişkenlerini eşanlı iki bağımlı değişken olarak belirleyip, bankaların performansının temel belirleyicisi olan, ROA, Tobin Q, kredi büyümesi, GSYH büyümesi, özsermaye/mevduat oranı, kredi/mevduat oranı, banka büyüklüğü, maliyet/gelir oranı, likidite riski, kredi zarar karşılığı oranı, takipteki krediler oranı ve enflasyon değişkenleri arasındaki ilişkiyi incelemişlerdir. Yapılan analiz sonuçlarına göre; SYO ile bankaların performansı arasında istatistiksel olarak anlamlı bir ilişki bulunduğunu ve kredi büyümesi, GSYH büyümesi, özsermaye/mevduat oranı ile maliyet/gelir oranının her iki bağımlı değişken üzerinde de anlamlı etkiler yarattığı sonucuna ulaşmışlardır. Amalia ve Nugraha (2021) çalışmasında Endonezya Menkul Kıymetler Borsası'nda işlem gören tüm bankacılık şirketlerinin risk profili, gelir ve sermaye yönlerinden performansını belirlemeyi amaçlamış ve bu kapsamda ilgili dönem için panel veri regresyon analizi yapmıştır. Çalışmada, likidite riskini temsil eden FDR (Financing Debt Ratio), varlık kalitesini gösteren NPF (Non-Performing Financing), şirket büyüklüğünü temsil eden toplam varlıklar, kârlılığı temsilen ise ROA, sermaye yeterliliğini temsilen ise SYO rasyoları arasındaki ilişki analiz edilmiş ve çalışmanın analiz sonuçlarında, FDR, SYO ve NPF oranlarının ROA üzerinde pozitif bir etkisi olduğu belirtilmiştir. Hersugondo vd., (2021) çalışmalarında kamu bankaları ve özel bankalar kapsamında panel regresyon modeli ile takipteki krediler, sermaye yeterliliği ve iflas

riski gibi banka düzeyindeki faktörlerin banka performansı üzerindeki etkisini incelemişlerdir. Ayrıca çalışmada banka büyüklüğü ve banka yaşı kontrol değişkenleri olarak kullanılmış; kredi riski ve iflas riski ise Z-Skoru yöntemi ile belirlenmiştir. Analiz sonucunda, takipteki kredilerin banka performansı üzerinde anlamlı ve negatif bir etkiye sahip olduğu ve sermaye yeterliliği rasyosunun, banka performansı üzerinde anlamlı biçimde negatif bir etkilediği ifade edilmiştir.

Batrancea (2021) çalışmasında panel veri, genelleştirilmiş momentler yöntemi ile Avrupa ve İsrail, Amerika Birleşik Devletleri ve Kanada'nın en önemli 45 bankasının banka varlık ve yükümlülükleri üzerindeki finansal performans etkisini incelemiştir. Yapılan analiz sonuçlarına göre; banka varlık ve yükümlülük oranlarının finansal performans göstergeleri üzerinde güçlü bir etkisi olduğunu ortaya koymuştur. Al-Sharkas vd., (2022) çalışmalarında Ürdün ekonomisi için, 24 bankadan oluşan bir örneklemde statik panel verilerini kullanarak, sermaye yeterliliği oranlarının Ürdün bağlamında banka kârlılığı üzerindeki potansiyel etkisini analiz etmişlerdir. Yapılan analiz sonucunda, ROA'nın dört SYO ile negatif korelasyona sahip olduğu ancak, banka kârlılığı için ROE kullanıldığında, hem çekirdek sermayenin risk ağırlıklı varlıklara oranı hem de toplam sermayenin risk ağırlıklı varlıklara oranı tarafından pozitif yönde etkilendiği buna karşın, ROE, çekirdek sermayenin toplam varlıklara oranı ve toplam özkaynak sermayesinin toplam varlıklara oranı tarafından negatif yönde etkilendiği sonucuna ulaşmışlarıdır.

VERİ VE METODOLOJİ

Çalışmada Türk bankacılık sektörüne ilişkin seçili rasyolar arasındaki nedensellik ilişkileri 2003Q1:2025Q1 periyodu için çeyrek dönemlik veriler ile analiz edilmiştir. Türk bankacılık sektörüne ilişkin öz kaynaklar/toplam varlıklar (OKV), öz kaynaklar–duran varlıklar/toplam varlıklar (ODV), finansal varlıklar (net)/toplam varlıklar (FVT) ve net bilanço pozisyonu/öz kaynaklar (NBO) değişkenlerinden sermaye yeterlilik oranına (SYO) yönelik nedensellik ilişkileri araştırılmıştır. Tüm seriler, Türkiye Bankalar Birliği'nin veri tabanı üzerinden sağlanmıştır. Çalışmada analiz dönemi 2003 yılından başlatılmıştır. İlgili yıl Türkiye ekonomisinde bankacılık sektörünün yapısal dönüşümünün belirginleştiği dönemi temsil etmektedir. 2001 yılında yaşanan ekonomik krizin ardından alınan makroekonomik tedbirler ve bankacılık sektörüne ilişkin düzenlemeler başlatılmıştır. 2003 yılı itibariyle makeoekonomik göstergelerde belirgin bir toparlanma ve normalleşme süreci gözlenmeye başlamıştır. Bu nedenle çalışmada 2003 yılı analiz döneminin başlangıç yılı olarak seçilmiştir.

Çalışmanın bağımlı değişkeni olan SYO, bankaların maruz kaldıkları riskleri öz kaynak yapısı ile ne ölçüde karşılayabildiğini gösteren temel bir finansal sağlamlık göstergesidir. Bu nedenle bankacılık sektörünün direnç kapasitesini ve kriz dönemlerindeki dayanıklılığının ölçülmesinde kilit bir rol üstlenmektedir. Çalışmada kurulan modelde yer alan bağımsız değişkenler sermaye yeterliliği üzerinde etkili olabilecek bilanço ve öz kaynak dinamiklerini temsil etmektedir. Nitekim; NBO serisi, bankaların bilanço dengesi ve döviz pozisyonu bakımından maruz kaldıkları riski yansıtır. FVT serisi, aktiflerin kompozisyonunu gösterir. ODV serisi, öz kaynakların sabit nitelikte olan varlıkları karşılama konusundaki kapastiesini ifade eder. OKV serisi ise bankaların finansman yapısındaki öz kaynak payını doğrudan göstermektedir. Serinin yüksek olması, bankanın şoklara karşı dayanıklılığına işaret eder. Söz konusu değişkenlerin bir arada analiz edilmesi, sermaye yeterliliğini etkileyen hem bilanço yapısı hem de finansal istikrar göstergeleri açısından bütüncül bir değerlendirme yapılmasını mümkün kılabilmektedir. Dolayısıyla, bu çalışma ile Türk bankacılık sektöründe sermaye yeterliliği üzerinde etkili olan finansal rasyolar analiz edilmiştir.

Vektör Otoregresyon (VAR) modeline dayanan Granger (1969) ve Toda-Yamamoto (1995) tarafından geliştirilen nedensellik testleri değişkenler arasındaki nedensel ilişkilerin tespit edilmesinde sıklıkla kullanılmaktadır. Granger nedensellik testinin uygulanmasında sahte regresyon probleminin ortadan kaldırılması için ilgili serilerin durağan olmaları gerekmektedir. Ayrıca Granger nedensellik testinde ilgili seriler aynı mertebeden durağan olduğunda seriler arasındaki eşbütünleşme ilişkisi araştırılmalıdır. Dolayısıyla Granger nedensellik testinin uygulanmasında bir takım koşullar bulunmaktadır. Toda ve

Yamamoto (1995) tarafından geliştirilen nedensellik testinde ise serilerin durağan olup olmamalarından bağımsız bir şekilde test uygulanabilmektedir. Toda-Yamamoto nedensellik testinin uygulanabilmesi için serilerin maksimum bütünleşme derecesi ile optimum gecikme uzunluğunun tespit edilmesi gerekmektedir. Tespit edilen değerlerin toplanması ile VAR modeli oluşturulur. Modelin oluşturulmasının ardından modelin kararlılığı ve otokorelasyon sorunu taşıyıp taşımadığı belirlenir. Otokorelasyon sorunu olmayan ve kararlı olduğu belirlenen modelin ardından Wald testi ile seriler arasındaki nedensellik ilişkileri tespit edilir.

BULGULAR

Bulgular başlığı altında çalışmada yapılan analiz ve sonuçlar açıklanmıştır. Toda-Yamamoto nedensellik testi, serilerin fark ya da logaritmik dönüşümlerini zorunlu kılmamaktadır. Ayrıca analiz edilen değişkenlerin tamamı oran değişkendir. Dolayısıyla serilerin doğal ölçekleri korunarak değişkenlerin oransal yapısına uygunluk sağlanmıştır. Bu kapsamda çalışmada model tahminlerinde değişkenler, düzey değerleriyle kullanılmıştır. Tablo 1'de değişkenlere ilişkin tanımlayıcı istatistikler sunulmuştur.

Tablo 1. Tanımlayıcı İstatistikler

	SYO	NBO	FVT	ODV	OKV
Ortalama	19.162	-33.341	28.465	7.677	11.630
Medyan	18.062	-26.641	29.372	7.92	11.609
Maksimum	32.083	-2.476	44.202	10.439	15.186
Minimum	14.659	-85.759	14.391	2.501	7.982
Standart Hata	3.8396	22.398	7.981	1.570	1.651
Çarpıklık	1.744	-0.502	-0.135	-0.550	-0.038
Basıklık	5.460	2.0836	2.291	3.270	2.403
Jargue-Bera (JB)	67.55	6.852	2.132	4.758	1.345
JB Olasılık Değeri	0.000	0.032	0.344	0.092	0.510

Tablo 1'de serilere ilişkin tanımlayıcı istatistikler sunulmuştur. Jargue-Bera testi sonuçları, SYO ve NBO serilerinde normal dağılım varsayımının reddedildiğini gösterirken diğer serilerin normal dağılım sergilediğini göstermektedir. Serilerin ortalama değeri yalnızca NBO değişkeni için negatiftir. Maksimum değeri en yüksek olan değişken FVT'dir. Standart hata değeri en düşük olan seri ODV iken en yüksek olan seri ise NBO'dur. Çarpıklık değeri yalnızca SYO serisi için pozitiftir. Basıklık değeri ise tüm seriler için pozitiftir. Serilere ilişkin tanımlayıcı istatistiklerin sunulmasının ardından serilerin birim kök durumlarının belirlenmesi için Dickey Fuller (1981) ve Phillips-Perron (1988) birim kök testleri uygulanmıştır. Tablo 2'de birim kök testi sonuçları sunulmuştur.

Tablo 2. Değişkenlerin Birim Kök Testlerine İlişkin Sonuçlar

	Augmented Dickey Fuller (ADF)		Phillips Perron (PP)	
Değişkenler	**Sabitli**	**Trendli - Sabitli**	**Sabitli**	**Trendli - Sabitli**
SYO_t	-3.000 (0.039)**	-2.195 (0.486)	-1.923 (0.3204)	-1.956 (0.616)

ΔSYO_t	-9.961 (0.000)***	-10.330 (0.000)***	-11.093 (0.000)***	-24.075 (0.000)***
NBO_t	-2.166 (0.220)	-3.089 (0.115)	-1.865 (0.3472)	-3.121 (0.107)
ΔNBO_t	-10.296 (0.000)***	-10.276 (0.000)***	-11.648 (0.000)***	-12.029 (0.000)**
FVT_t	-1.634 (0.461)	-0.969 (0.942)	-1.731 (0.411)	-1.100 (0.922)
ΔFVT_t	-8.427 (0.000)***	-8.721(0.000)***	-8.453 (0.000)***	-8.721 (0.000)***
OKV_t	-1.618 (0.469)	-5.310 (0.000)***	-1.251 (0.648)	-5.452 (0.000)***
ΔOKV_t	-11.848 (0.000)***	-11.776 (0.000)***	-16.330 (0.000)***	-16.173 (0.000)***
ODV_t	-3.062 (0.033)**	-3.885 (0.016)**	-3.0535 (0.033)**	-4.1300 (0.008)***
ΔODV_t	-10.239 (0.000)***	-10.780 (0.000)***	-10.604 (0.000)***	-12.651 (0.000)***

Not: ***, **, * ve Δ sembolleri sırasıyla %1, %5, %10 anlamlılık düzeylerini ve ilgili değişkenin birinci farkını ifade etmektedir. Parantez içerisinde olasılık değerleri yer almaktadır.

Birim kök testleri hem sabitli hem de sabitli-trendli modeller için uygulanmıştır. SYO serisi, ADF testine göre sabitli modelde düzeyde durağan iken PP testine göre birinci farkında durağandır. NBO ve FVT serileri her iki birim kök testi sonuçlarına göre sabitli ve sabitli-trendli modelde birinci farkında durağandır. OKV serisi PP ve ADF testi sonuçlarına göre sabitli-trendli modelde düzeyde durağandır. Son olarak ODV serisi ise her iki modelde de birim kök testleri sonuçlarına göre düzeyde durağandır. Özetle serilerin düzeyde ya da birinci farklarında durağan olması seriler arasındaki nedensellik ilişkilerinin analizinde Toda-Yamamoto nedensellik testinin kullanılmasını mümkün kılmaktadır. Modelde kullanılacak uygun gecikme uzunluğunun belirlenmesi için Tablo 3 hazırlanmıştır.

Tablo 3. Model İçin Optimum Gecikme Uzunlukları

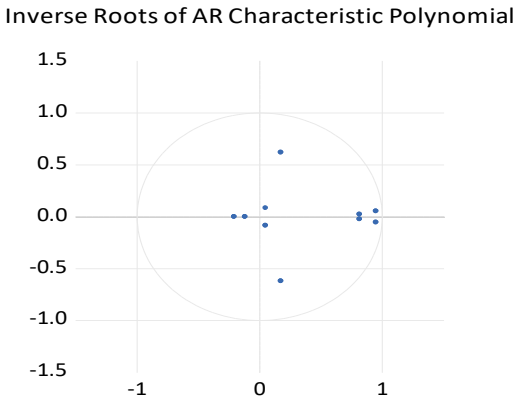
Lag	LogL	LR	FPE	AIC	SC	HQ
0	-934.5890	NA	8187.391	23.19973	23.34754	23.25903
1	-577.5996	661.0916	2.257893*	15.00246	15.88929*	15.35827*
2	-559.4408	31.38546	2.692406	15.17138	16.79724	15.82370
3	-546.4323	20.87781	3.685440	15.46747	17.83235	16.41629
4	-526.2331	29.92475	4.293777	15.58600	18.68992	16.83134
5	-474.4830	70.27800*	2.348371	14.92551*	18.76845	16.46734
6	-462.3583	14.96876	3.522770	15.24341	19.82538	17.08176
7	-436.6605	28.55311	3.935004	15.22618	20.54718	17.36104
8	-421.6900	14.78568	6.040100	15.47383	21.53385	17.90519

Not: * sembolü ilgili kriter tarafından belirlenen gecikme sırasını göstermektedir. LR: sıralı modifiye edilmiş LR test istatistiği, FPE: Son tahmin hatas, AIC: Akaike bilgi kriteri, SC: Schwarz bilgi kriteri ve HQ: Hannan-Quinn bilgi kriteridir.

Tablo 3'e göre farklı kriterler arasından kısmi farklılıklar olsa da genel eğilimin 1. gecikme düzeyinde yoğunlaştığı görülmektedir. Buradan hareketle çalışmada optimal gecikme uzunluğu 1 olarak belirlenmiştir. Serilere ilişkin maksimum bütünleşme derecesinin ve optimal gecikme uzunluğunun 1 olması nedeniyle ilgili değerler toplananarak analiz VAR (2) modeli üzerinden gerçekleştirilmiş ve raporlanmıştır. Ayrıca Akaike bilgi kriterinin önermiş olduğu optimal gecikme uzunluğu (5) ile serilerin maksimum bütünleşme derecesinin toplanması ile elde edilen VAR (6) modeli de sağlamlık amacıyla test edilmiştir. VAR (2) ve Var (6) modellerinde istikrar koşulu sağlanmakla birlikte modellerde otokorelasyon sorunu bulunmamaktadır. Ayrıca her iki modelde de değişkenker arasındaki nedensellik ilişkilerinin anlamlılık bakımından değişmediği gözlenmiştir. Bu nedenle, çalışmada bulgular VAR (2) modeline göre raporlanmıştır.

Tablo 4. Modelin Karakteristik Kökleri, Modülüs Değerleri ve Birim Çemberi

Root	Modülüs
0.949021 - 0.053815i	0.950546
0.949021 + 0.053815i	0.950546
0.814805 - 0.023067i	0.815131
0.814805 + 0.023067i	0.815131
0.172886 - 0.620003i	0.643656
0.172886 + 0.620003i	0.643656
-0.207534	0.207534
-0.118968	0.118968
0.048390 - 0.084936i	0.097753
0.048390 + 0.084936i	0.097753



VAR (2) modelinin kararlılık koşulunun belirlenmesi amacıyla AR karakteristik kökleri incelenmiştir. İlgili sonuçlar Tablo 4'te sunulmuştur. Elde edilen sonuçlar, tüm köklerin birim çember içerisinde yer aldığını göstermektedir. Ayrıca modülüs değerleri birden küçüktür. Bu tespit, modelin istikrar koşulunu sağladığını ortaya koymaktadır. Dolayısıyla, modeled öngörülen ilişkilerin güvenilir ve istikrarlı olduğu sonucuna ulaşılmıştır.

Tablo 5. Otokorelasyon LM Test Sonuçları

Lag	LM-İstatistiği	Olasılık Değeri
1	22.26733	0.6203
2	27.86801	0.3140

VAR (2) modelinin artıklarında otokorelasyon sorununun bulunup bulunmadığının belirlenmesi amacıyla yapılan otokorelasyon testi sonuçları Tablo 5'te sunulmuştur. Elde edilen sonuçlara göre, her iki gecikme düzeyinde de otokorelasyon istatistikleri, istatistiksel bakımdan anlamlı değildir. Olasılık değerleri %5'ten büyüktür. Dolayısıyla modelde otopkorelasyon problemi bulunmamaktadır. Söz konusu bulgu, VAR (2) modelinin tahmin sonuçlarının güvenilirliğini desteklemektedir. Buradan hareketle değişkenler arasındaki nedensellik ilişkilerinin belirlenmesi için Wald testi uygulamasına geçilmiştir. Wald testi sonuçları, Tablo 6'da sunulmuştur.

Tablo 6. Nedensellik Testinin Sonuçları

Nedenselliğin Yönü			Test İstatistiği	Olasılık Değeri	Sonuçlar
OKV	→	SYO	66.89740	0.00000	Nedensellik Var
ODV	→	SYO	81.56695	0.00001	Nedensellik Var
NBO	→	SYO	6.135528	0.0132	Nedensellik Var
FVT	→	SYO	23.40398	0.00001	Nedensellik Var

VAR (2) modelinde nedensellik testi sonuçlarında olasılık değerleri %5'ten küçüktür. Bu durum bağımsız değişkenlerden sermaye yeterlilik oranına yönelik anlamlı bir nedensellik ilişkisinin olduğunu ortaya koymaktadır. Elde edilen sonuç, sermaye yeterliliği oranının bankacılık sisteminin öz kaynak ve bilanço yapısında meydana gelen değişimlere karşı duyarlı olduğunu ifade etmektedir. Özellikle ODV, OKV ve FVT değişkenlerinin test istatistiklerine ilişkin olasılık değerleri söz konusu değişkenlerden sermaye yeterlilik oranına yönelik olarak güçlü bir nedensellik ilişkisine işaret etmektedir. Nedensellik testi sonuçlarının ekonomik açıdan değerlendirmesine sonuç bölümünde yer verilmiştir.

SONUÇ

Fon arz edenler ile fon talep edenler arasında aracılık görevini yürüten bankacılık sektörünün sürdürülebilir bir şekilde işlevlerini yerine getirmesinde öz kaynaklar ve riskler büyük önem arz etmektedir. Sermaye yeterlilik oranı, bir bankanın sahip olduğu öz kaynakların üstlendiği risklerin büyüklüğüne oranını gösteren temel bir finansal sağlamlık göstergesidir. Bankaların sahip olduğu öz kaynak düzeyi, finansal sistemde ortaya çıkabilecek risklere karşı dayanıklılıklarını artıran temel bir unsurdur. Öz kaynak düzeyi yükseldikçe bankanın kredi riski, piyasa riski ve likidite şoklarına karşı kırılganlığı azalmakta ve dayanıklılığı artmaktadır. Nitekim, Basel düzenlemeleri kapsamında bankalar tarafından hesaplanan sermaye yeterliliği oranının belirli seviyelerde tutulması bankacılık sektörünün verimli çalışması açısından önemlidir. Dolayısıyla sermaye yeterliliği rasyosu üzerinde etkili olan finansal rasyoların tespit edilmesi, bankalar tarafından uygulacak stratejilerin tasarlanma süreçlerine katkı sağlayacaktır. Buradan hareketle bu çalışmada sermaye yeterlili rasyosunun belirleyicileri nedensellik analizi ile araştırılmıştır.

Çalışmada Türk bankacılık sektörüne ilişkin seçili rasyolar arasındaki nedensellik ilişkileri 2003Q1:2025Q1 periyodu için çeyrek dönemlik veriler ile analiz edilmiştir. Türk bankacılık sektörüne ilişkin öz kaynaklar/toplam varlıklar, öz kaynaklar–duran varlıklar/toplam varlıklar, finansal varlıklar (net)/toplam varlıklar ve net bilanço pozisyonu/öz kaynaklar değişkenlerinden sermaye yeterlilik oranına yönelik nedensellik ilişkileri araştırılmıştır. Analiz sonuçları, bağımsız değişkenlerin tümünden sermaye yeterlilik oranına yönelik istatistiksel bakımdan anlamlı bir nedensellik ilişkisinin bulunduğunu göstermektedir. Söz konusu bulgu, Türkiye'de bankacılık sisteminin sermaye yapısının kendi bilanço dinamiklerinden etkilendiğini ortaya koymaktadır.

Öz kaynaklar/toplam varlıklar oranından sermaye yeterlilik oranına yönelik güçlü bir nedensellik ilişkisinin varlığı, bankaların öz kaynak tabanını genişletmesinin sermaye yeterliliğini desteklediğini ifade etmektedir. Öz kaynak oranının yüksek olması, risk ağırlıklı olan varlıklara karşı tampon görevi

gören sermaye yapısının güçlenmesi anlamına gelmektedir. Bu durum, özellikle de Basel kriterleri bağlamında bankaların sermaye tabanını büyütmelerinin finansal dayanıklılığı yükselttiğini teyit etmektedir. Öz kaynaklar – duran varlıklar/toplam varlıklar oranından sermaye yeterlilik oranına yönelik güçlü nedensellik, bankaların öz kaynakalarını hangi varlık türlerinde kullandıklarının sermaye yeterliliği açısından belirleyici olduğunu göstermektedir. Duran varlıkların finanse edilmesinde öz kaynakların etkin kullanımı, likit varlıkların daha fazla risk karşılamasına olanak sağlayabilir. Bu bakımdan ODV oranındaki yükseliş, sermaye yeterliliğinin yükselmesine katkı sağlayan yapısal bir faktördür.

Net bilanço pozisyonu/öz kaynaklar serisinden SYO'ya yönelik tespit edilen anlamlı nedensellik ilişkisi, döviz pozisyonundaki dengenin sermaye yapısına yansıdığını ifade etmektedir. Bankacılık sektöründe döviz açık pozisyonundaki azalış ya da bilançonun daha dengeli bir hale gelmesi sermaye yeterliliğini destekleyebilmektedir. Bu durum döviz kuru dalgalanmalarının yüksek olduğu dönemlerde risk yönetimine ilişkin politikaların sermaye yapısı üzerinde etki göstermesi bakımından önemli olabilmektedir. Finansal varlıklar (net)/toplam varlıklar oranından SYO'ya yönelik anlamlı ve güçlü bir nedensellik ilişkisinin olduğu tespit edilmiştir. Bu tespit, bankaların aktif kompozisyonunda finansal varlıkların payının sermaye yeterliliği üzerinde etkili olduğunu göstermektedir. Yüksek likiditeye sahip olan finansal varlıklar bankaların risk ağırlıklı varlık yükünü azaltarak öz kaynak oranını korumasında destek sağlayabilir.

Finansal rasyolar ile sermaye yeterliliği arasındaki ilişkileri araştıran çalışmalardan olan Okuyan (2013) SYO ile kredi oranı, mevduat oranı, büyüklük, risk, aktif getirisi ve ekonomik büyüme arasında ilişki olduğunu tespit etmiştir. Reis ve Kötüoğlu (2016) likidite, kârlılık ve takibe dönüşüm oranının SYO üzerinde anlamlı bir etkisini olduğunu, Afşar ve Karaçayır (2018) aktif getirinin, kredi oranının, mevduat ile aktif büyüklük değişkenlerinin SYO'yu etkilediğini belirtmişlerdir. Aydın (2019) aktif getiri oranı, banka büyüklüğü, takibe düşen krediler, mevduat düzeyi ve likidite riski gibi değişkenlerin SYO üzerinde etkili olduğunu ortaya çıkarmıştır. Çıtak ve Göker (2020) SYO ile bankaların toplam aktif büyüklüğü, kredi/toplam aktif oranı, mevduat/toplam aktif oranı, takipteki kredi/toplam kredi oranı ve faiz marjı arasında anlamlı bir ilişki olduğu ifade etmişlerdir. Medetoğlu (2023) sermaye yeterlilik oranı ile finansal rasyolar arasında anlamlı bir ilişki olduğunu ortaya çıkarmıştır. Aydın ve Kaplan (2024) toplam kredi/toplam varlık, likidite oranı, takipteki kredi oranı, toplam mevduat/toplam varlık ve net faiz marjının SYO üzerinde etkili olduğunu belirtmişlerdir. Nitekim yukarıda özetlenen çalışmalar, bu çalışmada ortaya çıkarılan bankacılık sektörüne özgü rasyolar ile sermaye yeterlilik oranı arasında ilişki olduğu tespitini desteklemektedir.

Genel itibariyle sonuçlar, Türk bankacılık sektöründe sermaye yeterliliğinin bankaların aktif yapısı, bilanço dengesi ve öz kaynak kompozisyonu gibi içsel unsurlardan güçlü bir şekilde etkilendiğini göstermektedir. Bu bulgu, sermaye yeterliliğinin yalnızca makroekonomik koşullardan değil, aynı zamanda bankaların hali hazırdaki kendi finansal yönetim politikalarının da bir yansıması olduğunu ifade etmektedir. Ayrıca sonuçlar, finansal istikrarın sağlanmasında ve sürdürülmesinde bankaların aktif-pasif yönetimlerinde dengeli bir strateji izlemelerinin önemine vurgu yapmaktadır. Elde edilen bulgular neticesinde, sermaye yeterliliğinin sürdürülebilir biçimde korunmasında bankaların öz kaynak tabanını güçlendirmeye, likidite yönetini etkinleştirmeye ve bilançolarındaki döviz pozisyonlarını dengede tutmaya yönelik uygulamalara öncelik vermeleri kritik öneme sahiptir. Aktif kalitesinin korunması ve sermaye yapısının uzun dönemli planlamalar ile desteklenmesi finansal sistemin şoklara karşı esnekliğinin artırmasında dolayısıyla kırılganlığının azalmasına katkı sağlayabilecektir.

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PARA ARZININ ENFLASYON ÜZERİNDEKİ ETKİSİ: GELİŞMEKTE OLAN ÜLKELER ÜZERİNE ÖRNEKLER

Mehmet Veli KOYUNÇU

Öğr. Gör., Batman Üniversitesi
E-mail: mehmetveli.koyuncu@batman.edu.tr
ORCID ID: 0000-0002-4854-327X

Özet

Enflasyon fiyatlar genel seviyesindeki sürekli bir artışı ifade eden ve makroekonomik göstergeler içinde en önemli olanlardan birisidir. Yüksek enflasyon birçok gelişmekte olan ülke için sorun yaratmaya devam etmektedir. Para arzı ise enflasyona neden olur mu olmaz mı hep bir tartışma konusu olmuştur. İktisat literatüründe para arzı ile enflasyon ilişkisi iktisat okulları tarafından da farklı şekilde yorumlanmıştır. Klasik okul ve türevleri (tam istihdam koşulu altında) para arzının direkt olarak enflasyona neden olduğunu söylerken, Keynesyen ve türevleri ise (eksik istihdam varsayımı altında) para arzının enflasyona neden olmadığını savunmuşlardır. Günümüzde özellikle covid-19 pandemisi sonrası enflasyon sorunu tüm dünyayı etkilerken en çok gelişmekte olan ülkeler zarar görmüştür. Merkez bankaları enflasyonu engellemek için daraltıcı politikalar uygulamış, para arzını kesmiş, politika faiz oranlarını yükseltmişlerdir. Sonuç olarak enflasyon düşüş eğilimine geçmiş olsa da Merkez bankaları para arzını artırmak için temkinli davranmaktadırlar. Bu çalışmada ise, euro kullanmayan seçili gelişmekte olan Avrupa Birliği üyesi ülkelerden 2015-2025 zaman diliminde enflasyon ve para arzı arasındaki ilişki zaman serisi yöntemini ile analiz edilecektir.

Anahtar Kelimeler: AB Ülkeleri, Enflasyon, Para Arzı.

Jel Kodu: E31, E51, C22.

THE EFFECT OF MONEY SUPPLY ON INFLATION: EXAMPLES FROM DEVELOPING COUNTRIES

Abstract

Inflation refers to a continuous increase in the general price level and is one of the most important macroeconomic indicators. High inflation continues to pose problems for many developing countries. Whether money supply causes inflation has always been a subject of debate. In economic literature, the relationship between money supply and inflation has been interpreted differently by various schools of economics. The classical school and its derivatives (under full employment conditions) argue that money supply directly causes inflation, while Keynesians and their derivatives (under the assumption of underemployment) argue that money supply does not cause inflation. Today, especially after the COVID-19 pandemic, the inflation problem has affected the whole world, with developing countries suffering the most. Central banks have implemented restrictive policies to curb inflation, cutting money supply and raising policy interest rates. As a result, although inflation has started to decline, central banks are cautious about increasing money supply. This study analyzes the relationship between inflation and money supply in selected developing European Union member countries that do not use the euro between 2015 and 2025 using time series methods.

Keywords: EU Countries, Inflation, Money Supply.

GİRİŞ

Makroekonomik değişkenlerden biri olan enflasyon, belirli bir dönem içinde fiyatlarda oluşan sürekli artış anlamına gelmektedir. Burada asıl önemli olan fiyatlarda oluşan sürekli bir artışın olmasıdır. Bu durum ulusal paranın değer kaybına yol açmaktadır. Enflasyona yol açan etmenlerin başında döviz kuru,

faiz oranları, para arzının artırılması gibi ekonomik değişkenler gelmektedir. Bu değişkenleri konrol etmek son derece önemlidir. Ülkelerin Merkez Bankaları para politikasını uygularken enflasyon hedeflemesi yaparlar ve hedefe ulaşmak için bazı para politikası araçları kullanırlar (Bağcı, 2021:310). Enflasyon hedefine ulaşmak için de genellikle sıkılaştırıcı para politikasını uygulayıp başta para arzını kısılması, faiz oranlarının artırılması gibi ekonomik göstergeler yolunu seçerler.

Fiyat istikrarı ekonominin sürdürülebilirliği açısından önemli bir makro ekonomik göstergedir. Gelişmiş ülkeler için %1-%3, gelişmekte olan ülkelerde ise %5-%6 enflasyon makul bir orandır. Ancak bunun üstüne çıkarsa fiyat istikrarı bozulmuş olur. Günümüzde birçok ülke enflasyonla mücadele etmekte ve enflasyon yüksek seviyelerde seyretmektedir (Uğur ve Atılgan, 2021:776). Çalışmamızın örneklemi olarak seçilen gelişmekte olan AB üyesi ülkelerden 2025 Eylül itibariyle güncel yıllık enflasyonları şu şekildedir; Bulgaristan %5,3, Çek Cumhuriyeti %2,5, Romanya %9,9, Polonya %2,8, Macaristan %4,3 ve AB Birliği ise %2,2 olmuştur. Genel olarak bakıldığında seçili ülklerin AB Birliği ortalamasının üstünde kalmıştır. Romanya ise %10'a kadar yüksek bir düzeyde seyretmiştir.

Klasik, Keynesyen ve Monetarist iktisat okullarının para arzı ile enflasyon arasındaki ilişkiyi farklı şekillde yorumlamışlardır. Klasiklerin varsayımlarında ekonominin daima tam istihdam seviyesinde olduğunu ve bu yüzden yapılan bir para arzının direkt olarak fiyatları yükselteceğini Fisher'ın miktar teoremi ile açıklamaya çalışmışlardır. Keynesyenler ise tam tersini iddia etmişlerdir. J.M.Keynes ekonominin daima eksik istihdam da olduğunu onun için piyasanın dinamikleri açısından para arzının yapılması piyasaya paranın pompalanması gerektiğini ve eksik istihdamda olduğundan enflasyona neden olmayacağını söylemiştir. Monetarsitler ise kalasiklere daha yakın durmuşlardır. M. Friedman ise GSYH oranı kadar bir para arzının yapılmasını istemiştir. Piyasaya yeteri kadar bir para arzı yapılırsa hem enflasyon hem de deflasyona yol açmayacaktır (Yalta, 2020: 150 ve Karacan, 2019: 4752-4753).

Çalışmanın amacı, para arzı ile enflasyonun nedensellik ilişkisini inceleyen hipotezi ile AB üyesi eski doğu blokunda olan ancak euro kullanmayan Bulgaristan, Çek Cumhuriyeti, Polonya, Romanya ve Macaristan ülkelerinin 2015-2025 dönemine ait aylık verilerden elde edilecek para arzının enflasyona olan etkisinin analiz etmektir. Çalışmanın literature olan özgün değeri tüm dünyada seyreden yüksek enflasyonun seçili ülkeler üzerinde para arzının enflasyonu yükseltip yükselmeyeceğidir. Birinci bölümde, teorik çerçeve olarak enflasyon, para arzı, iktisat okullarının bu iki değişken arasındaki ilişkiye bakış açılarını ve literatürde yapılan önemli çalışmaları ele alınacaktır. İkinci bölümde, çalışmanın yöntemini, seçili ülklerin para arzı ve enflasyon ilişkisinin nedensellik hipotezi analiz edilecektir. Üçüncü bölümde ise çıkan bulgular yorumlanacak ve önerilerde bulunacaktır.

1.PARA ARZININ ENFLASYON ÜZERİNDEKİ ETKİLERİ; TEORİK ÇERÇEVE

Enflasyon, faiz oranları, para arzı ve döviz kurları ekonominin temel göstergeleri olup ekonomi hakkında bize yol gösterir. Rusya-Ukrayna savaşı ile petrol fiyatlarının yükselmesi ve Covid-19 pandemi etkisiyle tüm dünyada yapılan yüksek seviyedeki para arzının fiyatlar genel seviyesinin yükselmesine neden olmuştur. Uluslararası Para Fonu (IMF)'nin raporlarına göre 2020'de dünya enflasyon oranı %3,2 ilen bu oran 2022'de %8,8' yükselmiştir (Dinç, 2023:970).

Bir ülkenin para politikasından sorumlu kurum Merkez Bankalarıdır. MB, para basma, bankalara kredi verme, faiz oranlarını belirleme, emisyona gidilmesi gibi birçok yetkiye sahiptir. MB'nın en önemli amacı ise fiyat istikrarı ve finansal istikrarı sağlamaktır. Bunu sağlamak için parasal hedefler, döviz hedeflemesi ve enflasyon hedeflemesi belirler ve hedeflere ulaşmak için de belli başlı araçlara sahiptir. Örneğin enflasyon hedeflemesi için enflasyonu control altına almak için politika faiz oranlarını belirler. 1990 yıllarından sonra MB daha çok enflasyonla mücadele ettiklerinden dolayı Enflasyon Hedeflemesi seçmişlerdir (Torun ve Yılmaztürk, 2021:3).

Para arzı belirli bir dönemde piyasada olan stok para miktarıdır. Dar ve geniş anlamda iki çeşit para arzı tanımı bulunmaktadır. M0 ile M1 dar anlamda para arzını oluştururken, M2 ile M3'te geniş anlamda para arzını oluşturur. M0 en dar para arzını, dolaşımdaki banknotlar ve bankaların kasasındaki nakit paraların çıkarılması bulunur. M0 para arzına vadesiz hesapları eklenince M1, M1 'e vadeli hesabı eklenincede M2'yi, M2'ye de repo ve para piyasası fonları ile ihraç edilen menkul kıymetler eklendiğinde ise M3 para arzına ulaşılmaktadır (Bağcı, 2021:311).

İktisat okulları para arzı ile enflasyon ilişkisine farklı açıdan yorumlamışlardır. Klasik iktisatçılar para arzı ile enflasyon ilişkisini Miktar Teorisi ile açıklamaya çalışmışlardır. Bu teori şu şekildedir;

$M.V = P.Y$

(M, para arzını, V, paranın dolaşım hızını, P, fiyatlar genel seviyesi ve Y ise toplam işlem hacmi veya milli geliri ifade etmektedir.)

Denklemde, sağ tarafında bulunan M.V para arzını ifade ederken sol tarafta bulunan P.Y ise para talebini oluşturur. Toplam para arzı ile para talebi her zaman birbirine eşittir. Klasiklere göre paranın dolanım hız (V) ile milli gelir (Y) sabit kabul edilmiştir. Paranın dolanım hızı bireylerin alışkanlıkları, ekonomik örgütlenme gibi sebeplerden dolayı sabit kalırken, Milli gelir ise ekonominin tam istihdam da olması nedeniyle toplam üretim miktarı ulaşabilecek en üst düzeyde olması nedeniyle sabit kabul etmişlerdir. Bu yüzden yapılacak bir para arzının doğrudan fiyatlar genel seviyesini yükselmesine neden olacağını varsaymışlardır. Tersi durumda da yapılacak bir para arzının kısılması da fiyatlar genel seviyesini düşüreceklerini varsaymışlardır (Seyidoğlu, 2003: 439).

Keynesyen iktisatçılara göre ise ekonomi eksik istihdamdadır. Tam istihdam ise özel bir durumdur. Eksik istihdamda fiyatların yapışkan, rijit veya katı olduğunu, ayrıca para talebi faiz esnekliği yüksek olmasından dolayı para arzının fiyatları yükseltmeyeceğini söylemiştir. Keynes, para talebinin işlem güdüsü yanında (klasiklerin para talebi) ayrıca ihtiyat ve spekülasyonlar nedeniyle tutulmak istediğini söylemiştir. Özellikle spekülasyon para talebi ile tutulan para faiz oranları ile doğrudan ilişkilendirmiştir. Yapılacak bir para arzı faizleri düşürecek, düşen faizler ise yatırımları artıracak ve ekonomik yavaş yavaş eksik istihdamdan tam istidama doğru yol alacaktır. Ekonomi tam istihdama ulaştığında ise para arzının artık enflasyonu ortaya çıkaracaktır. Ulaşılması istenilen hedeftir, ancak bu zor bir durumdur (Uğur ve Atılgan, 2021: 778).

Monetarist iktisatçılar ise daha çok klasikler gibi düşünmüşlerdi. Milton Friedman "Enflasyon her zaman ve her yerde parasal bir olgudur" demiştir. Friedman ve arkadaşları ABD'nin 100 yıllık verileri ile yaptıkları bir çalışmada para arzının artışı sonrasında enflasyona neden olduğunu ortaya çıkarmışlardır. Parasal büyümenin milli gelir düzeyinde olması gerektiğini ne daha az ne daha fazla olacak şekilde ayarlanması gerekir (Önder, 2022:647).

2. LİTERATÜR

Enflasyon, para arzı, fiyat istikrarı, döviz kuru ilişkisini inceleyen ülke grupları için farklı yöntemlerle yapılmış birçok ampirik çalışma mevcuttur. Para arzının enflasyon ile ilişkisine dayalı çalışmalar kronolojik sıraya göre Tablo 1'de gösterilmektedir.

Tablo 1: Literatür Taraması

Yazar Yıl	Ülkeler	Veri Seti	Değişkenler	Yöntem	Sonuç
Gündoğdu Odabaşıoğlu ve Aydın (2014)	10 Avrupa Birliği üyesi Merkezi ve Doğu Avrupa	1995-2012 Aylık	TÜFE, Reel faiz oranı, M2 para arzı GSYİH Döviz kuru	GMM Tahmin Yöntemi	M2 para arzı miktarının GSYİH içindeki payında bir artış enflasyon oranında bir düşüşe neden olmaktadır.
Tuncay (2017)	10 gelişmekte olan ülke	2005-2015 Yıllık	Enflasyon (Tüfe) Para arzı (M2) GSYİH, Cari işlemler dengesi	Panel Veri Analizi	Para arzındaki artışlar enflasyonu arttırmaktadır.
Karacan ve Cengiz (2019)	Türkiye	2001-2018 Yıllık	TÜFE M0/GSYİH	Zaman Serisi Analizi	Kısa vadede para arzı artışı enflasyona neden olurken, uzun vadede para arzı artışı enflasyonu etkilememektedir.
Torun ve Yılmaztürk (2021)	Kanada, Şili Türkiye Yeni Zelanda Avustralya İsveç İsrail	2002-2018	Döviz kuru Para arzı Ekonomik büyüme Faiz oranı Enflasyon Hedeflemesi	Panel Veri	Enflasyon değişkeni üzerinde faiz değişkeninin negatif etkiye sahip olduğu; büyüme, para arzı ve döviz kuru değişkenlerinin ise fark enflasyon üzerinde pozitif etkiye sahip olduğu sonucuna ulaşılmıştır.

Uğur ve Atılgan (2021)	Türkiye Hindistan Brezilya Hindistan Çin	1995-2017 Yıllık	Enflasyon (Tüfe) M2 Para Arzı Reel Gelir	LM Testi CD Testi CDLM Testleri	Para arzı %1'lik enflasyonu %0,70 oranında artırmıştır
Bağcı (2021)	Türkiye	2008-2020	Enflasyon Para Arzı (M2)	Kantil-Kantil Regresyon (KKR) yaklaşımı	Para arzında oluşan artışlar, enflasyonu her zaman arttırmamaktadır.
Önder (2022)	Türkiye	2005-2022	Enflasyon (Tüfe) Para Arzı (M2)	Engle Granger eş bütünleşme Testi ve Toda-Yamamoto Nedensellik Testi	Para arzından enflasyona yönelik tek yönlü ilişki olduğu tespit edilmiştir.
Bulut (2023)	Doğu Bloku Ülkeler ve Avrupa	2022	Enflasyon Büyüme İşsizlik GSYH	-	Avrupa Birliği'ne üye olan eski Doğu Bloku ülkeler ekonomik ve ticari açıdan genişlemiştir
Dinç (2023)	Türkiye	2000-2022	Enflasyon oranı Döviz kuru Faiz oranı Para arzı	Zamana göre değişen nedensellik ilişkisi	Döviz kuru ile faiz oranı ve enflasyon oranı ile para arzı arasındaki ilişkiler çok güçlü iken, para arzı ile faiz oranı ve para arzı ile döviz kuru arasındaki ilişki ise daha zayıftır
Uzun (2024)	Kanada İsveç Brezily	1991-2006	Enflasyon Hedeflemesi Fiyat İstikrarı	Zaman Serisi	Gelişmiş ülkelerde enflasyon hedeflemesi genellikle başarılı olurken, gelişmekte

olan ülkelerde daha karmaşık ve değişken sonuçlar ortaya çıkabilir.

3. EURO KULLANMAYAN SEÇİLİ AB ÜLKELER

1990 yılların başında dağılan Doğu bloku ülkeleri ekonomik ve politik açısından sistem arayışına girmişlerdir. Bu ülkeler Avrupa'nın doğusunda yer alması nedeniyle gelişmiş Avrupa ülkeleri tarafından mali ve teknik yardımlar alması ile piyasa ekonomisine geçiş yapmışlardır. Piyasa ekonomisi Doğu bloğundan ayrılan ve kısa süreliğine ekonomik boşluk yaşayan bu ülkelere çözüm olmuştur. Bulgaristan, Macaristan, Polonya ve Romanya 1989 yılında, Çek Cumhuriyeti ise 1993 yılında doğu bloğundan ayrılmışlardır. İlk yıllarda ekonomik olarak zorlanan bu ülkeler kısa süre sonra serbest piyasa ekonomisine geçiş yapmışlardır. Sosyalist sistemin son bulmasıyla bu ülkeler yurt dışı pazarlarını kaybetmiş, halkın refah düzeyi düşmüş ve ulusal paraları değer kaybetmişlerdir (Bulut, 2023:359-360).

Serbestleşme devletin ekonomiye artık müdahale etmemesi ve piyasa dinamikleri daha çok özel sektör eliyle yapılmasıdır. Keynesyen görüşlerden sonra özellikle 1980 yıllarından sonra başta gelişmiş ülkeler serbest piyasa ekonomisine geçiş yapmışlardır. 1989'da Sovyetlerin yıkılmasıyla bu bloktan ayrılan ve gelişmekte olan ülkelerde piyasa ekonomisine hızlı bir şekilde geçiş yaptılar. Kürselleşmenin etkisiyle liberal politikalar hayata geçmiş ve finansal serbestleşmede hem iç hem de dış finansal şeklinde olmuştur. Finansal sermayenin ülkelere uğrayıp çıkması gibi sorunlar finansal krizlerin yaşanmasına neden olmuştur. En çok finansal krizler gelişmekte olan ülkelerde etkisini göstermektedir (Tuncay ve Demir, 217:1152). 1990'lı yıllarından sonra planlı ekonomiden piyasa ekonomisine geçiş yapan bu ülkeler, başlarda planlı ekonominin izlerini taşımışlardır. Bütçe açıkları, yüksek seviyelerde oluşan enflasyon oranları, eksik istihdam ve üretim, üretim miktarını aşan para arzları gibi sorunlarla karşılaşmışlardır. 1992-97 yılları arasında yapılan makroekonomik istikrar politikaları ile bu sorunlara çözüm aramışlardır (Gündoğdu ve Aydın, 2014:294).

Yapılan ekonomik istikrar paketleri çözüm olmaya başlamış ve ilk enflasyon oranlarını düşürmeye çalışmışlardır. Tablolarda da görüleceği üzere ilk yıllarda yüksek olan enflasyon ve para arzları sonraki yıllarda düşme eğilimine girmiştir. Gelişmiş AB ülkelerinin yardımı ile bu sorunların üstesinden gelinmeye çalışılmıştır. Bu ülkelerin enflasyon ve parasal genişleme verileri aşağıdaki tablolarda gösterilmiştir.

Tablo 2: Ülkelerin 2000-2025 Enflasyon Verisi

Dönem	Bulgaristan	Polonya	Romanya	Macaristan	Çek Cumhuriyeti
Enflasyon (Yıllık ortalama %)					

2000–2004	6.38	5.34	25.94	7.32	2.54
2005–2009	7.16	2.66	6.72	5.10	2.20
2010–2014	1.98	2.30	4.06	3.20	1.76
2015–2019	1.38	0.88	1.30	1.94	1.70
2020–2024	4.86	7.40	7.26	8.90	6.82
2025 (tahmini)	4.00	3.50	7.00	3.80	2.50

Kaynak: Dünya Bankası ve IMF (2000-2025 verileri)

Enflasyon tablosunu yorumlamak gerekirse 2000-2004 yıllarında Romanya hiperenflasyon (%26) görülmüştür, Çekya ise en düşük %2,5 enflasyona sahip ülke olmuştur. 2005-2019 yılları arasında ise tüm ülkeler %0–4 bandına indi. En iyi 15 yıl olmuştur. Ancak 2020-2024 yıllarında ise Pandemi ve savaş şokuyla enflasyon çift hanelere çıkmıştır. En kötü performans Macaristan %8,9 ortalama ile görülmüştür. 2025 ise normalleşme başlamış ama Romanya hâlâ yüksek %7 düzeylerde seyretmiştir, Çekya tekrar en düşük (%2,5) enflasyonun görüldüğü ülke olmuştur. Son 25 yıllık süre içinde Çek Cumhuriyeti en düşük ve en istikrarlı ülke konumundadır. En büyük dönüşüm ise Romanya'da olmuştur

Tablo 3: Ülkelerin 2000-2025 Parasal Genişleme Verisi

Dönem	Bulgaristan	Polonya	Romanya	Macaristan	Çek Cumhuriyeti
M2 Para Arzı Büyüme Oranı (Yıllık ortalama %)					
2000–2004	14.90	10.60	24.76	12.38	8.92
2005–2009	14.26	10.46	14.30	12.14	9.76
2010–2014	7.22	5.88	8.64	6.88	6.08
2015–2019	6.84	7.66	8.66	7.46	6.86
2020–2024	7.88	8.12	8.78	8.50	7.56
2025 (tahmini)	4.20	4.80	5.70	5.00	4.50

Kaynak: Dünya Bankası ve IMF (2000-2025 verileri)

Parasal genişlemeye bakıldığında, en hızlı para arzı büyümesi 2000-2004 yılları arasında %24.8 ortalama ile Romanya'da olmuştur. Parasal genişlemenin en yavaş olduğu 2010-2014 döneminde tüm ülkeler %6-8 bandında olmuştur. Enflasyon verilerinde olduğu gibi parasal genişlemede de en istikrarlı ülke Çek Cumhuriyeti ve hiçbir zaman %10'u aşmadı. 2025'te ise bütün ülkeler %5 civarı veya altına inmiştir. Çünkü pandemi sonrası hızla artan enflasyon oranlarına karşı uygulanan sıkı para politikasıdır. Sonuç olarak para arzı büyümesi 2000'lerin başında yüksek seviyelerden 2025'te oldukça ılımlı seviyelere geriledi.

Tablo 4: Ülkelerin Para Birimi ve Euro Döviz Kurları

Ülke	Para Birimi	1 Euro =	Enflasyon Oranı

Bulgaristan	Bulgar Levası (BGN)	1,96 BGN	%5,3
Çek Cumhuriyeti	Çek Kronu (CZK)	24,24 CZK	%2,5
Macaristan	Macar Forinti (HUF)	384,52 HUF	%4,3
Polonya	Polonya Zlotisi (PLN)	4,23 PLN	%2,8
Romanya	Romen Leyi (RON)	5,08 RON	%9,9

Kur değerleri 23 Kasım 2025 itibarıyla piyasa ortalamasıdır (küçük dalgalanmalar olabilir). Enflasyon oranları Ekim/Kasım 2025 verilerine dayanmaktadır.

Hem enflasyon oranı hem de para arzı verilerine bakıldığında en güçlü para birimi ve en düşük enflasyon Çek Cumhuriyeti ilk sırada yer almaktadır. Romanya ise hem enflasyon yüksek düzeyde hem de para arzı yüksek olduğundan güçsüz para birimine sahip olduğu görülmektedir. Verilere göre şu an ekonomik sorunlar yaşanmaktadır. Diğer ülkeler ise enflasyon oranları normal düzeyde seyretmektedir.

4. EKONOMETRİK MODEL VE BULGULAR

27 AB üyesi bulunmaktadır. Bunlardan Euro birliği içinde olmayan Bulgaristan, Macaristan, Polonya, Romanya, Çek Cumhuriyeti, Danimarka, İsveç ülkeleridir. Bu ülkeler arasından gelişmekte olan piyasalar tercih edilmiştir. Ayrıca Yöntemsel birliği sağlamak amacıyla analize dört ülke ile devam edilmiştir: Bulgaristan, Macaristan, Polonya ve Romanya.

Çalışmanın amacı, bu ülkelerde para arzı ve enflasyon arasında bir ilişki olup olmadığının tespit edilmesidir. Bu çalışmada Fourier temelli yapısal kırılmaları dikkate alan testler tercih edilmiştir. Çünkü ülkelerin verileri ayrı ayrı incelendiğinde, özellikle 1990'lı yıllarda yüksek enflasyon sorunu yaşandığı, ancak AB üyeliklerini takiben önemli ölçüde enflasyonda düşüş olduğu gözlenmiştir. Benzer şekilde par arzındaki değişimlere bakıldığında da analize tabi dönem içinde trendi etkileyebilecek önemli değişimler yaşandığı gözlenmektedir. Bu nedenle kırılmanın sayısı ve türünde esneklik imkanı veren Fourier tabanlı testlerin uygulanmasının daha doğru olacağı görülmüştür. Çünkü Fourier yaklaşımı, kırılmaların ve yakalamaların sayısı, tarihleri ve biçimi hakkında önceden bilgi gerektirmez ve yapısal kaymaları az sayıda düşük frekanslı bileşen kullanarak kademeli/pürüzsüz bir süreç olarak yakalar.

Nedensellik testi içerisinde serilerin birim kök içerip içermediklerinin bilinmesi gerekmektedir. Bu amaçla Enders & Lee, 2012 - Fourier ADF Birim Kök Testi her bir ülke için ayrı ayrı uygulanmıştır.

Tablo 5: Fourier ADF Birim Kök Testi (Enflasyon)

	BULGARISTAN	**MACARISTAN**	**POLONYA**	**ROMANYA**
SABITLI	-4.261	-3.672	-4.491	-0.612
SABITLI VE TRENDLI	-4.666	-2.369	-3.204	1.112

FREKANS	1	3	3	1
	1	1	2	2

Tablo 6: Fourier ADF Birim Kök Testi (Para Arzı)

	BULGARISTAN	**MACARISTAN**	**POLONYA**	**ROMANYA**
SABITLI	-2.231	-2.30	-3.306	-2.705
SABITLI VE TRENDLI	-4.222	-1.854	-2.301	-0.428
FREKANS	1	2	3	3
	1	2	3	3

Maksimum Fouirer frekansı 3, maksimum gecikme sayısı 3, Bilgi kriteri olarak Akaike yöntemi tercih edilmiştir. Varyans tahmin metodu olarak Kurozumi with Bartlett kullanılmıştır. %10, %5 ve %1 anlamlılık düzeyinde Sabitli modelde Fourier 1 frekansı için kritik değerler -3.49, -3.81 ve -4.42; Fourier 2 frekansı için kritik değerler -2.91, -3.27 ve -3.97; Fourier 3 frekansı için -2.71, -3.07 ve -3.77 olarak hesaplanmıştır. Sabitli ve trendli modelde Fouirer 1 frekansı için -4.05, -4.35 ve -4.95; Fourier 2 frekansı için -3.71, -4.05 ve -4.69; Fouirer 3 frekansı için -3.44, -3.78, -4.45 olarak hesaplanmıştır.

Yapılan testler göstermektedir ki, Polonya hariç 3 ülke için de hem sabitli hem de sabitli ve trensli modelde %1 anlamlılık düzeyinde seriler durağan bir yapı göstermemektedir. Polonya ise sabitli ve trendli modelde birim kök içermektedir. Ancak dört ülke farklı anlamlılık seviyelerine göre bakıldığında ise sonuçlar değişmektedir. Bu nedenle tüm serilerin durağan olmasını gerektiren Granger nedensellik testi yerine, serileri düzeyinde nedensellik testine tabi tutmayı mümkün kılan Nazlioglu, et al (2016) tarafından geliştirilen Toda Yamamato temelli Fourier nedensellik testi bu çalışmada tercih edilmiştir.

Tabloda iki yönlü test var:

1. “Enf → Para Arzı” : Enflasyon para arzını nedeni midir?
2. “Para Arzı → Enf” : Para arzı enflasyonu nedeni midir?

Sayılardaki [köşeli parantez] içindeki değerler p-değerleridir (genellikle %5 anlamlılık düzeyinde $p < 0.05$ ise nedensellik kabul edilir).

Tablo 7: Toda Yamamato temelli Fourier nedensellik testi

Ülke	Enflasyon → Para Arzı	Para Arzı → Enflasyon	Sonuç (tek yönlü / çift yönlü nedensellik)
Bulgaristan	8.427 [p = 0.013]	16.562 [p = 0.000]	Çift yönlü güçlü nedensellik

Macaristan	7.629 [p = 0.072]	34.418 [p = 0.000]	Sadece Para Arzı → Enflasyon (çok güçlü)
Polonya	3.719 [p = 0.082]	2.366 [p = 0.146]	İki yönde de nedensellik yok (%10'da bile sınırda)
Romanya	0.374 [p = 0.934]	1.007 [p = 0.817]	İki yönde de hiç nedensellik yok

(Olasılık değerleri 1000 tekrarlı bootstrap ile hesaplanmıştır. Akaike bilgi kriteri kullanılmıştır)

Tablodan elde edilen sonuçlara göre Bulgaristan için %5 seviyesinde, Macaristan için ise %10 seviyesinde temel hipotez reddedilmiş ve değişkenler arasında karşılıklı nedensellik ilişkisi olduğu sonucuna varılmıştır. Polonya için %10 anlamlılık seviyesinde yalnızca Enflasyondan para arzına doğru anlamlı bir nedensellik ilişkisi olduğu görülmüştür. Romanya için ise iki yönde de anlamlı bir nedensellik ilişkisi tespit edilememiştir.

5. SONUÇ

Sovyetlerin 1989 yılında dağılmasıyla Doğu blokundan ayrılan ülkeler yeni bir politik ve ekonomik sistem arayışına girdiler. Bu ülkeler daha önce planlı ekonomi sistemi ile yönetilmişken bundan vazgeçip serbest piyasa ekonomisini tercih etmişlerder. Avrupa'nın doğusunda yer alan ülkeler Avrupa Birliğine girdiler. Ancak bazı sorunlardan dolayı daha Euro birliğine geçiş yapmadılar. Bu çalışmada, Euro kullanmayan özellikle eski doğu blokunda yer almış şuan Avrupa Birliği (AB)'de yer alan Bulgaristan, Macaristan, Polonya, Romanya ve Çek Cumhuriyeti'nin enflasyon verisi Tüketici Fiyat Endeksi (TÜFE) ve Para Arzı (M2) arasındaki ilişki 2000-2025 yılllarına ait aylık zaman serisi ile analiz edilmiştir. Parasal genişleme ile enflasyon arasında bir ilişkinin olup olmayacağı incelenmesi amaçlanmıştır. Bu amaçla, para arzının enflasyon oranı üzerindeki etkiler zaman serisi analiz yöntemlerinden Toda Yamamato temelli Fourier nedensellik testi bu çalışmada tercih edilmiştir. Analiz sonuçları özetle şöyledir:

- Bulgaristan'da para politikası ile enflasyon arasında çok güçlü ve çift yönlü bir ilişki var. Para arzı enflasyonu artırıyor, enflasyon da merkez bankasının para arzını artırmasına yol açıyor.
- Macaristan'da klasik monetarist görüşü geçerli görülüyor. Para arzındaki artışlar güçlü bir şekilde enflasyonu tetikliyor, ama ters yön (enflasyon → para arzı) anlamlı değil.
- Polonya ve Romanya'da ise para arzı ile enflasyon arasında istatistiksel olarak anlamlı bir nedensellik ilişkisi bulunmamış.

Sonuç olarak, Macaristan'da para arzının enflasyona neden olduğu hipotezinin en güçlü desteklendiği ülke olmuştur. Bulgaristan ise karşılıklı nedensellik ilişkisinin olduğu ülke, Polonya ve Romanya'da ise para arzı değişimleri enflasyonun kısa-orta vadeli hareketlerini nedensellik ilişkisi tespit edilmemiştir.

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MULTIVEKTÖR DIŞ POLITIKA MODELI: AZERBAYCAN ÖRNEĞI

s.e.f.d. G.M. Quliyeva
Bakü Devlet Üniversitesi, Diplomasi ve Modern Entegrasyon Süreçleri Bölümü
ORCID: 0009-0003-9754-3588
E-posta: gulgun2004@mail.

Xülasə

Bu makale, çok vektörlü dış politika modelini teorik ve pratik açılardan incelemekte ve Azerbaycan Cumhuriyeti'nin bu model kapsamında izlediği dış politika seyrini incelemektedir. Azerbaycan'ın coğrafi konumu, enerji kaynakları ve tarihsel ve politik koşulları, çeşitli güç merkezleriyle aynı anda dengeli ve pragmatik ilişkiler kurmasına olanak sağlamaktadır. Makale, Azerbaycan'ın Rusya, Batı, Türkiye, İran ve Çin ile ilişkileri çerçevesinde çok vektörlü politikanın ana hatlarını ve sonuçlarını analiz etmektedir. Bu makalede, Azerbaycan Cumhuriyeti'nin çok vektörlü dış politika modeli ayrıntılı olarak incelenmektedir. Çok vektörlülük kavramı, küçük ve orta ölçekli devletlerin modern uluslararası ilişkiler sistemindeki konumlarını korumak ve güçlendirmek amacıyla çeşitli güç merkezleriyle paralel ilişkiler kurması olarak açıklanmaktadır. Makale, çok vektörlü politikanın teorik temellerini - realizm ve neo-realizm çerçevesinde - ve küçük devletlerin bu modele yönelmelerinin nedenlerini " balancing " ve "bandwagoning" yaklaşımları bağlamında incelemektedir. Azerbaycan'ın bağımsızlık döneminden bu yana, özellikle Haydar Aliyev ve İlham Aliyev dönemlerindeki dış politika stratejisinin oluşumu analiz edilmektedir. Haydar Aliyev'in denge yaklaşımı ve İlham Aliyev döneminde çok vektörlü politikanın sistemleştirilmesi, diplomatik pragmatizm ve stratejik tarafsızlık gibi özellikler vurgulanmaktadır. Makale, Azerbaycan'ın çok vektörlü politikasının bölgesel ve küresel yönlerini - Rusya, Türkiye, İran, Çin ve Batı (ABD ve Avrupa Birliği) ile ilişkileri - analiz etmektedir. Her bir ortakla işbirliğinin niteliği, özellikle enerji güvenliği, askeri-teknik iş birliği, bölgesel güvenlik ve stratejik çıkarların uyumu ayrıntılı olarak ele alınmaktadır. Özellikle Karabağ çatışması ve Rusya-Ukrayna savaşının Azerbaycan'ın denge politikası üzerindeki etkileri analiz edilmektedir. Jeopolitik esneklik, diplomatik manevra kabiliyeti ve ulusal çıkarların korunması, çok vektörlü politikanın avantajları olarak belirtilmektedir. Aynı zamanda, bölgesel çatışmalar, enerji güvenliğindeki riskler ve dengeleme politikasının karmaşıklığı gibi zorluklar da vurgulanmaktadır. Sonuç olarak, Azerbaycan örneği, çok vektörlü dış politika modelinin egemenliği korumak ve bölgesel ve uluslararası baskılar arasında esnek bir pozisyon almak için etkili bir araç olduğunu göstermektedir. Ancak, bu politikanın başarılı bir şekilde uygulanması yüksek diplomatik beceri ve stratejik analiz gerektirmektedir.

Açar sözlər: Çok vektörlü dış politika, Azerbaycan dış politikası, bölgesel dengeleme, enerji diplomasisi, stratejik ortaklık, Karabağ sorunu, jeopolitik esneklik, diplomatik manevra, bölgesel güvenlik

MULTIVEKTOR XARICI SIYASƏT MODELI: AZƏRBAYCAN NÜMUNƏSI

s.e.f.d. G.M.Quliyeva
BDU-nun Diplomatiya və müasir inteqrasiya prosesləri kafedrası
ORCİD 0009-0003-9754-3588
gulgun2004@mail.ru

Xülasə

Bu məqalədə multivektor xarici siyasət modeli nəzəri və praktik aspektlərdə təhlil olunur və Azərbaycan Respublikasının bu model çərçivəsində apardığı xarici siyasət kursu araşdırılır. Azərbaycanın coğrafi mövqeyi, enerji resursları və tarixi-siyasi şəraiti onun müxtəlif güc mərkəzləri ilə eyni vaxtda balanslaşdırılmış və praqmatik əlaqələr qurmasına imkan verir. Məqalədə Azərbaycanın Rusiya, Qərb, Türkiyə, İran və Çinlə münasibətləri çərçivəsində multivektor siyasətin konturları və nəticələri təhlil edilir.Bu məqalədə Azərbaycan Respublikasının multivektor xarici siyasət modeli geniş təhlil olunur. Multivektorluq anlayışı, kiçik və orta dövlətlərin müasir beynəlxalq münasibətlər sistemində öz mövqelərini qorumaq və gücləndirmək üçün müxtəlif güc mərkəzləri ilə paralel əlaqələr qurması kimi izah edilir. Məqalədə multivektor siyasətin nəzəri əsasları – realizm və neorealizm çərçivəsində, həmçinin kiçik dövlətlərin bu modelə yönəlməsinin səbəbləri "balancing" və "bandwagoning" yanaşmaları kontekstində araşdırılır. Azərbaycanın müstəqillik dövründən başlayaraq, xüsusilə Heydər Əliyev və İlham Əliyev dövrlərində xarici siyasət strategiyasının formalaşması təhlil edilir. Heydər Əliyevin balanslaşdırıcı yanaşması və İlham Əliyev dövründə multivektor siyasətin sistemləşdirilməsi, diplomatik praqmatizm və strateji neytrallıq kimi xüsusiyyətlər vurğulanır. Məqalədə Azərbaycanın multivektor siyasətinin regional və qlobal istiqamətləri – Rusiya, Türkiyə, İran, Çin və Qərb (ABŞ və Avropa İttifaqı) ilə münasibətləri analiz edilir. Hər bir tərəfdaşla əməkdaşlığın xarakteri, xüsusilə enerji təhlükəsizliyi, hərbi-texniki əməkdaşlıq, regional təhlükəsizlik və strateji maraqların uyğunlaşdırılması aspektləri ətraflı müzakirə olunur. Xüsusi olaraq, Qarabağ münaqişəsinin və Rusiya–Ukrayna müharibəsinin Azərbaycanın balanslaşdırıcı siyasətinə təsirləri təhlil edilir. Multivektor siyasətin üstünlükləri kimi geosiyasi çeviklik, diplomatik manevr imkanları və milli maraqların qorunması qeyd edilir. Bununla yanaşı, regional qarşıdurmalar, enerji təhlükəsizliyində risklər və balans siyasətinin mürəkkəbliyi kimi çağırışlar da vurğulanır. Nəticədə, Azərbaycan nümunəsi göstərir ki, multivektor xarici siyasət modeli suverenliyi qorumaq, regional və beynəlxalq təzyiqlər arasında çevik mövqe tutmaq üçün effektiv vasitədir. Lakin bu siyasətin uğurla həyata keçirilməsi yüksək diplomatik bacarıq və strateji analiz tələb edir.

Açar sözlər Multivektor xarici siyasət, Azərbaycanın xarici siyasəti, regional balanslaşdırma, enerji diplomatiyası, strateji tərəfdaşlıq, Qarabağ münaqişəsi, geosiyasi çeviklik, diplomatik manevr, regional təhlükəsizlik

MULTIVECTOR FOREIGN POLICY MODEL: THE EXAMPLE OF AZERBAIJAN

PHd. G.M.Quliyeva
Department of "Diplomacy and Processes
modern integration "BSU
ORCİD 0009-0003-9754-3588
gulgun2004@mail.ru

Summary

This article provides a comprehensive analysis of Azerbaijan's multivector foreign policy model. The concept of multivectority is explained as the approach adopted by small and medium-sized states to maintain and strengthen their positions in the modern international system by establishing parallel relations with multiple centers of power. The theoretical foundations of multivector policy are examined

within the frameworks of realism and neorealism, alongside the reasons why smaller states adopt this model through the lenses of balancing and bandwagoning strategies. The formation of Azerbaijan's foreign policy strategy since independence is analyzed, with particular focus on the balancing approach under Heydar Aliyev and the systematization of multivector policy, diplomatic pragmatism, and strategic neutrality during Ilham Aliyev's presidency. The article further explores Azerbaijan's multivector policy in regional and global dimensions, analyzing its relations with Russia, Turkey, Iran, China, and the West (the USA and the European Union). The nature of cooperation with each partner is discussed in detail, highlighting aspects such as energy security, military-technical cooperation, regional security, and the alignment of strategic interests. The impacts of the Nagorno-Karabakh conflict and the Russia–Ukraine war on Azerbaijan's balancing strategy are also assessed. Advantages of the multivector policy include geopolitical flexibility, diplomatic maneuvering capabilities, and protection of national interests. At the same time, challenges such as regional conflicts, energy security risks, and the complexity of maintaining balance are emphasized. In conclusion, the Azerbaijani case demonstrates that the multivector foreign policy model is an effective tool for preserving sovereignty and maintaining a flexible position amid regional and international pressures. However, successful implementation of this policy requires high diplomatic skill and strategic analysis.

Keywords: Multivector foreign policy, Azerbaijan foreign policy, regional balancing, energy diplomacy, strategic partnership, Nagorno-Karabakh conflict, geopolitical flexibility, diplomatic maneuvering, regional security

GİRİŞ

Çok vektorlu dış politika modeli, modern uluslararası ilişkilerde orta güç devletlerinin çıkarlarını korumak için uyguladıkları stratejik yaklaşımlardan biridir. Bu model sayesinde devletler yalnızca çatışmalardan kaçınmakla kalmaz, aynı zamanda çeşitli uluslararası aktörlerle iş birliği yapma fırsatlarını da korurlar. Azerbaycan, Sovyet sonrası alanda bu politikayı başarıyla uygulayan devletlerden biridir.

METOD VƏ MATERİLLAR.

Modern uluslararası ilişkiler sisteminde artan jeopolitik belirsizlikler, derinleşen bölgesel çatışmalar ve küresel güç dengesindeki değişimler ışığında, orta ve küçük devletlerin dış politika tercihleri daha da önemli hale gelmiştir. Özellikle Sovyet sonrası alanda yer alan ve stratejik kaynaklara sahip ülkeler için güvenlik, bağımsızlık ve bölgesel istikrar arasında bir denge sağlamak hayati önem taşımaktadır. Bu gibi durumlarda, çok vektorlu dış politika modeli, devletlerin aynı anda birden fazla büyük güçle iş birliği kurmak ve ulusal çıkarlarını en üst düzeyde korumak için kullandıkları esnek bir yaklaşımdır. Rusya, İran, Türkiye ve Batı arasında jeopolitik bir "geçiş bölgesi"nde yer alan Azerbaycan Cumhuriyeti, bu modeli uygulayarak bağımsız politika çizgisini oluşturmayı ve sürdürmeyi başarmıştır. Enerji kaynaklarının ihracatı, ulaştırma ve lojistik kabiliyetlerinin genişletilmesi ve güvenlik zorluklarının dengelenmesi gibi konular, Azerbaycan'ın çok yönlü ve pragmatik bir dış politika çizgisini zorunlu kılmıştır. Son yıllarda Güney Kafkasya'da meydana gelen değişimler - özellikle 2020'deki İkinci Karabağ Savaşı ve bunun sonucunda oluşan yeni bölgesel güvenlik mimarisi ve Azerbaycan'ın Rusya-Ukrayna savaşı bağlamında bir pozisyon alma ihtiyacı - çok vektörlü politika kavramının önemini daha da artırmıştır. Bu bağlamda, Azerbaycan'ın Rusya, Türkiye ve Batı ile paralel iş birliği ve İran ve Çin ile ilişkilerinde temkinli ve stratejik yaklaşımı, bu modelin analiz edilmesini gerekli kılmaktadır. Dolayısıyla, bu konu yalnızca teorik olarak değil, aynı zamanda pratik açıdan da güncelliğini

korumaktadır. Azerbaycan'ın çok vektörlü dış politika çizgisinin analizi, bölgesel güçleri dengeleme politikasının fırsat ve sınırlamalarını anlamaya yardımcı olmakla kalmayıp, aynı zamanda diğer benzer ülkeler için de model teşkil edebilecek bir deneyim sunmaktadır.

Çok Vektörlülük Kavramı: Kökenleri ve Uygulama Alanları Çok vetorlü dış politika kavramı, modern uluslararası ilişkiler teorisinde özellikle küçük ve orta ölçekli devletlerin dış politika davranışlarını açıklayan kavramlardan biri olarak ortaya çıkmıştır. Bu kavram, esas olarak Soğuk Savaş sonrası dönemde, yani iki kutupluluk sonrası dönemde, küresel güç merkezlerinin büyümesi ve çok taraflı ilişkilerin genişlemesiyle bağlantılı olarak oluşmuştur. Çok vektörlü **çok vektörlülük**, bir devletin ulusal çıkarlarını en üst düzeyde korumayı amaçlayan, bazen rekabet eden birkaç farklı uluslararası aktörle aynı anda ilişki kuran esnek ve dengeli bir dış politika stratejisidir [2].

Çok vektörlü dış politika modelinin teorik temelleri neorealizm, karmaşık karşılıklı bağımlılık, yumuşak güç ve rasyonalist tercih yaklaşımlarıyla açıklanmaktadır. Neorealist yaklaşıma göre devletler, anarşik bir uluslararası sistemde güvenliklerini sağlamak için dengeleme ve ittifaklara yönelirler. Çok vektörlü yaklaşımı ise bu dengelemenin, müttefik veya ortak olarak kabul edilebilecek birden fazla güç merkezi arasında paralel olarak gerçekleştirilmesini öngörmektedir. Bu politika, teori ve pratikte ilk olarak Orta Asya ve Kafkasya bölgelerinde, özellikle Kazakistan, Azerbaycan ve Özbekistan gibi devletlerin dış politikalarında sistematik olarak kendini göstermiştir. Örneğin, 1990'ların sonlarında, Kazakistan Cumhurbaşkanı Nursultan Nazarbayev, çok vektörlü politikasını ülke dış politikasının temel ilkesi olarak ilan etmiştir. Bağımsızlığını kazandıktan sonra Azerbaycan, özellikle 1994'ten itibaren dengeli ve pragmatik bir yaklaşıma öncelik vermiştir [4].

Çok vektörizmin temel uygulama alanları aşağıdaki gibidir:

Güvenlik: Farklı güç merkezleriyle eş zamanlı olarak iş birliği yaparak bölgesel istikrarı sağlamak.

Enerji ve ekonomi: Enerji kaynaklarının taşınmasında rotaların çeşitlendirilmesi ve çeşitli aktörlerle paralel iş birliği yapmak.

Diplomatik denge: Küresel aktörler (örneğin Rusya ve Batı veya Çin ve Amerika Birleşik Devletleri) arasında tarafsız veya esnek bir konum sağlamak.

Bölgesel entegrasyon: Çeşitli entegrasyon platformlarına katılarak daha geniş bir uluslararası bağlamda ulusal çıkarların güvence altına alınması.

Bu modelin önemli bir özelliği, devletin yalnızca tek bir güç merkezine bağlı olmaması, aksine stratejik özerkliğini korumaya çalışmasıdır. Dolayısıyla, çok vektörlü dış politika modeli, özellikle jeopolitik açıdan hassas bölgelerde bulunan devletler için esneklik, diplomatik manevra olanakları ve güvenlik garantileri açısından avantajlar sunmaktadır.

Realizm ve neorealizm çerçevesinde açıklama. Çok vektörlü dış politika modeli, uluslararası ilişkiler teorisindeki realist ve neorealist yaklaşımlar ışığında daha derinlemesine anlaşılabilir. Realist teorinin temel fikri, uluslararası ilişkilerin anarşik bir ortamda gerçekleştiği ve devletlerin bu sistemde ulusal çıkarlarını –başta güvenlik ve hayatta kalma olmak üzere– sağlama mücadelesi verdikleridir (Morgenthau, 1948). Neorealizm (Waltz, 1979), uluslararası sistemin yapısının, yani güç dengesinin, devletlerin davranışlarını şekillendiren temel etken olduğunu vurgular. Bu teorik yaklaşımlara göre devletler, güç merkezleri arasında denge politikası izleyerek güvenliklerini sağlamaya çalışırlar. Bu bağlamda çok vektörlü dış politika, realizm ve neorealizmdeki dengeleme və bandvagoninq kavramları arasında esnek bir geçişe olanak tanıyan bir araç işlevi görür. Çok vektörlü dış politika izleyen devletler, bir yandan belirli güç merkezlerine yakınlaşmaya ve onların desteğinden yararlanmaya çalışırlar (bandwagoning), diğer yandan da rakip aktörlerle ilişkilerini sürdürerek güç dengesini korurlar (balancing). Neorealist yaklaşımda, çok kutuplu bir güç yapısında (örneğin ABD, Rusya, Çin ve AB gibi aktörlerin varlığı), küçük ve orta ölçekli devletler için en uygun yol stratejik

tarafsızlık veya paralel ortaklıklardır. Bu yaklaşım Azerbaycan örneğinde açıkça görülmektedir. Azerbaycan ne NATO ne de Kolektif Güvenlik Antlaşması Örgütü üyesidir, ancak her iki yapının da ana güçleriyle iş birliği yapmaktadır. Bu, realist yaklaşımda devletlerin çıkarları doğrultusunda uyarlanabilir politikalar yürütme yeteneğini göstermektedir. Realizmin bir diğer önemli unsuru olan kendini koruma içgüdüsü de çok vektörlü politikanın temelini oluşturur. Azerbaycan'ın hem Rusya hem de Batı ile paralel iş birliği, İran ve Çin ile temkinli denge politikası ve bölgesel çatışmalara karışmaktan kaçınma konusundaki diplomatik esnekliği bunun açık örnekleridir. Aynı zamanda, realizmin "çıkar temelli davranış" yaklaşımı çok vektörlü politikaya da yansır: devletler ilkeli bir tutumdan ziyade pragmatik bir tutumla hareket eder, yani ideolojik bir politikadan ziyade daha çok çıkar temelli bir politika izlerler. Azerbaycan da ulusal güvenlik, ekonomik kalkınma ve uluslararası prestij gibi çıkarlarını korumak için farklı aktörlerle eş zamanlı olarak iş birliği yapma politikasını tercih etmektedir. Dolayısıyla, çok vektörlü dış politika modeli, realizm ve neorealizm temel ilkelerine uygun olarak açıklanabilir. Bu model, devletlerin anarşik bir uluslararası sistemde hayatta kalma, denge kurma ve çıkarlarını en üst düzeye çıkarma çabalarının bir tezahürüdür.

Küçük ve orta ölçekli devletlerin bu modele yönelmesinin nedenleri. Uluslararası sistemde güç dağılımının eşitsizliği ve büyük güçler arasındaki derinleşen rekabet, küçük ve orta ölçekli devletlerin dış politika stratejilerini daha esnek ve dengeli bir şekilde oluşturma ihtiyacını doğurmaktadır.

Çok vektörlü dış politika modeli, bu tür devletlerin çıkarlarına en uygun yaklaşımlardan biridir. Küçük ve orta ölçekli devletler için bu model, bir yandan güvenlik garantileri elde etmeye, diğer yandan ekonomik ve diplomatik olanaklarını genişletmeye hizmet eder. Çok vektörlü politikaya yönelmenin temel nedenleri şunlardır: Jeopolitik ve jeoekonomik hassasiyet. Küçük ve orta ölçekli devletler genellikle büyük güç merkezleri arasında yer alır ve bu da onları doğrudan çatışmaların etkisi altına sokar. Böyle bir coğrafyada bulunan bir devlet için yalnızca tek bir güç merkezine bağlı olmak tehlikeli ve kısıtlayıcı olabilir. Çok vektörlü politika, bu devlete farklı yönlerde diplomatik ve ekonomik manevra olanakları sağlar. Azerbaycan bunun klasik bir örneğidir - Rusya, İran, Türkiye ve Batı arasında yer alan bu devlet, aynı anda çeşitli güç merkezleriyle iş birliği yapmaktadır. Güvenlik Teminatına İhtiyaç: Küçük devletler askeri güce sahip olmadıkları için güvenliklerini uluslararası ortaklıklar aracılığıyla sağlamaya çalışırlar. Çok vektörlü politikası bu açıdan en uygun seçimdir, çünkü bu model devlet için alternatif güvenlik kanalları oluşturarak herhangi bir güç merkezine bağımlılığı en aza indirir. Böylece, bir aktörle ilişkilerde yaşanan bir bozulma, bir başkasıyla telafi edilebilir.

Ekonomik Bağımlılığın Çeşitlendirilmesi: Küçük devletler genellikle kaynaklar ve pazarlar açısından daha sınırlı fırsatlara sahiptir. Çok vektörlü politika bu devletlerin birden fazla ekonomik ortakla iş birliği yapmalarına, ticaret ve yatırım akışlarını çeşitlendirmelerine olanak tanır. Örneğin, Azerbaycan'ın Avrupa, Çin ve Türkiye pazarlarına eş zamanlı erişimi, bu politikanın ekonomik avantajını göstermektedir.

Diplomatik Tanınma ve Uluslararası Meşruiyet Yeni veya az bilinen devletlerin, uluslararası tanınma ve meşruiyet kazanmak için çeşitli aktörlerle ilişkiler kurmaları gerekmektedir. Çok vektörlü yaklaşım burada hem küresel örgütlerle (BM, AB, NATO) iş birliği hem de bölgesel güçlerle ikili ilişkilerin geliştirilmesi yoluyla kullanılmaktadır. Azerbaycan'ın hem İslam İşbirliği Teşkilatı, Bağlantısızlar Hareketi hem de Avrupa Birliği ile iş birliği platformundaki faaliyetleri bunun kanıtıdır.

Büyük Güç Rekabetinden Yararlanma Çok vektörlü politika, küçük devletlerin büyük güçler arasındaki rekabetten jeopolitik kazanç elde etmelerini sağlar. Büyük güçler, o devletin sadakatini kazanmak için onlara daha fazla ekonomik ve politik ayrıcalık sunabilir. Bu, o devletin çıkarlarını daha kârlı bir şekilde gerçekleştirmesi için koşullar yaratır. Bu unsur, Rusya, Avrupa ve Çin pazarlarıyla paralel iş birliğinin kullanıldığı Azerbaycan'ın enerji politikasında açıkça görülmektedir. Dolayısıyla, küçük ve orta ölçekli devletler için çok vektörlü dış politika modeli, stratejik esneklik, risk azaltma ve ulusal çıkarların daha geniş ölçekte güvence altına alınması açısından vazgeçilmez bir araçtır. Bu model,

hem jeopolitik hem de ekonomik bağımsızlığı korumak için en uygun seçenek olmaya devam etmektedir.

"**Bandwagoning" ve "Balancing" yaklaşımları**. Uluslararası ilişkiler teorisinde, özellikle realizm ve neorealizm çerçevesinde, devletlerin güç merkezlerine yönelik davranışlarını açıklayan iki temel kavramsal yaklaşım vardır: "dengeleme" ve "bandwagoning" (**eklemlenme)**. Bu iki yaklaşım, devletlerin güvenliklerini sağlamak ve çıkarlarını korumak için uluslararası sistemde kendilerini nasıl konumlandırdıklarını anlamaya yardımcı olur. Çok vektörlü dış politika modeli ise aslında bu iki yaklaşımın esnek bir birleşimi olarak işlev görür. **Dengeleme yaklaşımı** Dengeleme yaklaşımına göre devletler, uluslararası sistemde hegemonya veya tehdit oluşturan güçlere karşı karşıt güç merkezleriyle ittifaklar kurarak denge oluşturmaya çalışırlar (Waltz, 1979). Bu strateji, devletler bağımsızlıklarını ve egemenliklerini korumak istediklerinde özellikle önem kazanır. Böyle bir yaklaşım, devletlerin baskın güce karşı çıkarak kendilerini daha güvende hissettiklerini gösterir. Azerbaycan örneğinde, dengeleme yaklaşımı, Rusya ile yakın ilişkiler kurulmasına paralel olarak Batılı kurumlar (Avrupa Birliği, NATO ile iş birliği) ve Türkiye ile stratejik ortaklıkların geliştirilmesinde kendini göstermektedir. Bu yaklaşım, Azerbaycan'ın bölgesel ve küresel güçler arasında güç dengesini korumaya çalıştığını göstermektedir. Bandwagoning Güçlü bir aktöre katılma yaklaşımı. Bandwagoning kavramına göre devletler, güçlü veya baskın bir aktörle iş birliği yaparak ve onun himayesine girerek daha az risk ve daha fazla fayda elde etmeye çalışırlar (Walt, 1987). Bu model genellikle zayıf devletler tarafından tercih edilir, çünkü bu durumda baskın gücün baskısından kaçınma veya ekonomik ve politik kazanç elde etme fırsatına sahip olurlar. Azerbaycan'ın enerji politikasında Batı ile iş birliği yapması ve "Güney Gaz Koridoru" projesi kapsamında Avrupa ile bütünleşmesi, bir anlamda bandwagoning yaklaşımının unsurlarını içermektedir. Ayrıca, Çin ile "Tek Kuşak, Tek Yol" girişimine katılımı, gelecekteki ekonomik çıkarları göz önünde bulundurarak bu güç merkeziyle ilişkileri derinleştirme girişimi olarak görülebilir. Çoklu vektörlülük bu iki yaklaşım arasında nasıl işliyor? Çoklu vektörlü dış politika modeli, özünde dengeleme ve taraf değiştirme stratejilerini bağlamsal ve paralel olarak uygulayan hibrit bir yaklaşımdır. Bu modelde, devlet aynı anda bazı alanlarda baskın güce yakınlık gösterir (taraf değiştirme), diğer alanlarda ise diğer güç merkezleriyle denge kurarak karşı tarafın etkisini sınırlamaya çalışır (dengeleme). Bu yaklaşım, Azerbaycan'ın dış politikasında dinamik bir şekilde uygulanmaktadır.

Rusya ile dengeli iş birliği; Türkiye ile askeri ve stratejik yakınlık (dengeleme); enerji ve insan sermayesi alanında Avrupa ile derin entegrasyon (bandwagoning); İran ve Çin ile temkinli açık diplomatik kanallar (dengeleme ve fırsatları değerlendirme). Dolayısıyla, "dengeleme" ve "bandwagoning" yaklaşımlarının birleşimi, çok vektörlü politikanın temel itici mekanizmalarından biridir. Azerbaycan, bu iki yaklaşımı bağlamsal ve çıkar temelli bir şekilde kullanarak uluslararası sistemde esnek, pragmatik ve dengeli bir konum sürdürmeye çalışmaktadır.

1990'lar: Devlet İnşası ve Dış Politikanın Ana Hatlarının Belirlenmesi Azerbaycan, 1991'de bağımsızlığını yeniden kazandıktan sonra dış politika alanında ciddi zorluklarla karşı karşıya kaldı. Sovyetler Birliği'nin çöküşü yalnızca siyasi özgürlük getirmekle kalmadı, aynı zamanda ekonomik çöküş, bölgesel çatışmalar ve güvenlik boşluğu gibi bir dizi yapısal sorunun mirasını da bıraktı. Böyle bir bağlamda, Azerbaycan'ın dış politika stratejisinin hem devlet inşası hem de uluslararası konumlarının oluşumuyla paralel olarak geliştirilmesi gerekiyordu. 1990'larınbaşlarında, Azerbaycan Cumhuriyeti'nin dış politikası esas olarak tepkisel (tepkisel) bir yapıya sahipti. Bu dönem, özellikle Dağlık Karabağ sorununun şiddetlenmesi, Ermenistan ile askeri çatışmalar ve uluslararası izolasyon durumunun varlığıyla karakterize edildi. İlk yıllarda dış politikada öncelik, diplomatik tanınma, toprak bütünlüğünün uluslararası alanda korunması ve bağımsızlığın korunması gibi temel konulara odaklanmıştı.

Temel özellikler ve öncelikler: Uluslararası tanınma ve örgütlere üyelik: Azerbaycan'ın 1992'de BM'ye kabulü, ülkenin uluslararası öznelliğinin tanınması açısından önemli bir aşamaydı. Daha sonra, AGİT, İİT, BDT ve diğer bölgesel örgütlere üyelikle uluslararası hukuki konumu güçlendirildi.

Toprak bütünlüğünün korunması: Dağlık Karabağ sorununun tırmanması ortamında, Azerbaycan dış politikasının temel amacı, Ermenistan'ın saldırgan politikasına karşı uluslararası destek kazanmak ve BM kararlarının kabul edilmesini sağlamaktı. 1993 yılında kabul edilen 822, 853, 874 ve 884 sayılı kararlar bunun bir sonucuydu.

Enerji kaynaklarının jeopolitik bir araca dönüşmesi: 1994 yılında imzalanan ve "Əsrin Anlaşması" olarak adlandırılan petrol anlaşması, Azerbaycan'ın dış politikasında yeni bir dönemin başlangıcını işaret ediyordu. Bu anlaşma sayesinde Azerbaycan, Batılı şirketlerle iş birliği yaparak enerji kaynaklarını uluslararası pazarlara ihraç edebildi. Böylece enerji diplomasisi ilk kez çok yönlü bir dış politikanın temel direklerinden biri haline geldi.

Türkiye ile ilişkilerin gelişimi: Bağımsızlığını kazandıktan sonra Azerbaycan, kardeşlik ve stratejik ortaklık üzerine kurulu Türkiye ile ilişkilere önem verdi. Bu ilişkiler yalnızca siyasi değil, aynı zamanda ekonomik, askeri ve kültürel alanları da kapsıyordu. Türkiye, Azerbaycan'ın bölgedeki ana destekçisi haline geldi.

Rusya ile ilişkilerin düzenlenmesi: Azerbaycan'ın bağımsız politikası, Rusya'nın Sovyet sonrası alanda nüfuzunu sürdürmeye çalışması nedeniyle Moskova ile gerginlik yaratsa da, 1990'ların sonlarına doğru, özellikle Haydar Aliyev'in liderliği sırasında, bu ilişkilerde gerçekçiliğe dayalı pragmatik bir çizgi şekillenmeye başladı.

Haydar Aliyev'in rolü ve kavramsal değişim. Ulusal lider Haydar Aliyev'in 1993 yılında iktidara geri dönmesiyle birlikte dış politikada istikrar, denge ve stratejik düşünce ön plana çıktı. Onun liderliğinde Azerbaycan, dış politikada temel ilke olarak güvenliğe odaklanan pragmatik, çok vektörlü bir yaklaşım benimsedi. Bu, devletin iç ve dış politikalarının senkronize edilmesi ve uluslararası sistemde güçlendirilmesi açısından bir dönüm noktasıydı. Dolayısıyla 1990'lar, Azerbaycan dış politikasının ilk hatlarının belirlendiği ve devlet yapısının korunmasıyla birlikte uluslararası ilişkiler sistemine entegrasyon sürecinin başladığı bir dönem olarak nitelendirilir. Bu dönemde atılan temel adımlar, daha sonra geliştirilen çok yönlü dış politikanın temelini oluşturmuştur.

Azerbaycan Dış Politika Stratejisinin Oluşturulması. 1990'lar: Devlet İnşası ve Dış Politikanın Hatlarının Belirlenmesi Sovyetler Birliği'nin dağılmasının ardından, 1991 yılında bağımsızlığını yeniden kazanan Azerbaycan, yeni jeopolitik gerçeklerle karşı karşıya kalmıştır. Bu dönemde ülkenin dış politikasının temel önceliği, uluslararası meşruiyetin tanınması, BM ve diğer uluslararası kuruluşlara üyelik, toprak bütünlüğünün desteklenmesi ve Ermenistan ile savaşın ağır sonuçlarıyla mücadele olmuştur. 1992-1993 yıllarındaki siyasi istikrarsızlık ve deneyimsizlik ortamında, dış politika net bir doğrultuda yürütülememiştir. Ancak 1993 yılında Haydar Aliyev'in iktidara gelmesiyle birlikte, dış politikada tutarlı ve esnek bir çizginin temelleri atıldı.

Haydar Aliyev'in dengeleyici yaklaşımı. Haydar Aliyev liderliğinde, dengeli bir yaklaşım Azerbaycan dış politikasında baskın çizgi haline geldi. Bu strateji, hem Batılı devletlerle (ABD, Avrupa Birliği) hem de Rusya, İran ve Türkiye ile paralel ve birbiriyle çelişen ilişkiler kurmayı amaçlıyordu. 1994 yılında imzalanan "Asrın Anlaşması" gibi büyük enerji projeleri sayesinde Azerbaycan, Batı sermayesi için stratejik önem kazanırken, aynı zamanda Rusya ile ilişkilerde temkinli bir politika benimsendi. Bu dönem, Azerbaycan'ın çok vektörlü politikasının ilk hatlarının oluşması açısından kilit bir aşama olarak kabul edilmektedir.

İlham Aliyev döneminde çok vektörlülüğün sistemleştirilmesi. İlham Aliyev'in cumhurbaşkanlığı döneminde, 2003 yılından bu yana Azerbaycan, çok vektörlü dış politika modelini daha da geliştirmiştir. Enerji diplomasisi, ulaştırma ve lojistik projeleri (TANAP, TAP, Bakü-Tiflis-Kars vb.), Bağlantısızlar Hareketi'ndeki faaliyetler, Avrupa Birliği ile ortaklık programları ve aynı zamanda Rusya ve Çin ile ikili ilişkilerin genişlemesi, Azerbaycan'ın aynı anda birden fazla güç merkeziyle iş birliği yaptığını göstermektedir. Bu durum, Azerbaycan'ın köprü işlevini yalnızca coğrafi olarak değil, diplomatik olarak da güçlendirmiştir.

Diplomatik pragmatizm ve stratejik tarafsızlık. İlham Aliyev döneminin karakteristik özelliklerinden biri diplomatik pragmatizmdir. Azerbaycan, ideolojik eğilimlerden uzak, ulusal çıkarlara daha fazla dayanan, riskleri analiz eden ve fırsatları en iyi şekilde değerlendiren bir politika izlemektedir. Rusya-Batı ve İran-Batı gerginliğinin arttığı koşullarda, Azerbaycan stratejik tarafsızlık ilkesine bağlı kalarak dengeyi korumaya çalışmaktadır. Özellikle Rusya-Ukrayna savaşı ortamında, Bakü ne Batı yaptırımlarına katılıyor ne de Moskova ile çatışmaya giriyor. Bu, Azerbaycan'ın çok yönlü dış politikasında bağımsız ve esnek bir aktör olduğunu göstermektedir. Azerbaycan-Rusya İlişkileri. Azerbaycan-Rusya ilişkileri, çok yönlü dış politikanın önemli ayaklarından birini oluşturmaktadır. İki ülke arasındaki tarihi, coğrafi ve stratejik bağlar, Azerbaycan'ı Sovyet sonrası alanda Rusya ile yakın bağları sürdüren ana aktörlerden biri haline getirmiştir. 1990'ların sonlarından itibaren, özellikle Haydar Aliyev döneminde Azerbaycan, Rusya ile ilişkilerini pragmatik bir temelde inşa etmeye başlamıştır. Bu yaklaşım "stratejik iş birliği" formülüne dayansa da, tam bir bağımlılıktan uzak, dengeli bir çizgideydi [6]. İlham Aliyev döneminde bu ilişkiler daha kurumsal bir nitelik kazandı. Enerji, güvenlik ve ulaştırma gibi alanlarda karşılıklı yarar sağlayan iş birliği formatları geliştirildi. Örneğin, silah alımları ve sınır güvenliği konularında koordinasyon da dahil olmak üzere Rusya ile askeri-teknik iş birliği, Azerbaycan için bölgesel istikrarın korunmasında önemli bir rol oynadı. Aynı zamanda Azerbaycan, Ermenistan ile yaşanan anlaşmazlığın çözümü için Rusya ile ikili ve çok taraflı formatlarda müzakerelere devam etmekte ve Kremlin'in Güney Kafkasya'daki nüfuzunu dikkate alan bir politika izlemektedir [1]. Çok vektörlü politika çerçevesinde Azerbaycan, Rusya ile ilişkilerini Batı ve diğer bölgesel güçlerle ilişkileriyle çelişmeyecek şekilde yönetmektedir. Bu yaklaşım, Azerbaycan'ın egemenlik ilkesine bağlılığını korurken, Rusya'nın bölgede istikrar adına yapıcı bir ortak olarak kalmasını amaçlamaktadır. Bu ilişkilerin bir diğer önemli boyutu da enerji diplomasisi çerçevesinde ortaya çıkmaktadır. Azerbaycan enerji kaynaklarının Avrupa'ya taşınması, Rusya ile rekabeti, bazen de iş birliğini gerektirmektedir. Dolayısıyla Azerbaycan, Hazar Denizi ötesi iş birliği olasılığını tamamen göz ardı etmeden, enerji politikasını Rusya'nın çıkarlarını dikkate alarak yönlendirmektedir [9]. Dolayısıyla Azerbaycan-Rusya ilişkileri, çok vektörlü dış politikanın "dengeleme" mekanizmasının pratik bir örneğidir: Ne Moskova ile bir çatışma ne de onun bölgesel hakimiyetine tam bir boyun eğme söz konusudur. Bu, Azerbaycan'ın stratejik bağımsızlığını korumaya ve bölgesel ve uluslararası güç merkezleri arasında esnek manevra kabiliyetlerini sürdürmeye hizmet etmektedir.

Azerbaycan-Rusya İlişkileri. Azerbaycan ve Rusya arasındaki iş birliği, güvenlik konularında önemli bir yer tutmaktadır. Bölgede lider bir güç olan Rusya, Azerbaycan'ın toprak bütünlüğü ve güvenlik stratejilerinde ana aktörlerden biridir. İki ülke, sınır koruma, terörle mücadele ve barışı koruma operasyonları gibi alanlarda iş birliği yapmaktadır. 2010'lardan bu yana Azerbaycan, Rusya ile askeri iş birliğinde giderek artan bir pragmatizm sergilemektedir. Bu iş birliği, Azerbaycan için bölgesel istikrarın korunması ve çatışma bölgelerindeki nüfuz alanının dengelenmesi açısından önemlidir [5].

Enerji, askeri-teknik ilişkiler. Azerbaycan ve Rusya arasındaki enerji sektöründeki ilişkiler hem rekabet hem de iş birliği unsurları içermektedir. Azerbaycan, petrol ve doğalgaz ihracatını Batı pazarlarına çeşitlendirmeye çalışsa da, Trans-Hazar doğalgaz boru hattı gibi enerji projeleri konusunda Rusya ile diyalog halindedir. Askeri-teknik sektörde Azerbaycan, Rus yapımı askeri teçhizat kullanmakta ve Rusya'dan askeri teçhizat satın almakta, ayrıca askeri eğitim ve deneyim alışverişinde bulunmaktadır. Bu alandaki iş birliği, Azerbaycan'ın savunma kabiliyetlerini güçlendirmek için önemli bir bileşendir [14].

Azerbaycan-Türkiye Stratejik Ortaklığı. Askeri, siyasi ve kültürel entegrasyon. Azerbaycan ve Türkiye arasındaki ilişkiler, bağımsızlıktan bu yana hızla gelişmiş ve ittifak düzeyine yükselmiştir. Bu iş birliği, hem askeri, hem siyasi hem de kültürel alanlarda derin bir entegrasyonu kapsamaktadır. Askeri alanda, ortak tatbikatlar, savunma sanayi iş birliği ve istihbarat paylaşımı, karşılıklı güvenliğin güçlendirilmesinde önemli bir rol oynamaktadır. Siyasi alanda ise iki ülke, özellikle Dağlık Karabağ sorunu ve bölgesel meseleler olmak üzere uluslararası platformlarda karşılıklı destek sağlamaktadır.

Kültürel ve dilsel birlik, uzun vadeli dostluğun ve stratejik ortaklığın temel direğini oluşturmaktadır [11].

Zangezur Koridoru, Şuşa Deklarasyonu. 2021 yılında imzalanan Şuşa Deklarasyonu, Azerbaycan ve Türkiye arasındaki ilişkilerin stratejik niteliğini daha da güçlendirmiştir. Deklarasyon, iki ülke arasında askeri iş birliği ve güvenlik alanında yeni bir aşamanın başlangıcını işaret etmiştir. Aynı zamanda, Zangezur Koridoru gibi bölgesel ulaşım ve ekonomik iş birliği projeleri, iki ülkenin küresel ve bölgesel entegrasyon stratejilerinde karşılıklı çıkarlarının bir göstergesidir. Bu koridor aracılığıyla Azerbaycan ve Türkiye, ekonomik ve ticari ilişkilerini güçlendirmenin yanı sıra Güney Kafkasya'da ulaşım altyapısının yeniden şekillenmesine de ivme kazandırıyor.

Azerbaycan ve Türkiye arasında Türk Devletleri Teşkilatı (TDT) bünyesinde iş birliği özellikle önemlidir. TUT'un amacı, Türk devletleri arasındaki siyasi, ekonomik ve kültürel entegrasyonu güçlendirmektir. Azerbaycan ve Türkiye, TUT'ta liderlik rolünü üstlenerek bölgesel istikrar ve kalkınma için ortak stratejiler oluşturmaktadır. Bu teşkilat bünyesinde hayata geçirilen projeler, Azerbaycan-Türkiye ilişkilerini daha da derinleştirmeye ve her iki ülkenin çok yönlü dış politikasında stratejik ittifak modelini güçlendirmeye hizmet etmektedir [3].

ELMİ YENİLİKLƏR

Azerbaycan ve Batı (ABD ve Avrupa Birliği). Enerji güvenliği ve "Güney Gaz Koridoru". Enerji güvenliği, Azerbaycan'ın Batı ülkeleriyle iş birliğinde temel önceliklerden biridir. Özellikle 2000'li yıllardan beri uygulanan "Güney Gaz Koridoru" projesi, Azerbaycan'ın Avrupa'ya doğal gaz ihracatını çeşitlendirmeyi ve Rusya'ya bağımlılığını azaltmayı amaçlamaktadır (Smith, 2019). Bu proje aracılığıyla Azerbaycan gazı Gürcistan, Türkiye, Yunanistan, Arnavutluk ve İtalya'ya ulaştırılmakta ve Avrupa'nın enerji kaynaklarının çeşitlendirilmesinde önemli bir rol oynamaktadır. Amerika Birleşik Devletleri ve Avrupa Birliği, Azerbaycan'ın enerji kaynaklarının Avrupa'nın enerji güvenliği için kullanılmasını teşvik ederek bu girişime stratejik destek sağlamaktadır.

İnsan hakları ve siyasi diyalog. İnsan hakları ve demokratik reformlar, Batı ve Azerbaycan arasındaki siyasi diyalogda önemli konulardır. Avrupa Birliği ile iş birliği çerçevesinde, ülkede yasal reformların teşvik edilmesi, sivil toplumun geliştirilmesi ve özgür seçimlerin yapılması gibi konular gündeme gelmektedir. Aynı zamanda Azerbaycan, egemenliğine ve ulusal güvenliğine öncelik vermekte ve bu alanda dengeli bir diyalog yürütmeye çalışmaktadır. İki taraf arasındaki görüşmelere zaman zaman anlaşmazlıklar eşlik etse de, karşılıklı çıkar ve iş birliği devam etmektedir [17].

NATO ile iş birliği. Azerbaycan-NATO ilişkileri, özellikle 1990'ların sonlarından itibaren gelişmeye başlamıştır. NATO Ortaklık Eylem Planı (IPAP) kapsamında Azerbaycan, güvenlik sektöründe yapısal reformlar gerçekleştirmenin yanı sıra barışı koruma operasyonlarına da katılmaktadır. Bu iş birliği, Azerbaycan'ın uluslararası güvenlik ortamındaki rolünü güçlendirmesine ve askeri modernizasyon sürecini hızlandırmasına olanak tanımaktadır. Ancak Azerbaycan, NATO üyesi olmaması nedeniyle stratejik tarafsızlığını korumakta ve bölgesel dengeyi korumayı tercih etmektedir [20].

Azerbaycan-İran İlişkileri. Tarihsel ve Dini Yakınlık, Ancak Stratejik Rekabet Azerbaycan ve İran'ın kadim tarihe ve dini-kültürel yakınlığa dayanan ilişkileri vardır. Her iki ülkenin nüfusunun çoğunluğu Şii Müslümanlardan oluşsa da, bu ortak değerler stratejik ilişkilerdeki çelişkileri engellememektedir. Azerbaycan'ın bağımsızlığını yeniden kazanmasının ardından, bölgede yeni jeopolitik oyunların oluşması ve özellikle Batı ve Rusya'nın etkisinin artmasıyla birlikte, İran'la ilişkilerde hem iş birliği hem de rekabet unsurları gözlemlenmektedir. Güney Kafkasya'daki nüfuz alanını korumaya çalışan İran, Azerbaycan'ın Batı ve Türkiye ile yakınlaşmasından endişe duymaktadır [15].

Sınır güvenliği ve karşılıklı suçlamalar. Azerbaycan-İran sınırlarındaki güvenlik sorunları zaman zaman gerginlik kaynağı olmuştur. Her iki taraf da birbirlerini sınır ihlalleri, kaçakçılık ve istihbarat

faaliyetleriyle suçlamaktadır. Bu gerginlikler bölgesel istikrarı olumsuz etkilese de, resmi düzeyde diyalog ve iş birliği kanalları sürdürülmektedir. Terörizm ve aşırıcılıkla mücadele için ortak adımlar da atılıyor [9].

İran-Ermenistan ilişkilerinin dengelenmesi. Azerbaycan'ın İran'daki stratejik endişelerinden biri İran-Ermenistan ilişkileridir. İki komşu ülke arasındaki ekonomik, askeri ve siyasi iş birliği geliştikçe, Bakü Tahran'la ilişkilerinde temkinli bir politika izlemek zorunda kalmaktadır. İran'ın Ermenistan'a verdiği destek, Azerbaycan için güvenlik ve diplomatik bir zorluk teşkil etmektedir. Bu nedenle Azerbaycan, Rusya ve diğer bölgesel aktörlerle iş birliğini güçlendirerek İran'ın etkisini dengelemeye çalışmaktadır [8].

Azerbaycan-Çin İlişkileri. "Tek Kuşak, Tek Yol" Girişimine Katılım Azerbaycan, Çin Halk Cumhuriyeti'nin bir girişimi olan "Tek Kuşak, Tek Yol" projesinin aktif katılımcılarından biridir. Bu girişim, Çin ile Avrupa arasındaki ekonomik ve ulaştırma ilişkilerini güçlendirmenin yanı sıra katılımcı ülkelerin altyapı ve ticaret potansiyelini artırmayı amaçlamaktadır. Azerbaycan'ın coğrafi konumu, Asya ve Avrupa arasında bir köprü görevi görmesi ve Doğu-Batı yönündeki girişimin ana geçiş rotalarından biri olması nedeniyle Kuşak ve Yol Girişimi (BRI) için stratejik öneme sahiptir [6].

Ulaştırma-lojistik iş birliği. Ulaştırma ve lojistik sektörü, Azerbaycan-Çin iş birliğinde özel bir yere sahiptir. Bakü-Tiflis-Kars demiryolu projesi, Çin mallarının Avrupa pazarlarına erişimini hızlandırırken, Azerbaycan'ın transit potansiyelini de artırmıştır. Çinli şirketler, özellikle Bakü Uluslararası Deniz Ticaret Limanı olmak üzere Azerbaycan'ın liman altyapısına yatırım yapmaktadır. Bu iş birliği, Azerbaycan'ı bölgesel bir ulaşım merkezine dönüştürmeye ve iki ülke arasındaki ekonomik bağları güçlendirmeye hizmet etmektedir [20].

Teknoloji ve yatırım iş birliği. Çin ve Azerbaycan arasında teknoloji alanındaki iş birliği de hızla gelişmektedir. Çinli şirketler Azerbaycan'ın bilgi ve iletişim teknolojileri, enerji ve sanayi sektörlerine yatırım yapmaktadır. Ayrıca, iki ülke arasında eğitim, inovasyon ve araştırma alanlarında iş birliği mekanizmaları kurulmaktadır. Bu doğrultuda imzalanan anlaşmalar Azerbaycan'ın ekonomik çeşitlendirme ve modernizasyon politikasına katkıda bulunmaktadır [21]. Çok Vektörlü Politikanın Avantajları ve Zorlukları. Jeopolitik esneklik ve diplomatik manevra olanakları. Çok vektörlü dış politika modeli, özellikle küçük ve orta güçteki devletler için önemli olan jeopolitik esneklik sağlamaktadır. Bu politika, devlete farklı güç merkezleri arasında diplomatik manevra olanakları yaratmakta, yani uluslararası sistemdeki baskılara ve değişen durumlara hızlı bir şekilde yanıt vermesini sağlamaktadır [19]. Azerbaycan örneğinde, çoklu vektörcülük sayesinde devlet, bir yandan belirli güç merkezleriyle yakınlaşma politikası izlerken, diğer yandan diğer aktörlerden elde ettiği ekonomik, politik ve güvenlik kazanımlarını en üst düzeye çıkararak Rusya, Türkiye, Çin ve Batı gibi çeşitli aktörlerle ilişkilerini aynı anda dengelemektedir. Bu jeopolitik esneklik, Azerbaycan'ın uluslararası arenada egemenliğini ve ulusal çıkarlarını korumak için vazgeçilmez bir araçtır. Diplomatik manevra kabiliyeti, Azerbaycan'a çatışmaları çözme, bölgesel iş birliği formatları oluşturma ve güvenliği sağlama konusunda ek avantajlar da sağlamaktadır. Dolayısıyla, esnek ve dengeli bir dış politika izleyerek devlet hem iç istikrarını hem de dış ilişkilerini etkili bir şekilde inşa edebilir. Ancak bu esneklik, belirli riskler ve zorluklar da doğurmaktadır: Farklı güç merkezleri arasında dengeyi sağlamak, zaman zaman karmaşık uzlaşmalar ve diplomatik incelikler gerektirmektedir. Bununla birlikte, jeopolitik esneklik, çok vektörlü politikasının temel avantajı olmaya devam etmektedir. Çok Vektörlü Politikasının Avantajları ve Zorlukları. Enerji Politikasında Çeşitlendirme Enerji politikası, Azerbaycan dış politikasının temel önceliklerinden biri ve çok vektörlü stratejisinin önemli bir bileşenidir. Ülke, enerji kaynaklarını farklı pazarlara ve güzergâhlara yönlendirerek enerji ihracatını çeşitlendirmektedir. "Güney Gaz Koridoru" ve "Bakü-Tiflis-Ceyhan" petrol boru hattı gibi projeler bu politikanın örnekleridir. Azerbaycan, bu güzergâhlar aracılığıyla Avrupa pazarlarına doğrudan erişim sağlamakta ve enerji arzındaki tekellere etkili alternatifler yaratmaktadır [18]. Çeşitlendirme, güzergâhların çeşitlendirilmesiyle sınırlı değildir; Azerbaycan'ın yeni enerji projeleri ve pazar erişim yönleri yalnızca

enerji güvenliğini artırmakla kalmamakta, aynı zamanda ülkenin uluslararası statüsünü de güçlendirmektedir.

Karabağ sonrası dönemde yeni riskler ve sınırlı manevra kabiliyeti. Bölgesel jeopolitik manzara, 2020 sonbaharındaki İkinci Karabağ Savaşı'ndan bu yana önemli ölçüde değişti. Çatışmanın yeniden alevlenmesi ve bölgede yeni güvenlik dinamiklerinin ortaya çıkması, çok vektörlü politikasının manevra kabiliyetini bir ölçüde sınırlamıştır. Özellikle Rus barış güçlerinin konuşlandırılması ve Ermenistan ile ilgili yeni statüko, Azerbaycan'ın stratejik kararlarını daha dikkatli bir şekilde değerlendirmesini gerektirmektedir [7]. Enerji projeleri, özellikle de Zangezur koridoru gibi ulaşım ve transit rotaları, yeni jeopolitik risklere açıktır ve Azerbaycan'ın diplomatik faaliyetlerinde ek dikkat ve ihtiyat gerektirmektedir. Bu koşullar altında, çok vektörlü bir politikanın esnekliği hâlâ önemlidir, ancak öncelikler ve güvenlik güvencesi konusunda bazı tavizler kaçınılmaz görünmektedir.

NƏTİCƏ

Azerbaycan dış politika modeli, uluslararası sistemde küçük ve orta ölçekli devletlerin çıkarlarını korumanın başarılı bir örneğidir. Çok vektörlü yaklaşım, Azerbaycan'ın bağımsızlığını, bölgesel nüfuzunu ve uluslararası ilişkilerde dengeli konumunu koruması için gerekli koşulları yaratır. Gelecekte, bu politikanın başarısı büyük ölçüde çevik diplomasi, bölgesel güvenlik ve enerji stratejilerinin başarılı bir şekilde koordine edilmesine bağlı olacaktır. Çok vektörlü dış politika modeli, Azerbaycan'ın uluslararası arenadaki çıkarlarının etkili bir şekilde korunması ve geliştirilmesinde önemli bir stratejik rol oynamaktadır. Bu politika sayesinde devlet, çeşitli jeopolitik güç merkezleri arasında dengeli ilişkiler kurarak hem bölgesel hem de küresel düzeyde esnek manevra olanakları elde etmektedir. Azerbaycan'ın Rusya, Türkiye, Çin, Batı ve İran gibi kilit aktörlerle ilişkileri, çok vektörlülüğün hem iş birliği hem de rekabet unsurlarını aynı anda yönetmeye olanak tanıyan dinamik bir yaklaşım olduğunu göstermektedir. Ancak, çok vektörlü politika, özellikle bölgesel çatışmalar sırasında dengeyi sağlamanın zorlukları olmak üzere bir dizi zorluğu da ortaya koymaktadır. 2020 Karabağ Savaşı ve 2022 Rusya-Ukrayna Savaşı gibi küresel ve bölgesel olaylar, Azerbaycan'ın diplomatik manevra alanlarını bir ölçüde kısıtlamıştır. Bununla birlikte, Azerbaycan dış politikasında pragmatik ve esnek bir yaklaşım hâkimdir ve bunun gelecekte de sürdürülmesi önemlidir.

Genel olarak, Azerbaycan'ın çok yönlü dış politikası, egemenliğini, bölgesel güvenliğini ve uluslararası konumunu güçlendirmede ve stratejik esnekliğini artırmada kilit bir faktör olarak işlev görmektedir. Devlet açısından bu model, hem fırsatlarla hem de yeni zorluklarla dolu bir siyasi araçtır ve başarılı bir şekilde uygulanması sürekli adaptasyon ve diplomatik beceriler gerektirmektedir.

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ECONOMETRIC ANALYSIS OF HUMAN FLIGHT AND BRAIN DRAIN DETERMINANTS: EVIDENCE FROM THE FRAGILE STATES INDEX, 2006–2023

Zulaykho KADIROVA

Associate Professor, Tashkent State University of Oriental Studies, Uzbekistan
E-mail: zulayxo_kadirova@tsuos.uz
ORCID ID: 0000-0001-8487-3308
Irtaza NAWAZ

Senior Lecturer, Tashkent State University of Oriental Studies, Uzbekistan
E-mail: Irtaza.joiya@yahoo.com
ORCID ID: 0009-0004-1794-7740
Sulkhiya GAZIYEVA

Associate Professor, Tashkent State University of Oriental Studies, Uzbekistan
E-mail: sulya_@mail.ru
ORCID ID: 0000-0001-9015-0771
Hassan Mujtaba Nawaz SALEEM

Associate Professor, The Islamia University of Bahawalpur, Pakistan
E-mail: hassan.saleem@iub.edu.pk
ORCID ID: 0000-0003-1572-2068
Ravshanjon RISKULOV

Senior Lecturer, Tashkent State University of Oriental Studies, Uzbekistan
E-mail: ravshanjon_riskulov@tsuos.uz
ORCID ID: 0000-0001-6143-2403

Abstract

Current research seeks to explore the determinants of human flight and brain drain with the help of annual panel data gathered from the Fragile States Index (FSI) spanning 2006–2023. Employing suitable econometric modelling techniques to inspect the research to study political, economic, and social factors backing the emigration of skilled professionals from fragile nation-states. Our research applies a panel data approach, while the previous research was limited to cross-sectional analysis. This technique makes it possible to comprise temporal as well as entity-specific effects, and the research is therefore more robust and explanatory. This research reveals that Security Apparatus, Factionalised Elites, Economic Fragility, and Demographic Pressures all positively predict human flight. At the same time, Economic Inequality and Human Rights each negatively predict it, and thus show more complex, non-linear relationships than others. Additionally, External Intervention also positively predicts human flight, meaning that emigration declines as the intensity of foreign involvement declines. As such, institutional stability, resilience and demographics need to be addressed to mitigate talent outflow. The principal policy implications are therefore to restructure the governance mechanism and intensify job creation and “brain circulation” policies in fragile economies.

Keywords: Brain Drain, Human Capital Migration, Fragile States Index, Panel Data, Econometrics.

INTRODUCTION

On a global scale, the movement of human capital, particularly the emigration of highly qualified specialists, commonly referred to as "*intellectual migration*" or "*brain drain*", is one of the key factors influencing nations' socio-economic stability and competitiveness. And most of it is driven by economic, political, and institutional factors and profoundly affects countries’ competitiveness and growth. The Fragile States Index (FSI) by the Fund for Peace provides annual measures of political stability, economic decline, human rights, public services, and other factors that may influence emigration (FFP,

2023). Likewise, Lawan Ngoma and Wana Ismail (2013), described that domestic political instability and weaker governance correlate with higher-skilled migration (Groizard & Llull, 2007). Under globalisation, the outflow of skilled professionals driven by economic, political, and institutional factors has intensified the human capital shortage in national labour markets. In particular, the FSI's *Human Flight and Brain Drain indicator (E3)* considers the economic impact of human displacement, specifically the loss of productive, skilled professional labour. At the same time, in some countries, this process can have a positive impact, transforming into "brain circulation" or "knowledge exchange" that contributes to innovation and development. The research by Nawaz, Kadirova, Gazieva, Ismoyilov, and Nawaz (2025), shows that countries like the *United States* and the *United Kingdom* have effectively attracted highly skilled migrants, although they face continuing obstacles, including visa constraints, credential recognition, and integration challenges.

Previous studies suggest that political instability and weak institutions amplify brain drain (Docquier, Lohest, & Marfouk, 2007). Various international organisations and scholars have sought to identify the relationship between state fragility and migration in recent years. The research by Vega-Muñoz, González-Gómez-del-Miño, and Contreras-Barraza (2025) analysed the determining factor of human flight and brain drain with the help of an ANOVA model on cross-sectional data of all nations from the Fragile States Index established by the Fund for Peace. They acknowledged four statistically substantial variables persuading the phenomenon: Public Services (P2), External Intervention (X1), Economic Inequality (E2), and Economic Decline (E1). The research reported an inclusive R-squared of approximately 68%, giving valuable understandings. In accumulation, governmental stability and a strong security apparatus are key to mitigating talent drain by nurturing confidence in local institutions (Vega-Muñoz, Gónzalez-Gómez-del-Miño, & Espinosa-Cristia, 2021).

However, this cross-sectional approach offers a limited snapshot, as it does not account for entity-specific or temporal effects of variables. In contrast, this dissertation employs a panel data approach using the same data source, but data spanning 2006 to 2023 allows for control of entity-specific and temporal variations.

The main objective of current research is to investigate the causes of human flight and brain drain grounded on panel data covering the period 2006–2023, using econometric modelling procedures. Earlier research often relied on cross-sectional data, which provided only a short description and was unsuccessful in accounting for temporal dynamics or country-specific characteristics. In contrast, this research employs a panel data model that captures both time and entity variations, thereby increasing the reliability and explanatory power of the analysis.

The findings of this research will provide assistance in categorising the main causes of human capital migration and estimating the efficacy of state stability and social policy measures. Moreover, the findings offer valuable practical implications for international organisations and policy-making institutions in designing effective strategies for managing migration and promoting sustainable human capital development.

MATERIALS AND METHODS

This study uses data on the Fragile States Index developed by the Fund for Peace, which includes 14 variables: Security Apparatus, Factionalised Elites, Group Grievance, Economy, Economic Inequality, Human Flight and Brain Drain, Overall, State Legitimacy, Public Services, Human Rights, Rank, Demographic Pressures, Refugees and IDPs, and External Intervention.

We are going to exclude Overall and Rank variables, since they account for the rest of the 12 variables and have incredibly high correlation, as shown in Figure 1:

Figure 6: Kendall Rank Correlation Matrix

FINDINGS

The rest of the variables are calculated independently, without accounting for information from each other. High values for each variable mean greater fragility, whereas a lower score means better conditions.

Table 1: Descriptive Statistics

Based on descriptive statistics and its visualisations, our key observations about this dataset include:

i. Public Services, Group Grievance, and Security Apparatus have the highest average fragility scores, indicating major global weaknesses in infrastructure, social cohesion, and safety.
ii. External Intervention and Refugees/IDPs show the lowest average scores, suggesting fewer issues in these areas for most countries.
iii. Several indicators (e.g., State Legitimacy, Group Grievance) have bimodal distributions, indicating a divide between stable and unstable countries.
iv. High variability in Human Rights and Refugees/IDPs points to significant regional differences and outliers.
v. Most indices centre around moderate fragility (scores 5–7), calling for broad but tailored policy interventions.

DISCUSSION AND CONCLUSION

Expected Model

Y = B0 + B1X1 + B2X2 + B3X3 + B4X4 + B5X5 + B6X6 + B7X7 + B8X8+ B9X9 + B10X10 + B11X11, where:

Y = Fragile States Index - Human Flight and Brain Drain

X1 = Fragile States Index - Security Apparatus,

X2 = Fragile States Index - Factionalised Elites,

X3 = Fragile States Index - Group Grievance,

X4 = Fragile States Index - Economy,

X5 = Fragile States Index - Economic Inequality,

X6 = Fragile States Index - State Legitimacy,

X7 = Fragile States Index - Public Services,

X8 = Fragile States Index - Human Rights,

X9 = Fragile States Index - Demographic Pressures,

X10 = Fragile States Index - Refugees and IDPs,

X11 = Fragile States Index - External Intervention

These indicators are all related to instability, weak governance, or poor living conditions, typically leading to increased emigration, especially of skilled workers and educated professionals. Therefore, the expected sign for all Betas would be positive.

Actual Model 1

Model 1 (OLS)

There are seven Classical Assumptions:

i. The regression model is linear, is correctly specified, and has an additive error term ε..: FAILED
In order to check the linearity of the model, we plotted residuals versus fitted values, as shown in Figure 2. The figure's shape looks curved rather than perfectly linear.

Figure 7: Model 1 - Residual Values *vs* Fitted Values

In order to confirm the nonlinearity of this model, we have conducted the Ramsey RESET Test (Regression Equation Specification Error Test). Our test is based on the following hypothesis:

Null hypothesis (H_0): The model is correctly specified (linearity holds).

Alternative hypothesis (H_1): The model is mis-specified (linearity does not hold, or variables are missing).

If the test output has a p-value < 0.05, then we reject H_0, meaning that linearity is indeed violated. On the other hand, if p-value > 0.05, we accept H_0, suggesting that the linearity conditions hold.

The following output was generated for our OLS Model 1:

F-statistic: 12.5410, p-value: 0.0005

Here we reject p-value < 0.05 → reject H_0 → Linearity is violated.

ii. The error term ε has a zero population mean: PASSED
Model 1 has a mean of residuals: -0.000000

iii. All explanatory variables (X_Ki) are uncorrelated with the error term (ε_i): FAILED
Durbin-Wu-Hausman (DWH) test for endogeneity

Null Hypothesis (H_0): The variable is exogenous and is not correlated with the error term.

Alternative Hypothesis (H_1): The variable is endogenous and correlated with the error term.

coef = 1.0000, p-value = 0.000

This means the residual from the first-stage regression is statistically significant in explaining the dependent variable, so we reject the null hypothesis (H_0: regressor is exogenous).

iv. Observations of the error term are uncorrelated with each other (no serial correlation between ε_i and ε_j): PASSED
We tested for serial correlation using the Durbin-Watson statistic, which returned a value of 2.213. Since this value is close to 2, we conclude that no significant autocorrelation exists in the residuals. Therefore, Assumption 4 (No Serial Correlation) is satisfied.

v. The error term ε has a constant variance (no heteroskedasticity): FAILED

In order to check for heteroskedasticity, we have conducted the Breusch-Pagan Test with the following assumptions:

Null hypothesis (H_0): Homoscedasticity (constant variance of residuals).

Alternative hypothesis (H_1): Heteroskedasticity (non-constant variance).

The test output below shows p-value = 0.0004 (Lagrange) or 0.0002 (F-statistic) → Very small (well below 0.05), therefore we have to reject the null hypothesis.

Lagrange multiplier statistic: 33.6153

p-value: 0.0004

f-value: 3.5103

f p-value: 0.0002

So, there is heteroskedasticity in the model — this violates one of the classical OLS assumptions.

vi. No explanatory variable is a perfect linear function of any other explanatory variable(s) (no perfect multicollinearity): FAILED
For variables to pass multicollinearity tests, we expect their Variance Inflation Factor Test values to be less than 5. Our test outputs suggest that variables, namely Factionalised Elites, Economic Inequality, State Legitimacy, Public Services, Human Rights and Demographic Pressure, significantly violate this condition:

Also, if we check Figure 1 with Kendall Correlation, we can see that there is a high independent correlation between these pairs:

Economic Inequality and Public Services - 71%

State Legitimacy and Human Rights - 73%

Public Services and Demographic Pressure - 75%

vii. The error term ε is normally distributed (this assumption is optional but usually is invoked): PASSED
Jarque-Bera test tests for normal distribution:

Jarque-Bera (JB): 3.387

Prob (JB): 0.184

Null Hypothesis (H_0): The residuals are normally distributed.

Alternative Hypothesis (H_1): The residuals are not normally distributed.

p-value = 0.184 > 0.05 → We fail to reject the null hypothesis. According to the JB test, the model's residuals do not significantly deviate from normality, which is aligned with this assumption.

Actual Model 2

Based on failed conditions in the initial model, we decided to modify our model. First, to address nonlinearity, we will add nonlinear terms for nonlinear variables: Polynomial Transformation for Human Rights and External Interventions, and Log Transformation for the Economy variable, because of their independent nonlinear relationship. To address multicollinearity, we will drop one from a pair of highly correlated variables, specifically State Legitimacy and Public Services. In order to address

heteroskedasticity, we will use WLS (with Robust standard errors (HC3)) instead of OLS, which corrects heteroskedasticity.

These remedies leave us with the Model 2:

Model 2 (WLS with Robust Errors)

There are seven Classical Assumptions:

i. The regression model is linear, is correctly specified, and has an additive error term ε: PASSED
Figure 3 shows us an improved relationship between residuals and fitted values, compared to Figure 2:

Figure 8: Model 2 - Residual Values *vs* Fitted Values

To prove that we were able to get rid of the nonlinearity issue, we again conducted the Ramsey RESET Test:

F-statistic: 3.6158

p-value: 0.0590

With a p-value just above the 0.05 threshold, at $\alpha = 0.05$, we fail to reject the null, so we no longer have strong enough evidence of nonlinearity.

i. The error term ε has a zero population mean: PASSED
Mean of residuals: 0.000000

ii. All explanatory variables (X_Ki) are uncorrelated with the error term (ε_i).: N/A
Not applicable for the WSL model, so we cannot run the Durbin-Wu-Hausman Test

iii. Observations of the error term are uncorrelated with each other (no serial correlation between ε_i and ε_j): PASSED
Durbin-Watson: 2.244

Similarly to Model 1, the value is close to 2; we conclude that there is no significant autocorrelation in the residuals.

iv. The error term ε has a constant variance (no heteroskedasticity): N/A
Breusch-Pagan test results are the following:

Lagrange multiplier statistic: 23.1076

p-value: 0.0060

f-value: 2.7834

f p-value: 0.0046

Since both p-values are below 0.05, we reject the null hypothesis, confirming the presence of heteroskedasticity in our model. However, this is not concerning in the case of Model 2, because WSL accepts heteroskedasticity.

v. No explanatory variable is a perfect linear function of any other explanatory variable(s) (no perfect multicollinearity): PASSED
This time all of our variables have passed the VIF test, with none of them exceeding a value of 5:

vi. The error term ε is normally distributed (this assumption is optional, but usually is invoked): PASSED JB test here revealed the same performance as Model 1:

Jarque-Bera (JB): 3.387

Prob (JB): 0.184

Model 2 Interpretation

X	Variable Name	Interpretation
X1	**Fragile States Index - Security Apparatus**	***Coefficient: 0.1738***. Interpretation: A higher value for Security Apparatus means greater state control over security forces, theoretically leading to more repression and less stability, potentially causing more people to flee. The positive coefficient fits the expected model, where greater state control (a marker of fragility) is associated with increased human flight.
X2	**Fragile States Index - Factionalised Elites**	***Coefficient: 0.0721***. Interpretation: Factionalised elites reflect divisions within the ruling class, and higher values suggest less cohesion and more instability in governance. The positive coefficient is expected, as more internal conflict typically leads to greater instability, increasing the likelihood of brain drain and human flight.
X3	**Fragile States Index - Group Grievance**	***Coefficient: 0.0171***. Interpretation: Group Grievance reflects societal divisions and tensions, where higher values indicate a society fractured by ethnic, religious, or political divisions. A positive coefficient suggests that more grievances may cause social instability, increasing human flight and brain drain. The coefficient here is small, reflecting perhaps less immediate impact on flight than other variables.
X4	**Fragile States Index - Economy (Log-transformed)**	***Coefficient: 2.3754***. Interpretation: A higher economic score (log-transformed) specifies a more fragile economy. This suggests that a fragile economy will likely drive people to leave for better opportunities. The positive coefficient fits the expected model, as economic fragility typically increases the motivation for people to migrate. The log transformation suggests the effect of a deteriorating economy becomes more pronounced as it worsens.
X5	**Fragile States Index - Economic Inequality**	***Coefficient: -0.0902***. Interpretation: Economic Inequality typically signifies a society with a vast wealth gap. However, in this case, the negative coefficient suggests that while inequality is often a sign of fragility, it does not directly contribute to human flight in this model. This might be due to the complex ways inequality can motivate people to leave and compel them to stay (e.g., desire to benefit from opportunities or fear of violence). An alternative theory could be that greater inequality could trigger internal migration or social movements, which offset brain drain.
X6	**Fragile States Index - Human Rights (Squared)**	***Coefficient: -0.0243***. Interpretation: Human Rights violations increase a country's fragility, and squaring this variable emphasises that the worst violations (extremely high values) have a stronger relationship with human flight. The negative sign here is surprising, as one would expect it to be positive, suggesting a non-linear effect. Severe human rights violations could either accelerate outflows (positive effect) or cause a reversal due to

		government repression of exit (negative effect). This paradox may indicate complex, dual effects of human rights abuses.
X7	**Fragile States Index - Demographic Pressures**	***Coefficient: 0.1842***. Interpretation: Demographic Pressures encompass high population growth or youth bulges, which are frequently correlated with insufficient resources and political instability. Strong performance on this index indicates more societal stress and vulnerability, which pushes people to emigrate for better opportunities. Therefore, a positive coefficient is as anticipated for demographic pressures.
X8	**Fragile States Index - Refugees and IDPs**	***Coefficient: -0.0013***. Interpretation: Refugees and internally displaced persons (IDPs) specify displacement and humanitarian crises. The negative coefficient at this point is unexpected, as we would characteristically assume more displaced people to correlate with more human flight. This might propose that displacement repeatedly occurs within a country or that international humanitarian efforts are mitigating outward migration.
X9	**Fragile States Index - External Intervention (Squared)**	***Coefficient: 0.0209***. Interpretation: External intervention replicates the inspiration of foreign powers in the country's internal affairs. The squared term suggests that moderate interventions may have one effect, while extreme interventions have a noticeable supplementary impact on human flight. The positive coefficient specifies that external interventions (such as foreign military or political involvement) contribute to fragility and boost outflows, though the effect rushes as the intervention becomes more intense.

Final Model suggests the following relationship:

$$Y=-1.0129+0.1738\cdot X1 +0.0721\cdot X2 +0.0171\cdot X3+2.3754\cdot X4 -0.0902\cdot X5 -0.0243\cdot X6+0.1842\cdot X7 -0.0013\cdot X8 +0.0209\cdot X9$$

The econometric results reaffirm key drivers of human flight and brain drain in fragile states. Security, economic fragility, factionalised elites, and demographic pressure all significantly influence outward migration. While consistent with previous studies like Vega-Muñoz et al. and Nawaz et al., our panel data approach shows these effects are long-term, not temporary. Positive coefficients for Security Apparatus, Factionalised Elites, and the Economy point to worsening institutions and economies pushing skilled workers away. Demographic Pressure also plays a strong role, linking youth unemployment and population growth to talent loss. Interestingly, Economic Inequality and Human Rights (squared) show unexpected signs, suggesting complex or non-linear impacts. In some contexts, inequality may incentivise elite retention, and repression may restrict outward movement. External Intervention (squared) is also significant, indicating that intense foreign involvement destabilises local systems and encourages emigration. Model 2 strengthens these findings through improved specifications, addressing earlier errors and improving reliability.

Policy Implications

Policy-wise, the results may draw a few main measures to mitigate brain drain. Basing on the above findings, the following measures may be suggested:

i.Strengthen public institutions and governance to reduce elite factionalism and unify politics.

ii. Stabilise the economy and create jobs for high-pressure demographic contexts.
iii. promote civil rights protection and restrict external political meddling to stabilise society.
iv. Facilitating "brain circulation" strategies, such as worldwide academic partnerships and diaspora engagement, to adapt human flight towards knowledge exchange.

Conclusion

This research enhances the growing literature on migration and state fragility by encompassing the analysis from a cross-sectional to a panel data framework setting spanning 18 years. It concludes that fragility dimensions related to security, economy, and governance persist as significant factors in amplifying human flight and brain drain. It is suggested that future studies entail the impact of governance and interaction effects with socio-economic stability measures, as well as analyse state-level differences to establish an increasingly polarized overview of the migration trend.

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DEVLET MUHASEBE STANDARTLARI: MALİ TABLOLARIN SUNULMASI STANDARDININ (DMS 1) İNCELENMESİ

Uğur İBİŞ

E-mail: ugur.ibis@tubitak.gov.tr
ORCID ID: 0009-0001-4337-2133

Özet

Devlet Muhasebe Standartları, kamu mali yönetiminde şeffaflık, hesap verebilirlik, güvenilirlik ve karşılaştırılabilirliği sağlamak amacıyla oluşturulmuş, kamu mali raporlama sistemine yön veren temel düzenlemelerdir. Bu standartlar, 2006 yılında Hazine ve Maliye Bakanlığı bünyesinde kurulan Devlet Muhasebe Standartları Kurulu (DMSK) tarafından hazırlanmıştır. Türkiye, kamu mali yönetimini uluslararası düzeyde standart bir yapıya kavuşturmak amacıyla, Uluslararası Muhasebeciler Federasyonu (IFAC) tarafından oluşturulan ve daha sonra Uluslararası Kamu Sektörü Muhasebe Standartları Kurulu (IPSASB) adını alan kurulla iş birliği yapmış, bu doğrultuda uluslararası standartlara uyumlu yerel düzenlemeler geliştirmeyi taahhüt etmiştir. 2003 yılında yürürlüğe giren 5018 sayılı KMYKK, performans esaslı, şeffaf ve hesap verebilir bir mali yönetim anlayışının yasal temelini oluşturmuş; bu çerçevede kamu idarelerinde mali işlemlerin yeniden yapılandırılması ve muhasebe uygulamalarında standardizasyon ihtiyacı ortaya çıkmıştır. Bu doğrultuda geliştirilen ilk standart, 2008 yılında yayımlanan **"Mali Tabloların Sunulması"** standardı olup, mali tabloların biçimsel ve içeriksel sunum esaslarını düzenlemektedir. Söz konusu standart, kamu idarelerinin mali raporlamasında birlik sağlamak, bilgilerin doğru, güvenilir ve karşılaştırılabilir şekilde sunulmasını temin etmek amacıyla hazırlanmıştır. 2022 yılında güncellenen standart, kamu idarelerinin mali tablolarının karşılaştırılabilirliğini artırarak kamu mali yönetiminde şeffaflık ve hesap verebilirliği güçlendirmeyi amaçlamaktadır. Çalışmada, standardın yürürlüğe girmesinden önce ve sonra hazırlanmış mali tablolar karşılaştırılarak, değişikliklerin etkileri incelenmiştir.

Anahtar Kelimeler: Devlet Muhasebe Standartları, Mali Tabloların Sunulması, DMS-1, IPSAS - IPSASB – Kamu Muhasebesi

GİRİŞ

Kamu mali yönetimi, devletin gelir ve giderlerinin etkin, verimli ve şeffaf bir şekilde yönetilmesini sağlayan temel bir sistemdir. Bu sistemin güvenilir bilgi üretmesi ve kamu kaynaklarının kullanımında hesap verebilirliği temin etmesi, çağdaş yönetim anlayışının gereğidir. (Kırılmaz, 2015) Bu bağlamda, mali raporlama süreçlerinde uluslararası düzeyde bir standardizasyon ihtiyacı doğmuştur. Türkiye'de bu ihtiyaca yanıt olarak geliştirilen **Devlet Muhasebe Standartları (DMS),** kamu sektörü muhasebe uygulamalarının uluslararası kamu sektörü muhasebe standartları (**IPSAS**) ile uyumlu hale getirilmesini amaçlamaktadır. DMS'ler, kamu kurum ve kuruluşlarının mali işlemlerini tekdüze bir yapıda kaydetmelerini, raporlamalarını ve analiz etmelerini sağlayarak mali saydamlık ve karşılaştırılabilirlik düzeyini artırmaktadır.

Bu standartlar arasında önemli bir yere sahip olan **DMS 1 – Mali Tabloların Sunulması Standardı,** kamu idarelerinin mali tablolarının biçimsel yapısını, içeriğini ve sunum esaslarını düzenlemektedir. DMS 1, mali tabloların yalnızca rakamsal veriler içeren bir rapor olmaktan çıkıp, kamu kaynaklarının kullanımına ilişkin anlamlı ve güvenilir bilgi sağlayan bir iletişim aracı haline gelmesini hedeflemektedir. Ayrıca, mali tabloların doğruluk, tutarlılık, anlaşılabilirlik ve karşılaştırılabilirlik niteliklerini güçlendirerek kamu yönetiminde **hesap verebilirlik** ve **mali disiplin** ilkelerine katkı sağlamaktadır.

Türkiye'de DMS 1'in uygulanmasıyla birlikte, kamu idarelerinin mali tablolarında uluslararası standartlara uygun bir sunum anlayışı benimsenmiş, raporlama süreçlerinde şeffaflık ve güvenilirlik artmıştır. Bu gelişme, hem ulusal düzeyde mali yönetimin etkinliğini hem de uluslararası alanda

Türkiye'nin mali raporlama güvenilirliğini güçlendirmiştir. (Yanık, 2018) Bununla birlikte, uygulamada bazı kurumların yeni standartlara uyum sürecinde karşılaştıkları teknik ve yapısal sorunlar, DMS'lerin tam anlamıyla benimsenmesi ve kurumsal kapasitenin geliştirilmesi gerekliliğini ortaya koymaktadır. Dolayısıyla, DMS 1 yalnızca muhasebe uygulamalarında bir düzenleme aracı değil, aynı zamanda kamu sektöründe mali yönetim anlayışının dönüşümünü destekleyen stratejik bir araç olarak değerlendirilmektedir. (Topakkaya, 2020)

LİTERATÜR TARAMASI

Osman Aydın'ın (2018) "Devlet Muhasebe Standartlarının Çeşitli Ülkelerde Uygulanması ve Türkiye Uygulamasının Değerlendirilmesi" başlıklı çalışmasında, 1990'lı yıllarda dünyada başlayan **Yeni Kamu Yönetimi (New Public Management – NPM)** reformlarıyla birlikte kamu mali yönetiminde önemli bir dönüşüm süreci yaşandığı vurgulanmaktadır. Çalışmaya göre, bu reform hareketleri sonucunda birçok ülke, geleneksel **nakit esaslı muhasebe sisteminden** karar alıcılar ve yöneticiler için daha kapsamlı bilgi üreten **tahakkuk esaslı muhasebe sistemine** geçmiştir. Bu geçiş, devletlerin varlık ve yükümlülükleri hakkında daha doğru bilgi edinmesini sağlayarak stratejik planlama ve mali karar alma süreçlerinde etkinliği artırmıştır. Aydın, özel sektörde geliştirilen **Uluslararası Finansal Raporlama Standartları (IFRS)**'nin kamu sektörü için örnek teşkil ettiğini; bu doğrultuda **Uluslararası Kamu Sektörü Muhasebe Standartları (IPSAS)**'ın oluşturularak uygulanmaya başlandığını belirtmektedir. IPSAS'ın temel amacının, kamu mali raporlamasında **karşılaştırılabilirlik, şeffaflık ve hesap verebilirlik** ilkelerini güçlendirmek olduğu ifade edilmektedir. Çalışmada ayrıca, devlet muhasebesinin gelişimiyle birlikte kamu kurumlarının da özel sektör işletmeleri gibi varlıklarını ve yükümlülüklerini ayrıntılı biçimde raporlamaya başladıkları; UNESCO gibi uluslararası kuruluşların IPSAS temelli finansal tablolarının bu dönüşümün somut bir örneği olduğu sonucuna varılmıştır.

Serap Yanık, Can Öztürk'ün (2018) çalışmasında, devlet muhasebesi kapsamında **Uluslararası Muhasebeciler Federasyonu (IFAC)** tarafından kabul edilen dört temel muhasebe sistemi — **nakit esası, uyarlanmış nakit esası, tam tahakkuk esası** ve **uyarlanmış tahakkuk esası** — incelenmiştir. Çalışmada özellikle **tam tahakkuk esasına** dayalı muhasebe sistemi ele alınmış; bu çerçevede Türkiye'de **Uluslararası Kamu Sektörü Muhasebe Standartları (IPSAS)** temel alınarak hazırlanan **Devlet Muhasebe Standartları (DMS)**'nden **DMS 1 – Mali Tabloların Sunulması** standardı, **IPSAS 1 – Presentation of Financial Statements** standardı ile karşılaştırmalı olarak analiz edilmiştir. Araştırma sonucunda, DMS 1'de yer alan "tam mali tablolar seti"nin kapsamının IPSAS 1'de tanımlanan "tam finansal tablolar seti" ile tam olarak örtüşmediği belirlenmiştir. Bu nedenle, Türkiye'de DMS'leri uygulayan kamu kurum ve kuruluşlarının mali tablolarının IPSAS standartlarıyla tam uyumlu olmayacağı sonucuna ulaşılmıştır. Bu durum, Türkiye'de kamu muhasebe sisteminin uluslararası standartlara uyum sürecinde yapısal bazı farklılıkların ve geliştirilmesi gereken alanların bulunduğunu göstermektedir.

Seval Kardeş Selimoğlu (2023) ise Türkiye'de Kamuda Sürdürülebilirlik için Devlet Muhasebe Standartlarının Rolü adlı çalışmasında, Türkiye'de, kamu yönetiminde **şeffaflık, hesap verebilirlik ve iyi yönetişim** ilkeleri benimsenmiş olmakla birlikte, uygulamaların halen optimize edilmesi gerektiğini belirtmiştir. Bu nedenle **Devlet Muhasebe Standartları (DMS)**'nin IPSAS ile uyumlu ve uluslararası standartlarla entegre biçimde uygulanması, hem kamu hem özel sektörde sürdürülebilirliği destekleyecek, Türkiye'nin küresel imajını ve ekonomik değerlerini güçlendirecektir. Çalışma, bu perspektiften hareketle DMS uygulamalarının önemi ve etkilerini incelemeyi amaçlamıştır.

Sevim (2009), Türkiye'de devlet muhasebesinin 1050 sayılı Kanun kapsamında geliştiğini ancak kamu sektörünün ekonomik büyüklüğü dikkate alındığında mevcut uygulamaların yetersiz olduğunu belirtmiştir. 2005'ten sonra yürütülen mali ve idari reformlar ile 5018 sayılı Kanun, devlet muhasebesini kamu sektörü muhasebesi anlayışı doğrultusunda şekillendirmiştir. Etkin bir kamu sektörü muhasebesi için öncelikle teknik uygulamalardan ziyade bizimde çalışmamızda birincisine yer vereceğimiz **ilkeler**

ve standartların geliştirilmesi gerektiğine değinmiştir. Bu yaklaşım, uzun süredir devam eden devlet muhasebesi kültüründen kaynaklanan davranışsal sorunların çözümünü hızlandıracaktır.

Ali Topakkaya ve Atila Tuncer ise editörlüğünü Prof. Dr. Seval Kardeş Selimoğlu, Dr. Mehmet Koçdemir ve Harun Yalçın Mengüloğul'un yaptığı 2020 de yayınlanan Kamu Sektörü Muhasebe Standartları adlı kitapta, Uluslararası Kamu Sektörü Muhasebe Standartları Kurulu (IPSASB) ın, büyük ölçüde IFRS modelini referans alarak uluslararası standartları yayımladığını ve Türkiye de bu standartları temel alarak kamu sektörü muhasebesinin yasal çerçevesini oluşturmakta ve uyumlaştırma sürecini sürdürdüğünü belirtmiştir. Bu kapsamda hazırlanan kitap, Türkiye'de alanla ilgili ilk rehber niteliğinde çalışmalardan biridir ve uygulayıcılar, akademisyenler ile öğrenciler için kamu sektörü muhasebe standartlarının ulusal ve uluslararası boyutlarını, geçmişini, güncel uygulamalarını ve gelecekteki yönelimlerini sistematik bir şekilde sunmaktadır. Kitapta, DMSK tarafından yayımlanan 30 standart detaylı olarak incelenmiş ve konular, alanın uzmanları tarafından anlaşılır bir biçimde aktarılmıştır.

DEVLET MUHASEBE STANDARTLARI

Devlet muhasebesindeki gelişmelerin temelinde, başta OECD, IMF ve Dünya Bankası gibi uluslararası mali kuruluşlar ile Avrupa Birliği gibi ekonomik ve siyasi bütünleşmelerin, devletlere ve bölgesel birliklere ait mali istatistikleri ve raporları üretme ihtiyacı yatmaktadır. Farklı muhasebe ve raporlama sistemlerine dayalı olarak üretilen mali raporların karşılaştırılması ve konsolide edilmesi mümkün olmadığından, hem ulusal düzeyde farklı yönetim birimlerinin hesaplarının bütünleştirilmesi hem de uluslararası düzeyde mali tabloların oluşturulması ciddi güçlükler doğurmaktadır. (Çetinkaya, 2004) Örneğin, merkezi yönetim ile yerel yönetim birimlerinin veya AB üye ülkelerinin farklı muhasebe standartları kullanması, konsolide raporlamayı engellemektedir. (Topakkaya, 2020) Benzer şekilde, IMF'in dünya ülkelerinin mali istatistiklerini derlemesi, farklı muhasebe sistemlerine dayalı verilerin karşılaştırılmasını ve konsolidasyonunu güçleştirmektedir. Bu nedenle, Uluslararası Kamu Sektörü Muhasebe Standartları Kurulu (IPSASB), IFAC, IMF ve EUROSTAT gibi uluslararası kuruluşlar, benzer muhasebe sistemleri geliştirme ve uyumlaştırma çalışmalarını yoğunlaştırmıştır. (Özyiğit, 2023)

Tarihsel olarak kamu sektörü muhasebesi bütçe esaslı bir sistemle yürütülmüş ve yalnızca tahsilat-ödeme ilişkisi ile hesap verebilirliği sağlamıştır; ancak günümüz devlet faaliyetlerinin artan karmaşıklığı ve küresel etkileşimler, bu sistemin yetersiz kalmasına yol açmıştır. (Heiling J, 2012) Nakit esaslı raporlama, mali durum ve performans hakkında sınırlı bilgi sunduğu için kamu sektörü kuruluşları, tam tahakkuk esasına dayalı muhasebe sistemine geçiş yapmış veya geçiş sürecini sürdürmektedir. Tam tahakkuk esaslı muhasebe, kaynakların, borçların ve hizmet maliyetlerinin şeffaf biçimde raporlanmasını sağlayarak mali bilgi kalitesini ve hesap verebilirliği artırmakta; IPSAS standartları ise uluslararası karşılaştırılabilirlik, güvenilirlik ve şeffaflık sağlama açısından önemli bir araç olarak kullanılmaktadır. (Topakkaya, 2020) Bu bağlamda, IPSAS'ların benimsenmesi hem gelişmiş hem de gelişmekte olan ülkelerde kamu mali yönetiminin modernizasyonuna ve etkinliğine katkıda bulunmakta, uluslararası kuruluşlar ve Avrupa Birliği gibi ekonomik birlikler de standartların uygulanmasını teşvik etmektedir.

Türkiye'de kamu muhasebesi uzun yıllar boyunca nakit esasına dayalı olarak yürütülmüş, bu sistem bilgi üretiminde yetersizlik, varlıkların izlenememesi ve mali raporlama eksiklikleri gibi birçok sorunu beraberinde getirmiştir. Bu sorunların giderilmesi amacıyla 1990'lı yılların başından itibaren tahakkuk esaslı muhasebe sistemine geçiş süreci başlatılmış, 5018 sayılı Kamu Mali Yönetimi ve Kontrol Kanunu ile bu sistem yasal dayanağa kavuşmuştur. Bu süreçte çeşitli yönetmelikler yayımlanmış ve tahakkuk esaslı muhasebe uygulamaya alınmıştır. (Kartalcı, 2019) 5018 sayılı Kanun çerçevesinde Hazine ve Maliye Bakanlığı bünyesinde Devlet Muhasebesi Standartları Kurulu (DMSK) kurulmuş ve uluslararası standartlara uygun devlet muhasebe standartları belirlenmiştir.

DMSK'nın temel amacı, kamu mali yönetiminde hesap verebilirlik ve mali saydamlığı sağlamak üzere, IPSAS'a (Uluslararası Kamu Sektörü Muhasebe Standartları) uyumlu bir muhasebe ve raporlama sistemi oluşturmaktır. (Kuyumcu, 2024) Bu doğrultuda Kurul, 2008 yılından itibaren 32 Devlet Muhasebesi Standardı yayımlamıştır.

Tablo 1: Devlet Muhasebe Standartları

SIRA NO	DMS NO	DEVLET MUHASEBESİ STANDARTI ADI	RG YAYIM YILI
1	DMS 1	Mali Tabloların Sunulması	2008
2	DMS 2	Nakit Akış Tabloları	2008
3	DMS 3	Muhasebe Politikaları, Muhasebe Tahminindeki Değişiklikler ve Hatalar	2008
4	DMS 4	Dövizle Yapılan İşlemler ve Döviz Kurlarındaki Değişimin Etkileri	2008
5	DMS 5	Borçlanma Maliyetleri	2008
6	DMS 9	Bedel Karşılığında Yapılan Faaliyetlerden Elde Edilen Gelirler	2010
7	DMS 10	Yüksek Enflasyonlu Ekonomilerde Mali Raporlama	2013
8	DMS 11	İnşaat Sözleşmeleri	2012
9	DMS 12	Stoklar	2010
10	DMS 13	Kiralamalar	2010
11	DMS 14	Raporlama Tarihinden Sonraki Olaylar	2010
12	DMS 16	Yatırım Amaçlı Varlıklar	2010
13	DMS 17	Maddi Duran Varlıklar	2010
14	DMS 18	Bölümsel Raporlama	2012
15	DMS 19	Karşılıklar, Koşullu Yükümlülükler ve Koşullu Varlıklar	2011
16	DMS 20	İlişkili Taraf Açıklamaları	2013
17	DMS 21	Nakit Üretmeyen Varlıklarda Değer Düşüklüğü	2011
18	DMS 22	Genel Yönetime İlişkin Mali Bilgilerin Açıklanması	2011
19	DMS 23	Vergiler ve Karşılıksız Diğer Gelirler	2015
20	DMS 24	Bütçe Bilgilerinin Mali Tablolarda Sunumu	2015

21	DMS 26	Nakit Üreten Varlıklarda Değer Düşüklüğü	2017
22	DMS 27	Tarım	2017
23	DMS 28	Mali Araçlar; Sunum	2016
24	DMS 29	Mali Araçlar; Muhasebeleştirme ve Ölçme	2016
25	DMS 30	Mali Araçlar; Açıklamalar	2016
26	DMS 31	Maddi Olmayan Duran Varlıklar	2011
27	DMS 32	Hizmet İmtiyaz Sözleşmeleri	2014
28	DMS 34	Bireysel Mali Tablolar	2024
29	DMS 35	Konsolide Mali Tablolar	2024
30	DMS 36	İştirakler ve Ortak Girişimlerdeki Yatırımlar	2024
31	DMS 37	Ortak Anlaşmalar	2024
32	DMS 38	Diğer Kuruluşlardaki Paylara İlişkin Açıklamalar	2024

Kaynak : : https://www.hmb.gov.tr/devlet-muhasebesi-standartlari

Standartlardan ilki 2008 yılında yayımlanan Mali Tabloların Sunulmasıdır. Bu standart, genel yönetim kapsamındaki kamu idarelerinin **genel amaçlı mali tablolarının sunumuna** ilişkin esasları belirlemektedir. Temel hedef, kamu kurumlarının mali tablolarının **önceki dönemlerle ve diğer kuruluşların mali tablolarıyla karşılaştırılabilirliğini** sağlamaktır. Bu doğrultuda standart, **tahakkuk esasına göre** hazırlanan mali tabloların **sunum ilkelerini, yapısal unsurlarını** ve **asgari içerik koşullarını** düzenlemektedir. Ayrıca, belirli işlem ve olayların mali tablolara **alınması, ölçülmesi ve açıklanması** konularının bu standartta değil, diğer **Devlet Muhasebesi Standartları** kapsamında ele alınacağı belirtilmektedir.

Bu standart, **tahakkuk esaslı muhasebe** çerçevesinde genel amaçlı mali tabloların **Devlet Muhasebesi Standartlarına uygun olarak hazırlanması ve sunulması** sürecinde uygulanmaktadır. Genel amaçlı mali tablolar, **özel bilgi talepleri bulunmayan** kullanıcıların (örneğin vatandaşlar, vergi mükellefleri, bağışçılar, borç verenler ve diğer kaynak sağlayıcılar) **bilgi ihtiyaçlarını karşılamayı** hedefleyen tablolardır. Bu tablolar, tek başına veya **yıllık rapor gibi** başka kamu belgeleriyle birlikte sunulabilir. (Sevim, 2009) Standart, **konsolide** ve **bireysel mali tablo** sunan tüm kamu kuruluşları için **aynı şekilde geçerlidir**.

Mali tablolar, bir kuruluşun **mali durumunu** ve **mali performansını** belirlenmiş kriterler çerçevesinde sunan raporlardır. (Cavlak, 2018) **Genel amaçlı mali tabloların** temel amacı, kaynakların tahsisine ilişkin kararların alınması ve değerlendirilmesinde geniş bir kullanıcı kitlesine (örneğin vatandaşlar, bağışçılar, kredi verenler vb.) **yararlı bilgiler** sağlamaktır. Bu tablolar, kuruluşun mali durumu, mali performansı ve nakit akışları hakkında bilgi sunar.

Kamu sektöründe genel amaçlı mali raporlamanın amacı ise, karar verme sürecine katkı sağlayacak bilgiler sunarak kuruluşların **hesap verebilirliğini güçlendirmektir**. Bu kapsamda raporlamanın hedefleri şunlardır:

- Mali kaynakların **edinimi, tahsisi ve kullanımı** hakkında bilgi sağlamak,
- Kuruluşun faaliyetlerini nasıl finanse ettiği ve **nakit gereksinimlerini nasıl karşıladığına** dair bilgi sunmak,
- Kuruluşun **yükümlülüklerini yerine getirme** ve **faaliyetlerini sürdürebilme** kapasitesini değerlendirmeye yardımcı bilgiler sağlamak,
- Kuruluşun **mali durumu** ve bu durumdaki değişiklikler hakkında bilgi sunmak,
- Kuruluşun performansını **hizmet maliyetleri, verimlilik** ve **hedeflere ulaşma** açısından değerlendirmede yararlı toplu bilgiler sunmaktır.

Bu amacın gerçekleştirilmesi için mali tablolar, kuruluşla ilgili aşağıdaki unsurlar hakkında bilgi sağlamaktadır:

- Varlıklar,
- Yükümlülükler,
- Net varlıklar / öz kaynaklar,
- Gelirler,
- Giderler,
- Net varlıklarda veya öz kaynaklarda meydana gelen diğer değişiklikler,
- Nakit akışları.

Tam bir mali tablo seti aşağıdaki unsurlardan oluşmaktadır:

- Mali Durum Tablosu (Bilanço): Kuruluşun belirli bir tarihteki varlıklarını, yükümlülüklerini ve net varlıklarını/öz kaynaklarını gösterir.
- Mali Performans Tablosu (Faaliyet Sonuçları Tablosu): Dönem içinde elde edilen gelirler ile katlanılan giderleri göstererek mali performansı ortaya koyar.
- Net Varlıklar / Özkaynak Değişim Tablosu: Dönem boyunca net varlıklarda veya öz kaynaklarda meydana gelen değişiklikleri açıklar.
- Nakit Akış Tablosu: Dönem içindeki nakit giriş ve çıkışlarını gösterir.
- Bütçe Gerçekleşme Karşılaştırması: Kuruluşun onaylanmış ve yayımlanmış bütçesinde öngörülen tutarların, gerçekleşen tutarlarla karşılaştırıldığı ayrı bir ek mali tablo veya mali tablolarda yer alan bir bütçe sütunu şeklinde sunulur.
- Dipnotlar: Önemli muhasebe politikaları ile diğer açıklayıcı bilgileri içeren bölümdür.
- Karşılaştırmalı Bilgiler: Bu standartta yer alan "Karşılaştırmalı Bilgiler" başlığı uyarınca, önceki döneme ilişkin mali bilgilerin cari dönem verileriyle karşılaştırmalı olarak sunulmasını içerir.

2022 de güncellenen standart 22/02/2008 tarihli ve 26795 sayılı Resmî Gazete'de yayımlanan "Mali Tabloların Sunulmasına İlişkin 1 No'lu Devlet Muhasebesi Standardını (DMS 1)" yürürlükten kaldırmıştır. Bu standart, **Uluslararası Muhasebeciler Federasyonu (IFAC) Kamu Sektörü Muhasebe Standartları Kurulu (IPSAS)** tarafından yayımlanan ve 2022 yılı Ekim ayı itibarıyla yürürlükte olan "Mali Tabloların Sunulması Standardı (IPSAS 1)" esas alınarak hazırlanmıştır.

Yayınlanan muhasebe standardının kapsamı ve temel özellikleri incelendikten sonra, Maliye Bakanlığı tarafından standardın yürürlüğe girmesinden önce ve sonra yayımlanan mali tablolar karşılaştırmalı olarak analiz edilmiştir. Bu inceleme, söz konusu standardın mali raporlama uygulamaları üzerindeki etkilerini değerlendirmek amacıyla gerçekleştirilmiştir. Elde edilen bulgular, Maliye Bakanlığı'nın standardın yürürlüğe girmesinin ardından mali tablolarını ilgili düzenlemelere uygun biçimde yeniden yapılandırdığını göstermektedir. Ayrıca, Bakanlığın finansal bilgileri kamuoyu ile paylaşma sürecinde şeffaflık ve hesap verebilirlik ilkelerine daha yüksek düzeyde uyum sağladığı gözlemlenmiştir. Bu durum, standartların uygulanmasının kamu kurumlarının mali raporlama kalitesini artırmada önemli bir rol oynadığını ortaya koymaktadır.

Standardın yayımlanmasından önceki son yılı incelediğimizde,

Tablo 2: Standart Öncesi Sunulan Bütçe Bilgilerine Dair Tablo

Kaynak: Hazine ve Maliye Bakanlğı sitesinden alınmıştır

2007 yılına ait mali veriler incelendiğinde, söz konusu verilerin yalnızca ekonomik düzeyde bütçe sonuçlarını yansıttığı, ancak standartta tanımlanan kamu sektöründe genel amaçlı mali raporlamanın hedeflerini tam olarak karşılamadığı görülmektedir. Mevcut mali tabloların, kamu sektörüne ilişkin mali raporlamanın temel amaçlarından olan hesap verebilirlik, şeffaflık ve karar alma süreçlerini destekleme işlevlerini yeterince yerine getirmediği tespit edilmiştir. Ayrıca, bu tabloların kuruluşla ilgili kapsamlı bilgileri içermediği ve standartta öngörülen nitelikteki mali tablolara yer verilmediği gözlemlenmiştir. Bu durum, standardın öngördüğü raporlama yapısına geçiş sürecinde kavramsal ve uygulamaya yönelik eksikliklerin bulunduğuna işaret etmektedir.

2007 yılında yayımlanan genel faaliyet raporunda, mali tablolar başlıklı kısmında Genel bütçe kapsamındaki kamu idarelerinin 2007 yılı mali varlık ve yükümlülükler tablosu ile 2007 yılı faaliyet sonuçları tablosu Raporun 8 ve 9 no'lu eklerinde yer aldığı belirtilmiş ve eklerde mali varlık yükümlüler tablosu ile faaliyet sonuçları tablosu verilmiştir.

Tablo 3: Standart Öncesi Yayımlanan Mali Tabloların Listesi

Kaynak: Hazine ve Maliye Bakanlğı sitesinden alınmıştır.

Tablo 4: Standart Öncesi Yayımlanan Bilanço

Kaynak: Hazine ve Maliye Bakanlğı sitesinden alınmıştır

Tablo 5: Standart Öncesi Yayımlanan Faaliyet Sonuçları Tablosu

Kaynak: Hazine ve Maliye Bakanlğı sitesinden alınmıştır

En son 2024 yılında yayımlanan mali tablolar sunumunda ise Hazine ve Maliye Bakanlığı standart da yer alan mali tablolara yer verildiği gözlenmiştir.

Tablo 6: Standart Sonrası Yayımlanan Tablolar Dizini

Kaynak: Hazine ve Maliye Bakanlğı sitesinden alınmıştır

Standardın belirttiği mali raporların sunumunda tam bir mali tablo setinin vermesi gerekli olan tablolardan bilanço, faaliyet sonuçları tablosu, öz kaynak değişim tablosu, bütçe gerçekleşme karşılaştırması, dipnotlar ve önceki döneme ilişkin bilgilere karşılaştırmalı olarak yer verilmiş, sadece dönem içinde ki giriş ve çıkışları gösteren nakit akış tablosuna yer verilmemiştir. Bu konuyu da değerlendirecek olursak;

Türkiye'de kamu kurumlarının mali raporlama yükümlülükleri **Kamu Mali Yönetimi ve Kontrol Kanunu (5018 sayılı Kanun)** ve **Devlet Muhasebe Standartları (DMS)** çerçevesinde belirlenmiştir. İlgili kanunda **genel yönetim kapsamındaki kamu idareleri; merkezi yönetim kapsamındaki kamu idareleri, sosyal güvenlik kurumları ve mahalli idareler olarak belirtilmiştir.**

Kamu kurumlarının mali işlemlerinde, tahakkuk esasına dayalı muhasebe sistemi ile nakit esasına dayalı bütçe sisteminin eşgüdüm içinde yürütülmesi amacıyla **"yansıtma tekniği"** kullanılmaktadır. Bu teknik sayesinde, bütçe kanunlarının gelir ve gider olarak tanımladığı işlemler öncelikle bütçe gelir ve gider hesaplarına kaydedilmekte, ardından yansıtma hesapları aracılığıyla genel kabul görmüş muhasebe ilkelerine göre gelir ve gider olarak kabul edilen işlemler ilgili gelir ve gider hesaplarına aktarılmaktadır. Buna karşılık, gelir veya gider olarak kabul edilmeyen işlemler, mali tabloların gerçeğe uygun ve tam bir biçimde sunulabilmesi için, ilgili varlık veya yükümlülük hesaplarında gösterilmektedir. Böylece, bütçe uygulamaları ile muhasebe kayıtları arasında kavramsal ve sayısal tutarlılık sağlanmakta; kamu mali yönetiminde hem nakit hem de tahakkuk esasına dayalı bilgilerin bütüncül bir şekilde izlenmesine olanak tanınmaktadır. (Karaarslan, 2007) Dolayısıyla, kamu kurumlarının **nakit esaslı bütçe sistemini** kullanmaları ve mali tablolarında bütçe bilgilerini doğrudan yansıtmaları, kurumların ayrıca bağımsız bir **nakit akış tablosu** hazırlama gerekliliğini büyük ölçüde ortadan kaldırmaktadır. Bununla birlikte, belirtilen kamu kurumlarının mali süreçlerinde **analitik bütçe sınıflandırması** sistemini uygulamaları, bütçe verilerinin nakit akış tablosuna benzer bir yapıda sunulmasına imkân tanımaktadır. Bu çerçevede, giderler program, fonksiyonel, kurumsal, finansman tipi ve ekonomik sınıflandırma grupları altında ödenek miktarları ve gerçekleşen harcama tutarlarıyla birlikte raporlanmakta; gelirler ise ekonomik sınıflandırma tablosu aracılığıyla detaylandırılarak bütçe gelirlerinin kaynak bazında izlenmesi sağlanmaktadır. Bu sayede, gelir ve giderlerin bu şekilde sınıflandırılarak sunulması, kamu kurumlarının **dolaylı olarak nakit akış tablosuna benzer bir raporlama pratiği** yürüttükleri şeklinde değerlendirilebilir. Ancak, bu uygulamanın söz konusu tabloların uluslararası kamu muhasebe standartlarında tanımlanan kapsamlı nakit akış tablosu özelliklerini tam olarak karşılamadığı gerçeğini değiştirmediği de vurgulanmalıdır.

Bir diğer husus, bilançoda yer alan ve ilgili standardın gereklerine uygun olarak yayımlanması zorunlu olan verilerdir. Standart, mali durum tablosunda varlık ve yükümlülüklerin kısa ve uzun vadeli ayrım gözetilerek, önem derecelerine göre ilgili başlıklar altında sınıflandırılarak sunulması gerektiğini belirtmiştir. Net varlıklar ve öz kaynakların niteliklerini ve amacının açıklaması zorunluluğuna da değinmiştir. Standart öncesi ve sonrası yayımlanan bilançoyu incelediğimizde arada ki farkı gözlemlemek mümkündür.

Tablo 7: Standart Öncesi Yayımlanan Bilanço

Kaynak: Hazine ve Maliye Bakanlığı sitesinden alınmıştır

Tablo 8: Standart Sonrası Yayımlanan Bilanço

Kaynak: Hazine ve Maliye Bakanlığı sitesinden alınmıştır

Standart öncesi bilanço yapısı incelendiğinde, kurumun varlık ve yükümlülüklerine ilişkin bilgilere yer verildiği, ancak bunların yalnızca ana başlık düzeyinde gruplandırıldığı görülmektedir. Öz kaynaklara ilişkin bilgilere ise hiç yer verilmemiştir. Ayrıca, standartta vurgulanan bir diğer unsur olan dipnotlar bakımından, standart öncesi dönemde yalnızca açıklama yapılmışken, standart sonrasında dipnotlar için ayrı bir kodlama sistemi oluşturularak detaylı bilgilere yer verilmiştir.

Tablo 9 : Dipnotlar

Kaynak: Hazine ve Maliye Bakanlığı sitesinden alınmıştır

SONUÇ VE TARTIŞMA

Devlet Muhasebe Standardı (DMS) 1 – Mali Tabloların Sunulması, kamu sektöründe mali raporlama sürecinin şeffaf, karşılaştırılabilir ve güvenilir bir yapıya kavuşturulmasını hedeflemektedir. Bu standart, kamu idarelerinin mali durumunu, performansını ve nakit akışlarını doğru ve anlamlı biçimde yansıtacak finansal tabloların hazırlanmasını sağlayan temel ilkeleri ortaya koymaktadır. Çalışma kapsamında yapılan değerlendirmeler, DMS 1'in uygulanmasının kamu mali yönetiminde önemli yapısal ve işlevsel dönüşümler yarattığını göstermektedir.

Standart, özellikle mali tabloların uluslararası kamu sektörü muhasebe standartları (IPSAS) ile uyumlu hale gelmesini sağlayarak raporlama kalitesini yükseltmiştir. Bu sayede, kamu kaynaklarının etkin kullanımının izlenmesi kolaylaşmış, hesap verebilirlik ve mali saydamlık ilkeleri güçlenmiştir. Mali tabloların bütüncül ve karşılaştırılabilir bir biçimde sunulması, hem denetim organları hem de kamuoyu açısından mali bilgilere erişimi kolaylaştırmıştır.

Ancak, uygulama sürecinde bazı teknik ve kurumsal zorluklarla da karşılaşılmaktadır. Özellikle muhasebe altyapısının yetersizliği, tahakkuk esasına geçişteki uyum sorunları ve personelin yeni sistemlere adaptasyonundaki eksiklikler, standardın amaçladığı raporlama düzeyine ulaşmayı güçleştirmektedir. Örneklerde de görüldüğü üzere, analitik bütçe sistemine geçilmesi, bilanço dipnotlarında yeni bir kod sisteminin kullanılmaya başlanması gibi gelişen uygulamalara personelin hızlı biçimde adapte olması büyük önem taşımaktadır. Çünkü bu raporlar, muhasebe personelinin veri girişi sonucunda ortaya çıkan mali bulgulardır. Eksik bilgi veya hatalı veri girişleri, hem mali verilerin güvenilirliğini zedelemekte hem de standardın hedeflediği doğru, karşılaştırılabilir ve anlamlı raporlama amacına ulaşılmasında tıkanıklıklara neden olabilmektedir.

Sonuç olarak, DMS 1'in uygulanması kamu mali yönetiminde kalite, şeffaflık ve hesap verebilirlik açısından önemli kazanımlar sağlamıştır. Ancak bu kazanımların kalıcı hale gelmesi, sadece teknik düzenlemelerle değil; aynı zamanda insan kaynağının bu yeni yapıya uyumuyla mümkündür. Bu nedenle, kamu kurumlarında muhasebe personelinin sürekli eğitimi, bilgi sistemlerinin modernizasyonu ve uygulamaların düzenli olarak değerlendirilmesi büyük önem taşımaktadır. Bu yönde atılacak adımlar, DMS 1'in getirdiği standartların sürdürülebilirliğini artıracak ve kamu mali yönetiminde güvenilir raporlama kültürünün yerleşmesini sağlayacaktır.

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POSTKOLONİALİZM DİSKURSUNDA EKOKOLONİALİZM ANLAYIŞI

Nərgiz Nağıyeva

Siyasi elmlər üzrə fəlsəfə doktoru, dosent

Bakı Dövlət Universiteti

nargiz_nagiyeva@mail.ru

ORCİD İD: 0009-0001-1205-5864

Xülasə

Kolonializm siyasi hadisəsi dünya tarixşünaslığında kifayət qədər əsaslı şəkildə araşdırılmış, bu sahədə xeyli sayda monumental, əsaslı nəzəri tədqiqat əsəri yazılmışdır. Bu əsərlərin hamısını sadalamağa ehtiyac olmasa da, E.V.Tarlenin, Vijay Mişra və Bob Hodqenin koloniyalizmin tarixi və nəzəri əsərləri xüsusi olaraq qeyd edilməlidir. Kolonializm bu gün postkolonial formada özünü büruzə verdi. Bu gün də dünyada koloniya və postkolonial, neokolonial həyat yaşayan ölkələr mövcuddur.

Yer kürəsində iqlim dəyişikliyinin tarixi qədim olsa da, insan fəaliyyətinin iqlimə təsiri Sənaye İnqilabı ilə başladığı hesab olunur. Sürətli sənayeləşmə və yüksək enerji tələbatı atmosferə atılan zərərli qazların artmasına səbəb olmuşdur. Yığılan bu qazlar öz növbəsində temperaturun artmasına səbəb olur və ölkələr üçün qlobal təhlükə yaradır. Sənaye İnqilabı də müstəmləkəçiliyə əsaslanırdı. Aparıcı iqlim alimləri müstəmləkəçiliyin iqlim böhranının hərəkətverici qüvvəsi olduğunu hesab edirlər. Torpaq və sərvətlərin öz məqsədləri üçün xarici ölkələr tərəfindən mənimsənilməsi olan yaşıl kolonializm ədalətsiz inkişafın nümunələrinin təkrarlanmasına və müstəmləkəçiliyə yeni bir sima verilməsinə səbəb olur.

Açar sözlər: kolonializm, postkolonializm, neokolonializm, ekokolonializm, imperializm, ətraf mühit müstəmləkəçiliyi.

THE CONCEPT OF ECOCOLONIALISM IN THE DISCOURSE OF POSTCOLONIALISM

Nargiz Nagiyeva

Phd, associate professor

Baku State University

nargiz_nagiyeva@mail.ru

ORCİD İD: 0009-0001-1205-5864

Abstrakt

The political phenomenon of colonialism has been thoroughly studied in world historiography, and a large number of monumental, substantial theoretical research works have been written in this field.

Although there is no need to list all of these works, the historical and theoretical works of E.V. Tarle, Vijay Mishra and Bob Hodgen on colonialism should be specially noted. Colonialism has manifested itself in a postcolonial form today. Today, there are still countries in the world that live in colonies and postcolonial, neocolonial life.

Although the history of climate change on Earth is ancient, it is believed that the impact of human activity on the climate began with the Industrial Revolution. Rapid industrialization and high energy demand led to an increase in harmful gases emitted into the atmosphere. These accumulated gases, in turn, cause an increase in temperature and pose a global threat to countries. The Industrial Revolution was also based on colonialism. Leading climate scientists believe that colonialism is the driving force behind the climate crisis. Green colonialism, the appropriation of land and resources by foreign countries for their own purposes, leads to the repetition of patterns of unjust development and gives colonialism a new face.

Keywords: colonialism, postcolonialism, neocolonialism, ecocolonialism, imperialism, environmental colonialism.

Giriş. Kolonializm bir siyasi fenomen kimi qədim tarixə malikdir. Bu siyasi və iqtisadi hadisə lap qədim dövrlərdə də dünyanın müxtəlif ərazilərində mövcud olmuş və zaman və məkana görə öz forma və məzmununu dəyişə-dəyişə bu günə qədər mövcudluğunu davam etdirməkdədir. Qədim Şərqdə, antik dövr, orta əsrlər və intibah dövrlərində Avropada kolonializm müəyyən mənada bəsit (primitiv) səciyyə daşımış, yalnız XVII əsrin əvvəllərindən etibarən, demək olar ki, Qərb dünyasının rəsmi siyasəti şəklinə düşmüşdür.

Antik dövrün kolonializmi ilə XVII-XVIII əsrin kolonializmi və ya XX-XXI-ci əsrin kolonializmi ilə eyni deyil. Bununla belə onların kökündə eyni kolonializm siyasəti dayanır. Mənim mövzum əsas etibarı ilə postkolonializm siyasəti üzərində qurulub. Adından da göründüyü kimi postkolonializm konlonializmdən sonrakı dövrü əhatə edir. Sonrakı kolonializmin özünəməxsus çoxsaylı xüsusiyyətləri mövcuddur və mən bu xüsusiyyətlərin bəzilərinə aydınlıq gətirməyə çalışacam. Hal-hazırda dünyada postkolonial taleyi yaşamayan demək olar ki. ərazi və ya ölkə yoxdur. (Buraya həm kolonialist, həm də koloniya ölkələr aiddir). Bu gün postkolonial siyasət ümumdünya siyasi həyatın aktual məqamlarından biridir.

Qeyd edim ki, **postkolonial nəzəriyyə** və ya **postkolonializm** müstəmləkəçiliyin mədəni irsini anlamağa çalışan intellektual diskursdur. Nəzəriyyənin mərkəzi F.Fanonun, E.Səidin, H.Bhabhanın, Ç.Spivakın, R.Quanın, D.Çakrabartinin artıq klassik əsərləridir ki, onların əsasında 1980-ci illərdən başlayaraq postkolonial tədqiqatlar formalaşdı.

Postkolonial tədqiqatlarda çox önəmli yer tutan martinikalı filosof Frans Fenon "Qara dəri, ağ maska" (1952) [9], "Yer üzünün bədbəxtləri"(1961) [10] adlı əsərlərində qeyd edir ki, kolonializmin tamamən aradan qalxması üçün tək siyasi müstəqillik kifayət emir, çünki, ərazilər, torpaqlarla birlikdə kimliklər, mədəniyyətlər də müstəmləkələşdirilblər.

Bu gün ABŞ, Fransa, İngiltərə dünyanın bir çox fərqli bölgələrində müstəmləkələri olmasa da, hərbi bazaları, kapitalizm münasibətləri, iqtisadi tor vasitəsilə neokolonial əlaqələr qurmuşdur. Beləliklə də postkolonializm imperilaizmin mirasıdır. Bitməyən bir imperializm sistemidir.

Fələstinli, amerikalı ədəbi tənqidçi, Kolumbiya Universitetinin professoru E.Səidin dünyanın 36 dilinə tərcümə edilmiş "Orientalizm" [12] əsəri postkolonializmin əsas tədqiqat obyektlərindən biridir. Ərəb əsilli xristian bir ailənin uşağı olaraq dünyaya gələn, ingilisdilli Qərb məktəblərində təhsilini tamamlayan və ABŞ-da elmi həyata daxil olan Edvard Səid bu xüsusiyyətlərinə görə özünü nə

bütövlüklə ərəb, nə də qərbli olaraq görmürdü. Hətta avtobioqrafiyasında özünü "yersiz, yurdsuz" deyə təsvir edir. XIX əsrdə orientalizm Şərqi öyrənən elm sahəsi idisə, E.Səiddən sonra postkolonializmin, müstəmləkəçilik tarixinin öyrənilməsində mühüm yer tutdu. E.Səidə görə Orientalizm Şərq haqqında elmdir, Şərqin Qərb tərəfindən necə təmsil edildiyi üzərində dayanır.

Poskolonializm yeni dövrün siyasi hadisəsidir. Yeni dövrün isə yeni tələbləri var. Artıq mövcud klassik kolonializm əvvəlki kimi davam edə bilməzdi. Onu yeni forma əvəz etməli idi və etdi də. Bu yeni forma dünya siyasətində postkolonializm adlandırıldı. Bu da ondan ibarətdir ki, artıq əvvəlki metropol ölkələr özünün müstəmləkəyə çevirdikləri ölkələrdə əvvəlki kimi silah gücünə deyil, başqa yollarla - mədəni, siyasi, iqtisadi əlaqələrlə öz kolonial siyasətini davam etdirirlər. Bu məsələnin bir qədər dərininə getmək istərdim. Postkolonial siyasətin həm metropol həm müstəmləkə ölkəsi üçün qarşılıqlı maraqları yaranır. Yəni hər bir kolonial ölkə kolonializm dövründə öz müstəmləkəsinə çevirdiyi ölkədə öz mədəniyyətini, adət-ənənəsini, psixologiyasını, ideologiyasını, dilini, iqtisadiyyatını, siyasətini tətbiq edir. Bu elemenlər müstəmləkə dövlətlərdə o qədər dərin kök salmış olur ki, müstəmləkəçilik sistemi başa çatdıqdan sonra da həmin ərazilərdə qalmaqda, işləməkdə davam edir.

Neokolonyalizm, inkişaf etməkdə olan bir ölkəyə təsir etmək üçün əvvəlki müstəmləkəçiliklə birbaşa hərbi nəzarət və ya dolayı siyasi nəzarət üsulları yerinə kapitalizm, qloballaşma ve mədəni imperializmdən istifadə təcrübəsidir.

Termin ilk dəfə, 1956-cı ildə fransız filosofu Jean-Paul Sartre tərəfindən işlədilib, daha sonra Kwame Nkrumah tərəfindən 1960-cı illərdə müstəmləkəçilikdən müstəqilliklərin qazanan Afrika ökələri ilə əlaqədar işlənildi.

Metod və materiallar. Təsadüfi deyil ki, yaxın günlərdə Azərbaycanın siyasi həyatında postkolonial mövzu dövlət səviyyəsində aktuallaşmış və beynəlxalq səviyyədə konfranslar keçirilmiş, çağırışlar edilmişdir. Çünki, postkolonializm bu gün dünya siyasətinin ən aktual məsələlərindən biridir. Məsələn, Azərbaycan Respublikasının Prezidenti İlham Əliyevin 2023 oktyabrın 20-də Bakıda keçirilən "Neokolonializm: İnsan Hüquqlarının Pozulması və Ədalətsizlik" mövzusunda beynəlxalq konfransın [1] iştirakçılarına müraciəti BMT-nin rəsmi sənədi kimi yayılıb. Dövlətimizin başçısı müraciətində Azərbaycanın XXI əsrdə kolonializmin davam etməsindən və kolonializmin yeni təzahürləri meyillərinin artmasından narahatlığını vurğulayıb, Afrika, Cənub-Şərqi Asiya, Sakit Okean, Latın Amerikasında onlarla ölkəni işğal edən, sərvətlərini talayan, xalqlarını uzun illər əsarətdə saxlayan Fransanın həmin ərazilərdə hərbi və bəşəriyyət əleyhinə çoxsaylı cinayətlər törətdiyini, etnik və dini mənsubiyyətinə görə yüz minlərlə dinc sakini soyqırımına məruz qoyduğunu diqqətə çatdırıb, Fransa kolonializminin utancverici yeni metodlarının bu gün də davam etməsindən təəssüfləndiyini bildirib.

Təkcə 1960-1966-cı illər arasında Fransa Əlcəzair Səhrasında 17 nüvə sınağı keçirib. Fransa ilk atom bombasını, kod adı Gerboise Bleue olan bombanı 13 fevral 1960-cı ildə Reggane yaxınlığındakı Tanezrouft səhrasının Tan Afella bölgəsində partladıb. Bombanın gücü təxminən 70 kiloton olub ki, bu, Xirosima bombasından dörd dəfə çoxdur. Partlama yeri Hamudia bazasından 40 kilometr və Bechar şəhərindən təxminən 700 kilometr cənubda yerləşirdi.

Fransanın ərazinin yaşayış yeri olmadığı barədə ilk iddialarına baxmayaraq, sonradan ətraf bölgədə on minlərlə insanın yaşadığı məlum oldu[2]. Köçəri Tuareq icmaları, yerli səhra sakinləri, yerli işçilər və Fransa hərbi qulluqçuları effektiv müdafiə almadan sınaq sahələrinin yaxınlığında idilər. Hesabatlar göstərir ki, bu şəxslərin radiasiyadan demək olar ki, heç bir qoruyucusu yox idi və onlara hər partlayışdan sonra sadəcə çimmək tapşırılıb ki, bu da tamamilə qeyri-kafi bir tədbir idi. 1960-1961-ci illər arasında eyni bölgədə üç əlavə atmosfer nüvə sınağı (o cümlədən Gerboise Blanche, Gerboise Rouge və digərləri) həyata keçirilib. Məsələn, Fransanın üçüncü bombası olan Gerboise Rouge 27 dekabr 1960-cı ildə partladılıb. Onun gücü təxminən 5 kiloton - Amerikanın Little Boy bombasının təxminən yarısı olsa da - geniş beynəlxalq qınağa səbəb olub. Yaponiya, Sovet İttifaqı, Misir, Mərakeş,

Nigeriya və Qana da daxil olmaqla ölkələr sınaqları pisləyiblər. Əvvəldən Afrikada nüvə sınaqları sülhün pozulması və yerli əhalinin həyatına etinasızlıq kimi qəbul edilib.

Əlcəzair 1962-ci ilin iyul ayında həmin ilin mart ayında imzalanan Evian Sazişlərindən sonra müstəqillik qazansa da, Fransa bu danışıqlarda mühüm bir güzəşt barədə danışıqlar aparıb: Əlcəzairdəki müəyyən hərbi obyektlərdən daha beş il istifadə etmək hüququnu saxlayıb. Əslində, müstəqil Əlcəzair 1967-ci ilə qədər Fransanın hərbi mövcudluğunu davam etdirməyə məcbur oldu, Fransa isə nüvə proqramını başqa yerə köçürdü. Bu gizli tənzimləmənin bir hissəsi olaraq, Fransa sınaq əməliyyatlarını Reggane-dən Əlcəzair Səhrasında daha ucqar bir yerə - Hoggar silsiləsindəki İn Ekker dağlıq bölgəsinə köçürdü. Səhra Hərbi Təcrübə Mərkəzi kimi tanınan yeni ərazi, yeraltı sınaqları asanlaşdırmaq üçün sonda Oasis Təcrübələri Mərkəzi adlandırıldı. 1961-ci ilin noyabrı ilə 1966-cı ilin fevralı arasında Taourirt Tan Afella dağındakı tunellərdə 13 yeraltı sınaq keçirildi. Bu sınaqlar yerin altına köçürülsə də, təhlükəsiz deyildi.

Ən məşhur hadisələrdən biri 1 may 1962-ci ildə Beril sınağı zamanı baş verdi. Partlayış o qədər güclü idi ki, dağı sındırdı və havaya radioaktiv tütün buraxdı. Sınağı izləyən bir neçə Fransa naziri və hərbi zabiti radiasiyaya məruz qaldı və çirklənmiş paltarlarla təxliyə edilməli oldu. Bu hadisə, sözdə "təhlükəsiz" yeraltı sınaqların da fəlakətli nəticələrə səbəb ola biləcəyini ortaya qoydu.

Nüvə sınaqlarından əlavə, Fransa ordusu müstəmləkə dövründə Əlcəzair Səhrasından kimyəvi silahlar üçün gizli laboratoriya kimi istifadə etmişdir. Məxfilikdən çıxarılan Fransa hərbi qeydlərinə görə, 1940-cı illərin sonlarından etibarən Əlcəzair səhrasında əhəmiyyətli miqdarda Alman sinir agentləri (II Dünya Müharibəsindən sonra ələ keçirilmiş) sınaqdan keçirilmişdir. Mərakeş sərhədindən təxminən 100 kilometr məsafədə yerləşən B2-Namous kimi tanınan ucqar bir ərazidə bu kimyəvi maddələrin sınaqdan keçirilməsi üçün istifadə edilmişdir. Tabun və sarin kimi ölümcül maddələr onların ölümcül təsirlərini öyrənmək üçün sursatlar üzərində və ehtimal ki, canlı heyvanlar (ehtimal ki, mal-qara) üzərində sınaqdan keçirilmişdir.

Səhrada açıq hava sınaqları torpağın və suyun yüksək zəhərli materiallarla çirklənməsinə səbəb olmuşdur. Fransa hökuməti rəsmi olaraq hücum kimyəvi silah proqramına malik olduğunu inkar etsə də, tarixi araşdırmalar - məsələn, Vinsent Jovertin 1997-ci il hesabatı - həqiqəti üzə çıxardı[13]. Narahatedici haldır ki, bu sahədə gizli əməkdaşlığın Əlcəzairin müstəqilliyindən sonra da davam etdiyi bildirilir. Hesabatlar göstərir ki, 1980-ci illərdə Çadli Bendjedidin prezidentliyi dövründə gizli bir razılaşma Fransaya kimyəvi sınaqlar üçün B2-Namous ərazisindən istifadə etməyə davam etməyə icazə vermişdi. Bir məlumata görə, bu fəaliyyətlər Əlcəzairin müstəqilliyindən 24 il sonraya qədər - 1986-cı ilə qədər davam etmişdir.

Bundan əlavə, sınaq kampaniyaları başa çatdıqdan sonra Fransa səhrada çoxlu miqdarda tullantı - o cümlədən partlayış güllələri, nümunə götürmə təyyarələri və hərbi nəqliyyat vasitələri - basdırdı. İllər sonra məlum oldu ki, bu radioaktiv qalıqlar lazımi işarələr və ya ictimaiyyətə açıqlanmadan qumun altında gizlədilib və Fransa onilliklər boyu onların dəqiq yerlərini açıqlamaqdan imtina edib.

Əlcəzairdəki nüvə sınaq əməliyyatlarının dayandırılmasından sonra Prezident de Qollun rəhbərliyindəki Fransa hökuməti tez bir zamanda alternativ bir əraziyə müraciət etdi. 1962-ci ildə Fransa rəsmi olaraq Fransa Polineziyasındakı Mururoa və Fangataufa atollarının nüvə sınaqlarının davam etdirilməsi üçün seçildiyini elan etdi. 1963-cü ilin yanvar ayında de Qoll bu qərarı yerli iqtisadiyyatı stimullaşdırmaq üçün bir vasitə kimi təqdim etdi və Polineziya sakinlərinin dəstəyini istədi - bəziləri əvvəlcə əməkdaşlıq etdi. Lakin sınaqlar başladıqdan sonra onların zərərli təsirləri ictimai rəydə dəyişiklik yaratdı və xüsusilə müstəqillik tərəfdarı hərəkatlar arasında müqaviməti artırdı.

1966-1996-cı illər arasında Fransa Fransa Polineziyasında 193 nüvə sınağı keçirdi. Bunlar iki mərhələdə aparıldı: 1966-1974-cü illər arasında 41 atmosfer sınağı, ardınca 1975-1996-cı illər arasında 150-dən çox yeraltı sınaq [3]. Atmosfer sınaqlarının dayandırılması üçün artan beynəlxalq təzyiqə cavab olaraq

- xüsusən də 1963-cü il Qismən Sınaq Qadağanı Müqaviləsindən (Fransa əvvəlcə imzalamadı) sonra - Fransa hökuməti 1974-cü ildə bütün gələcək sınaqların yeraltında aparılacağını elan etdi.

Fransız Polineziyasının təbii mühiti də ciddi ziyan gördü. Birbaşa sınaq sahələri olan Mururoa və Fangataufa atolları faktiki olaraq radioaktiv tullantıların saxlanma zonalarına çevrildi. Təkrarlanan partlayışlar onların geoloji strukturlarını zəiflətdi və parçaladı. 1980-ci ilə aid məxfi Fransa hərbi xəritəsində illərlə davam edən sınaqlar nəticəsində Mururoanın altında yaranan yeraltı çatlar və boşluqlar şəbəkəsi aşkar edildi [7]. Müstəqil alimlər xəbərdarlıq ediblər ki, bu qeyri-sabit, pətək formasındakı struktur gələcəkdə baş verəcək zəlzələ və ya partlayış zamanı dağıla bilər və okeana çoxlu miqdarda radioaktiv material buraxıla bilər [8].

Məsələn, 17 iyul 1974-cü ildə Centaure sınağı zamanı gözlənilməz külək dəyişiklikləri Mururoadakı partlayışdan 42 saat sonra Taiti adası və qonşu ərazilər üzərində radioaktiv bulud daşıyırdı. O zaman, paytaxt Papeete şəhərində 80.000 nəfər də daxil olmaqla, təxminən 110.000 insan buludun yolunda yaşayırdı. Rəsmi olaraq əhəmiyyəti azaldılan bu kimi hadisələr, ictimaiyyət tərəfindən qəbul edilən səviyyələri xeyli aşan udulmuş radiasiya dozalarına səbəb oldu [5].

Müxtəlif xərçəng növlərinin, xüsusən də tiroid, qan və ağciyər xərçənglərinin rastgəlmə nisbəti yerli əhali arasında əhəmiyyətli dərəcədə artdı. Fransa hökuməti uzun müddətdir hər hansı bir səbəb əlaqəsini inkar etsə də, Fransa Milli Səhiyyə İnstitutunun 2021-ci il tarixli hesabatında bölgədəki çoxsaylı xərçəng hallarının nüvə sınaqları ilə əlaqəli ola biləcəyi etiraf edilmiş və eyni zamanda qəti dəlillər üçün "əlavə tədqiqatlara ehtiyac" olduğu bildirilmişdir. Xərçəngdən əlavə, anadangəlmə deformasiyalar və genetik xəstəliklər də sənədləşdirilmişdir. Taitidə uşaq psixiatriyasının keçmiş rəhbəri Dr. Kristian Sueur 2018-ci ildə sınaq mərkəzlərinə yaxın ərazilərdə uşaqlar arasında inkişaf anomaliyalarının artdığını bildirmişdir. O, bölgədə müayinə edilən 271 uşaq arasında 69 əqli əlillik və ya fiziki deformasiya halını radiasiya ilə əlaqəli genetik mutasiyalarla əlaqələndirmişdir. O, həmçinin bildirib ki, Tureia Islada 1971-ci ildə test zamanı iştirak edən uşaqların dörddə birində sonradan tiroid xərçəngi inkişaf etmişdir. Bu gün yerli Polineziya hökuməti Fransadan bu testlərin gələcək nəsillərə genetik təsirləri ilə bağlı müstəqil tədqiqatların maliyyələşdirilməsini tələb edir [6].

Fransanın keçmiş müstəmləkələrində nüvə və kimyəvi sınaqları geniş beynəlxalq qınağa səbəb oldu. Bu reaksiyalar siyasi qınaqları, hüquqi tədbirləri, kütləvi fəallığı və insan haqlarının müdafiəsini əhatə etdi. İlk tənqid dalğası Fransanın 1960-cı ildə Əlcəzairdə nüvə sınaqlarından sonra gəldi. Qana, Nigeriya və Mərakeş kimi yeni müstəqillik qazanmış Afrika dövlətləri, Misir, Sovet İttifaqı və digərləri ilə birlikdə Saharadakı partlayışları Afrika sülhü və təhlükəsizliyinə təhdid kimi qınadılar. 1960-cı illərdə qlobal sınaq qadağası müqaviləsi mövcud olmasa da, BMT Baş Assambleyasındakı bir çox dövlət nüvə güclərini təmkinli olmağa çağırdı. Atom bombalamalarına məruz qalan yeganə ölkə olan Yaponiya, sınaqları Xirosimanın sağ qalanlarına dərin təhqir adlandıraraq, sərt tənqidçi oldu.

Müstəmləkəçi güclər, daha varlı ölkələri daha kasıb periferik ölkələrdən təbii sərvətlər çıxarmağa təşviq edən qlobal infrastruktur yaratmaqla problemi daha da ağırlaşdırdı.

Ətraf mühit tədqiqatçıları bəzən "ətraf mühit müstəmləkəçiliyi", "ekoloji müstəmləkəçilik" və "ekoloji imperializm" terminlərini bir-birini əvəz edən şəkildə istifadə edirlər. Lakin, Edvard Saidin xatırlatdığı kimi, "imperializm", uzaq bir ərazini idarə edən dominant metropoliten mərkəzinin təcrübəsi, nəzəriyyəsi və münasibətləridir. Ətraf mühit müstəmləkəçiliyinin həm qısa, həm də uzunmüddətli dövrdə yerli xalqlara və yerli torpaqlara həm açıq, həm də gözlənilməz təsirləri var. Məsələn, 1492-ci ildə avropalıların Amerikaya gəlişi sonrakı əsrdə 1500-1600-cü illərdə Amerikada yaşayan yerli əhalinin əksəriyyətinin itirilməsinə səbəb olan xəstəlik epidemiyalarının başlanğıcını qeyd edir. London Universitet Kollecinin (UCL) son tədqiqatı göstərir ki, pandemiya xəstəliyi dalğalarının yayılması zamanı Amerikadakı ümumi torpaq kütləsinin təxminən 1 faizi və ya Kolumbun gəlişindən sonrakı əsrdə yerli icmalar arasında epidemiya sonrası 55 milyon insan ölümündən təxminən 56 milyon hektar torpaq tərk edilmişdir. UCL tədqiqatçılarının aşkar etdiyinə görə, genişmiqyaslı əhali azalması nəticəsində

kənd təsərrüfatı torpaqlarının böyük bir hissəsi baxımsız qalıb və bu da torpağın ağaclar və digər yeni bitkilərlə örtülməsinə səbəb olub.

Elm birmənalı şəkildə deyir ki, iqlim böhranının əsas səbəbi qalıq yanacaqların yandırılmasıdır. Qazıntı yanacaq emissiyalarının sənaye miqyasında buraxılması XIX əsrin Sənaye İnqilabı dövründə Böyük Britaniyada başladı. Sənaye İnqilabı həm kömürə, həm də müstəmləkəçiliyə əsaslanırdı. Koloniyalar Britaniya fabriklərini xammalla təmin edirdi. Hindistan kimi bir çox koloniyalar güclü müqavimətə baxmayaraq, Britaniyanın asılı iqtisadiyyatlarına çevrilmək üçün sənayeləşmədən imtina etməyə məcbur edildi (yeni pəncərədə açılır). Kömür həmçinin Britaniya imperiya hərbi gəmilərini hərəkətə gətirirdi və onların yüksək hərəkətliliyi dominantlığın yüksək effektiv vasitəsi idi. Bu, Britaniyaya və digər Avropa müstəmləkəçilərinə müstəmləkə və kapitalist sərhədlərini genişləndirməyə imkan verdi və müstəmləkə ticarət şirkətlərinin maraqlarını dəstəklədi.

Aparıcı iqlim alimləri müstəmləkəçiliyin iqlim böhranının hərəkətverici qüvvəsi olduğunu hesab edirlər. Müstəmləkəçilik mirasları bu gün də yaşayır. Müstəmləkəçilik dövründə torpaqların ələ keçirilməsi təkcə insanların ərazilərini və resurslarını əlindən almaqla kifayətlənməyib, həm də əvvəllər davamlı olan yerli ekosistemləri dəyişdirib. İqlim dəyişikliyinin təsirlərinin aradan qaldırılmasına müstəmləkəçilik miraslarının aradan qaldırılması olmadan nail olmaq mümkün deyil. Qlobal miqyasda iqlim ədaləti hərəkatları uzun müddətdir ki, iqlim dəyişikliyinin müxtəlif insan qruplarına qeyri-bərabər təsirlərinin tanınması üçün kampaniyalar aparırlar.

İmperializmin başlanğıcından bəri müstəmləkəçilər işğal etdikləri ərazilərin ekosistemlərinə zərərli təsirlər göstəriblər. Məskunlar dünyanın hər yerində torpaqlardan, heyvanlardan və təbii sərvətlərdən həddindən artıq istifadə ediblər.

Səhralaşma və meşələrin qırılmasının da müstəmləkə kökləri var. Şimali və Qərbi Afrikadakı fransız müstəmləkəçiləri XIX əsrin sonlarında kənd icmalarına əsrlər boyu mövcud olan yaşayış təsərrüfatı üsullarını tətbiq etməyi qadağan etdilər. Yerli sakinlər Konqo çayından Sahel çayına qədər olan ərazilərdə, Fransa Ekvatorial Afrikasında meşələri kəsib pambıq plantasiyaları və digər gəlirli bitkilərlə əvəz etməyə məcbur oldular. Bu kütləvi meşə qırılması genişmiqyaslı ətraf mühitin pozulmasına səbəb oldu.

Müstəmləkəçilik heç vaxt dinc bir proses olmayıb. Zorakı mülkiyyətdən məhrum etmə aktları geniş yayılmış qırğınlar, İlk insan icmalarının yaşadığı kimi insanların torpaqlarından zorla çıxarılması və uşaqların ailələrdən zorla ayrılması ilə müşayiət olunub.

Lakin ədalətsizliklər və mülkiyyətdən məhrum etmə bu günə qədər davam edir. Yeni qlobal imperiyalar olan transmilli korporasiyalar minerallar, neft, qaz və digər sərvətlər üçün yerli əhalisini torpaqlarını əllərindən almaq təcrübəsini davam etdirirlər. Daha varlı ölkələrin korporasiyalarına daha kasıb periferik ölkələrdən təbii sərvətlər çıxarmaq səlahiyyəti verən mövcud qlobal infrastruktur, tez-tez dayanıqlı olan yerli iqtisadiyyat və mədəniyyətlərin qeyri-sabitliyini davam etdirir.

Nəticə. İqlim dəyişikliyinin insanlar üçün ən böyük təhlükə olduğu və buna görə də qlobal həll tələb etdiyi barədə qlobal konsensusun ortaya çıxması ilə yeni bir yaşıl müstəmləkəçilik də ortaya çıxır. Torpaq və sərvətlərin öz məqsədləri üçün xarici ölkələr tərəfindən mənimsənilməsi olan yaşıl kolonializm ədalətsiz inkişafın nümunələrinin təkrarlanmasına və müstəmləkəçiliyə yeni bir sima verilməsinə səbəb olur.

İqlim borcunu və iqlim təzminatlarını birlikdə anlamaq, dünyamızın necə işlədiyini və iqtisadi və iqlim aparteidinin necə davam etdiyini tam başa düşmək üçün dekolonizasiya ilə başlamalı olan bir çox yenidən təhsil tələb edir. Yalnız istismarçı və ədalətsiz müstəmləkə keçmişinin nümunələrindən çıxsaq, alternativ bir gələcək qura bilərik.

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Sağlık Ekonomisi Perspektifinden Yapay Zeka Uygulamalarının Sağlık Sistemlerine ve Hemşirelik Hizmetlerine Etkisi

IMPACTS OF ARTİFİCİAL INTELLİGENCE APPLİCATİONS ON HEALTH SYSTEMS AND NURSİNG SERVİCES FROM A HEALTH ECONOMİCS PERSPECTİVE

Emine Buse KURNAZ

Title, Affiliation[1]Kütahya Health Sciences University, Graduate Education Institute, Department of Nursing, Kütahya, Türkiye, 0009-0008-3473-6602, ebuse.kurnaz@ogr.ksbu.edu.tr, 05458391605

Deniz YİĞİT

[2]Kütahya Health Sciences University, Faculty of Health Sciences, Department of Nursing, Department of Child Health and Disease Nursing, Kütahya, Turkey, 0000-0001-5627-7963, deniz.yigit@ksbu.edu.tr, 05428092848

Emel SEZİCİ

[3]Kütahya Health Sciences University, Faculty of Health Sciences, Department of Nursing, Department of Child Health and Disease Nursing, Kütahya, Turkey, 0000-0002-6325-6607, emel.sezici@ksbu.edu.tr, 05064980691

Özet

Küresel sağlık sistemleri artan maliyetler, yaşlanan nüfus ve kronik hastalık yükü nedeniyle sürdürülebilirlik açısından önemli zorluklarla karşı karşıyadır. Bu bağlamda yapay zeka (YZ), sağlık hizmetlerinde verimliliği artıran, maliyetleri düşüren ve klinik sonuçları iyileştiren stratejik bir teknoloji olarak öne çıkmaktadır. Bu geleneksel derleme çalışması, YZ uygulamalarının sağlık ekonomisine ve hemşirelik hizmetlerine olan etkilerini güncel literatür doğrultusunda incelemektedir. Bulgular, YZ'nin tanı doğruluğunu artırarak klinik hata oranlarını azalttığını, hizmet hızını yükselttiğini ve kaynak kullanımını optimize ederek sağlık kurumlarının maliyet-etkinliğini güçlendirdiğini göstermektedir. Hemşirelik alanında ise YZ; idari yüklerin azalması, iş gücü verimliliğinin yükselmesi, bakım kalitesinin artması ve hasta güvenliğinin güçlenmesi gibi çok boyutlu katkılar sunmaktadır. Markov modelleri, karar ağaçları ve maliyet-etkinlik analizleri, YZ tabanlı erken tanı, yara bakımı, risk tahmini ve otonom hemşirelik asistanlarının uzun dönemli ekonomik değerini kanıtlamaktadır. Diğer yandan YZ entegrasyonu; veri mahremiyeti, algoritmik önyargı, açıklanabilirlik ve klinik karar sorumluluğu gibi etik ve hukuki sorunları beraberinde getirmektedir. Mevcut literatür, hemşirelerin YZ teknolojilerini sadece uygulayan değil, aynı zamanda bu sistemlerin güvenli, adil ve insan odaklı şekilde hayata geçirilmesinde belirleyici bir role sahip olduğunu göstermektedir. Sonuç olarak YZ, sağlık sistemlerinde ekonomik sürdürülebilirlik ve kaliteli bakım için kritik bir araçtır. Bu doğrultuda önerimiz; hemşirelerin dijital yetkinliklerinin artırılması, etik yönetişim süreçlerinin güçlendirilmesi, ulusal veri altyapılarının geliştirilmesi ve uzun dönemli ekonomik modelleme çalışmalarının yaygınlaştırılmasıdır.

Anahtar kelimeler: Yapay zeka, sağlık ekonomisi, hemşirelik hizmetleri, maliyet-etkinlik

Abstract

Global health systems face significant sustainability challenges due to rising costs, population ageing, and the increasing burden of chronic diseases. In this context, artificial intelligence (AI) has emerged as a strategic technology that enhances efficiency, reduces costs, and improves clinical outcomes. This traditional review examines the impacts of AI applications on health economics and nursing services in

light of current literature. Findings indicate that AI improves diagnostic accuracy, reduces clinical error rates, accelerates service delivery, and optimises resource utilisation, thereby strengthening the cost-effectiveness of healthcare institutions. In nursing, AI offers multidimensional contributions, including reduced administrative burden, increased workforce productivity, improved quality of care, and enhanced patient safety. Markov models, decision trees, and cost-effectiveness analyses demonstrate the long-term economic value of AI-based early diagnosis, wound care, risk prediction, and autonomous nursing assistants. However, AI integration raises ethical and legal concerns such as data privacy, algorithmic bias, explainability, and accountability in clinical decision-making. The literature further shows that nurses play a decisive role not only in implementing AI technologies but also in ensuring that these systems are deployed in a safe, equitable, and human-centred manner. In conclusion, AI is an essential tool for economic sustainability and high-quality care in health systems. Therefore, we recommend enhancing nurses' digital competencies, strengthening ethical governance processes, developing national data infrastructures, and expanding long-term economic modelling studies.

Keywords: Artificial intelligence, health economics, nursing services, cost-effectiveness

Giriş

Küresel sağlık sistemleri; artan nüfus, yaşlanma, kronik hastalık yükü ve maliyet baskıları nedeniyle sürdürülebilirlik açısından önemli zorluklarla karşı karşıyadır. Kaynakların sınırlı olduğu bu ortamda verimlilik, maliyet-etkinlik ve bütçe optimizasyonu kavramları sağlık politikalarının merkezine yerleşmiştir. Bu bağlamda yapay zeka (YZ), klinik ve ekonomik performansı dönüştüren stratejik bir teknoloji olarak öne çıkmaktadır (Wolff et al., 2020). YZ; makine öğrenmesi, derin öğrenme, doğal dil işleme ve otonom sistemler gibi bileşenleri aracılığıyla tanı, tedavi, bakım, izlem ve yönetim süreçlerinde etkin bir şekilde kullanılmaktadır. Bu kullanım, sağlık hizmetlerinde doğruluk, hız ve maliyet etkinliği açısından anlamlı iyileşmeler sağlamaktadır. Klinik hata oranlarının azalması, kaynak kullanımının rasyonelleşmesi ve hasta güvenliğinin artması sayesinde YZ, sağlık kurumlarının bütçe yönetimine doğrudan katkı sağlamaktadır (Vithlani et al., 2023).

Türkiye'de ve dünyada geliştirilen dijital sağlık politikaları kapsamında kullanılan YZ tabanlı sistemler, yalnızca hekimlik uygulamalarını değil; hemşirelik hizmetlerinin işleyişini ve maliyet yapısını da önemli ölçüde değiştirmektedir. Hemşirelik, sağlık sisteminin en geniş insan gücü bileşenini oluşturduğundan, YZ uygulamalarının ekonomik etkileri hem mikro düzeyde (birim maliyetler) hem de makro düzeyde (kurumsal bütçe) dikkat çekici bir şekilde görünür hale gelmektedir (Akalın & Veranyurt, 2020). Bu geleneksel derleme çalışması, sağlık ekonomisi perspektifinden YZ uygulamalarının sağlık sistemleri ve hemşirelik hizmetlerine etkilerini literatür ışığında incelemekte; ekonomik, yönetsel ve etik boyutları birlikte tartışmaktadır.

Sağlık Sistemlerinde Yapay Zeka Uygulamalarının Ekonomik Boyutu

YZ'nin sağlık sistemlerine ekonomik katkıları, doğrudan maliyetlerin azaltılması, hizmet süreçlerindeki verimliliğin artırılması ve sağlık hizmetlerinde kaynak sürdürülebilirliğinin desteklenmesi ekseninde bütüncül biçimde ortaya çıkmaktadır. Wolff ve ark. (2020) tarafından 66 çalışmayı kapsayan sistematik derlemede, YZ uygulamalarının büyük bölümünün maliyet-etkin olduğu ve tanı doğruluğu ile işlem hızını artırdığı bildirilmiştir. Vithlani et al. (2023) ise YZ tabanlı sağlık müdahalelerinin %62'sinde ekonomik üstünlük, %30'unda ise klinik avantaj sağlandığını rapor etmiştir. Çalışmaların çoğu Markov modelleri ve karar ağaçları gibi yöntemlerle analiz edilmiş ve kısa vadede maliyet avantajı ortaya konmuştur. Markov temelli maliyet–etkinlik modelleri, YZ uygulamalarının uzun dönemli ekonomik etkilerini değerlendirmede güçlü ve tercih edilen analitik yaklaşımlardan biri olarak öne çıkmaktadır. Bu modeller, hastaların belirli sağlık durumları arasında (örneğin erken tanı, komplikasyon gelişimi,

iyileşme veya ölüm) geçiş olasılıklarını zaman içinde simüle ederek, her bir müdahalenin ek maliyetini ve kazandırdığı yaşam kalitesini (QALY) hesaplamayı sağlar. Li ve ark. (2023), Çin'in kırsal bölgelerinde yürüttükleri çalışmada YZ tabanlı diyabetik retinopati taramasını 50 yıllık bir Markov kohort modeliyle değerlendirmiştir. Analizde elde edilen **112.146 RMB/QALY,** YZ destekli taramanın her kazandırılan kaliteli yaşam yılı (QALY) için yaklaşık 112 bin RMB (Çin'in resmi para birimi olan **Renminbi**) ek maliyet gerektirdiğini, bunun da ülkenin maliyet-etkinlik eşiğinin oldukça altında olduğunu göstermektedir. Gefen (2025), kronik yara bakımını değerlendirdiği çalışmada Markov modeli ile Monte Carlo simülasyonlarını birlikte kullanmıştır. Bulgular, YZ destekli yara izleme ve pansuman stratejilerinin enfeksiyonları azalttığını, maliyetleri düşürdüğünü ve yaşam kalitesini artırdığını ortaya koymuştur. Bu bulgular, hemşirelik hizmetlerinde YZ'nin ekonomik değerlendirmelerinde Markov tabanlı modellemelerin kullanılmasının yalnızca kısa dönemli verimlilik kazanımlarını değil, aynı zamanda uzun dönemli bütçe sürdürülebilirliği ve kalite iyileştirmesini nicel olarak ölçmek açısından da kritik olduğunu göstermektedir. Dolayısıyla, gelecekte yapılacak çalışmaların YZ tabanlı hemşirelik uygulamaları için Markov modeli temelli maliyet-etkinlik analizlerine odaklanması, hem mikro düzeyde (kurumsal bütçe) hem de makro düzeyde (ulusal sağlık ekonomisi) politika üretimi açısından önemli bir katkı sağlayacaktır (Li ve ark., 2023; Gefen, 2025).

YZ'nin ekonomik etkileri, klinik uygulamaların yanı sıra sağlık kurumlarının yönetimsel süreçlerinde de belirgin şekilde görünür hâle gelmektedir. Bulut (2025), insan gücü planlaması, tedarik zinciri yönetimi ve hasta yoğunluğu tahmini gibi alanlarda YZ kullanımının maliyetleri %15-20 azalttığını; Khanna et al. (2022) ise tanısal süreçlerde %30'a varan tasarruf sağladığını belirtmiştir. YZ destekli karar sistemleri, tanısal doğruluğu artırarak gereksiz testlerin ve tekrarlayan tetkiklerin azalmasına katkı sağlamış; böylece sağlık bütçesi üzerinde gözle görülür bir tasarruf etkisi yaratmıştır (World Health Organization, 2024). Türkiye'de yapılan bir çalışmada da (Yorgancıoğlu et al., 2024), YZ uygulamalarının laboratuvar ve görüntüleme süreçlerini hızlandırdığını, maliyet yükünü azalttığını ve sağlık kurumlarının kaynak verimliliğini artırdığını belirtmiştir. de Vos ve ark. (2022), yoğun bakımda zamansız taburculukları önlemeye yönelik makine öğrenmesi tabanlı Pacmed Critical sisteminin maliyet-etkinliğini 1 yıllık bir Markov modeliyle değerlendirmiştir. Analizler, sistemin 18.507 €/QALY değeriyle maliyet-etkin olduğunu ve 30.000 €/QALY eşiğinde %71 olasılıkla maliyet-etkin kabul edildiğini göstermiştir. Yoğun bakım kalış süresindeki azalma, hasta başına yaklaşık 1.500 € tasarruf sağlayarak modelin temel ekonomik yararını oluşturmuştur. Bu sonuçlar, YZ'nin klinik doğruluğun ötesinde sağlık kurumlarının bütçe sürdürülebilirliğini de destekleyebileceğini ortaya koymaktadır (de Vos et al., 2022).

Sağlık sistemlerinde YZ uygulamalarının gecikmesi, teknolojik uyum sürecinin uzamasının yanı sıra, verimlilik ve maliyet etkinliği açısından kayda değer ekonomik kayıplara yol açan kritik bir sorun olarak görülmektedir. Bu durum, "fırsat maliyeti (opportunity cost)" kavramıyla açıkladığı gibi, YZ temelli çözümlerin devreye alınmaması nedeniyle kaçırılan potansiyel tasarruflar ve iyileşme fırsatlarını ifade etmektedir. Özellikle yoğun bakım ünitelerinde erken tanı ve risk tahmini algoritmalarının kullanılmaması, gereksiz yatış günleri, artan komplikasyon oranları ve ek maliyetler gibi sonuçlar doğurabilmektedir. Bu nedenle YZ'nin sağlık ekonomisindeki rolü, yalnızca kullanımından doğan kazanımlarla değil, uygulanmamasının yol açtığı ölçülebilir ekonomik kayıplarla da belirginleşmektedir (Spencer et al., 2025).

Hemşirelik Hizmetlerinde Yapay Zeka Uygulamalarının Ekonomik Boyutu

YZ'nin hemşirelik uygulamalarına entegrasyonu, bakım süreçlerinin pek çok aşamasında belirgin ekonomik avantajlar sağlamaktadır. Akalın ve Veranyurt (2020), dijital sistemlerin hemşirelikte idari yükü azalttığını ve otomatik kayıt süreçlerinin hem hata oranlarını düşürdüğünü hem de bakım sürelerini iyileştirdiğini ortaya koymuştur. YZ tabanlı erken uyarı sistemleri komplikasyon risklerini önceden fark ederek yoğun bakım ve yenidoğan ünitelerinde tedavi maliyetlerini azaltmaktadır. Lee & Yoon (2021), bu tür sistemlerin yeniden yatış oranlarını %31 azalttığını ve yıllık birkaç milyon ABD doları düzeyinde

tasarruf sağladığını göstermiştir. Yoğun bakım ünitelerinde yapılan güncel araştırmalar, YZ'nin erken uyarı ve tanı süreçlerinde kayda değer bir etki oluşturduğunu göstermektedir. Yuan ve ark. (2020) tarafından geliştirilen XGBoost tabanlı algoritma (ağaç tabanlı bir makine öğrenmesi yöntemi; birçok karar ağacını birleştirerek yüksek doğruluk sağlayan 'gradient boosting' modeli), erken sepsis tanısında %82 doğruluk ve %88 özgüllük düzeyine ulaşmış; bu sonuçlar, geleneksel SOFA skoruna (Sequential Organ Failure Assessment; organ yetmezliğini değerlendiren klinik puanlama sistemi) kıyasla belirgin bir performans üstünlüğüne işaret etmiştir. Algoritmanın klinik uygulamaya entegrasyonu, sepsisin daha erken fark edilmesini ve tedavinin zamanında başlatılmasını sağlayarak komplikasyon oranlarını ve yatış süresini azaltmış; böylece sağlık sistemi maliyetlerinde ölçülebilir bir düşüşe katkıda bulunmuştur. İş gücü planlamasında veri temelli algoritmalar, personel dağılımını rasyonelleştirmekte ve vardiya optimizasyonu sayesinde %10–15 düzeyinde maliyet tasarrufu sağlamaktadır (Bulut, 2025). Benzer biçimde, Gupta ve ark. (2025) tarafından yürütülen AI Driven Nursing Assistant çalışması, YZ ve IoT tabanlı akıllı hemşirelik asistanlarının hem klinik hem de ekonomik açıdan sağladığı katkıları ortaya koymuştur. Araştırmada, bu akıllı hemşirelik asistanlarının yoğun bakım ve evde bakım ortamlarında manuel iş yükünü azalttığı, veri doğruluğunu artırdığı ve pilot uygulamalarda olumlu hasta geri bildirimlerine yol açtığı bildirilmiştir (Gupta et al., 2025)."

Pannu et al. (2024), yapay zekânın hemşirelikte yalnızca klinik karar destek aracı değil, aynı zamanda eğitim, yönetim ve liderlik süreçlerinin de önemli bir bileşeni hâline geldiğini belirtmiştir. Çalışmalarında, AI tabanlı eğitim uygulamalarının öğrenme süresini yaklaşık %25 kısalttığı, bilgi kalıcılığını artırdığı ve eğitim maliyetlerinde anlamlı bir azalma sağladığı raporlanmıştır. Bunun yanı sıra YZ destekli yönetim sistemleri, kaynak tahsisini optimize ederek hemşire başına düşen iş yükünü azaltmış ve bakım kalitesinde ölçülebilir bir artış yaratmıştır (Pannu et al., 2024). Benzer şekilde, Gupta ve ark. (2025) yapay zekâ temelli simülasyon ve değerlendirme araçlarının eğitimde hata oranlarını azalttığını, süreci daha nesnel hâle getirdiğini ve hemşirelik uygulamalarında verimlilik kazancı sağladığını ortaya koymuştur.

Sağlık Sistemlerinde ve Hemşirelik Hizmetlerinde Yapay Zekâ Uygulamalarının Etik, Hukuki ve Politik Boyutları

Sağlık sistemlerinde ve hemşirelik hizmetlerinde yapay zekâ uygulamalarının hızla yaygınlaşması, bu teknolojilerin yalnızca ekonomik faydalarıyla değil, aynı zamanda etik, hukuki ve politik sorumluluklarıyla birlikte değerlendirilmesini zorunlu kılmaktadır. YZ'nin ekonomik getirileri etik ve yönetişimsel temellerle desteklenmediği sürece sürdürülebilir değildir. Dünya Sağlık Örgütü (2024), sağlık alanında YZ uygulamalarının 'adil, şeffaf ve hesap verebilir' ilkeler doğrultusunda yürütülmesi gerektiğini vurgulamaktadır. YZ sistemlerinin büyük veri kullanması, kişisel verilerin gizliliği ve hasta onamı konularını ön plana çıkarmaktadır. Gupta ve ark. (2025), AI temelli hemşirelik asistanlarında IoT sensörleriyle toplanan verilerin güvenli bir şekilde aktarılabilmesi için güçlü şifreleme protokollerinin ve etkin onam süreçlerinin zorunlu olduğunu vurgulamıştır. Ayrıca yapay zekâ uygulamalarının yalnızca kullanıldığında değil, kullanılmadığında da etik açıdan sorumluluk doğurduğu; çünkü bu durumda gecikmiş kararlar, artan hata riski ve oluşabilecek fırsat maliyetlerinin de etik bir sorun oluşturduğu belirtilmektedir. "Spencer et al. (2025), 'AI hesitancy' kavramıyla klinik ekiplerin yapay zekâ teknolojilerine temkinli yaklaşmasının, hasta güvenliği ve sağlıkta adalet açısından önemli fırsat kayıplarına yol açabileceğini vurgulamaktadır. Bu durum, Dünya Sağlık Örgütü'nün (2024) 'etik yönetişim' ilkeleriyle uyumlu şekilde, teknolojik yeniliklere erişimin ertelenmesinin de etik bir ihmal olarak değerlendirilmesi gerektiğini göstermektedir. Bu bağlamda 'value-based AI' yaklaşımı, yalnızca maliyet-etkinliği değil; hasta yararını, insani değerleri ve sağlıkta hakkaniyeti merkeze alan bütüncül bir etik-ekonomik çerçeve sunmaktadır (Spencer ve ark., 2025).

YZ uygulamalarının etik yönetişimi, özellikle hemşirelik alanında veri gizliliği ve insani sorumluluk boyutları açısından daha karmaşık bir yapı kazanmaktadır.

Maguluri ve ark. (2024), YZ destekli veri işleme süreçlerinde hasta mahremiyetini koruma yükümlülüğünün yalnızca teknik bir gereklilik değil, aynı zamanda mesleki bir etik sorumluluk olduğunu vurgulamıştır. Çalışma, YZ sistemlerinin HIPAA gibi gizlilik standartlarıyla tam uyum göstermemesi durumunda veri sızıntısı, kimliği belirlenebilir bilgi ifşası ve güven kaybı risklerinin artabileceğini; bu nedenle hemşirelerin dijital etik farkındalıklarının güçlendirilmesinin kritik önem taşıdığını belirtmektedir. Ball Dunlap ve Michalowski (2024), hemşirelikte 'YZ veri etiği' yaklaşımını öne çıkararak adalet, şeffaflık, açıklanabilirlik ve hesap verebilirlik ilkelerinin hemşirelik karar destek sistemlerinin ayrılmaz bileşenleri olması gerektiğini savunmuştur. Bu çerçevede hemşireler; veri yönetiminde hasta onamını koruma, algoritmik önyargıları tanıma ve dijital güveni güçlendirme açısından kritik bir sorumluluk üstlenmektedir.

YZ'nin hemşirelik uygulamalarına entegrasyonu, yalnızca verimliliği artırmakla sınırlı değildir; aynı zamanda empati, hümanist bakım ve insan onurunun korunması gibi temel etik ilkeleri yeniden tanımlamaktadır. Ceviz ve Özden (2025), yoğun bakım ortamında yapay zekâ kullanımının etik sonuçlarına dikkat çekerek, empatiye dayalı karar süreçlerinin teknolojik sistemlerle dengeli bir biçimde yürütülmesi gerektiğini vurgulamıştır. Mahremiyet ihlalleri, algoritmik hatalar ve klinik karar sorumluluğu gibi etik ikilemler karşısında hemşirelerin profesyonel denetim ve müdahale yükümlülüğü daha da önemli hâle gelmektedir. Nurkalem ve Gülseven Karabacak (2025) ise, YZ'nin hemşirelikte hümanist bakım anlayışıyla uyumlu biçimde uygulanmasının zorunluluğuna işaret ederek, insan merkezli, etik ve adil sistemlerin geliştirilmesinde hemşirelerin dönüştürücü bir rol üstlenmesi gerektiğini belirtmektedir. Sonuç olarak, YZ'nin sağlık sistemlerinde kalıcı ve güvenilir bir şekilde konumlanabilmesi; yalnızca ekonomik verimlilikle değil, etik yönetişim, veri mahremiyeti, hümanist değerler ve politik düzenlemelerin eş zamanlı olarak güçlendirilmesiyle mümkün görünmektedir. Bu süreçte hemşirelik mesleği, teknolojiyi kullanan bir uygulayıcı olmanın ötesine geçerek, yapay zekânın etik, adil ve insan onuruna saygılı biçimde hayata geçirilmesini sağlayan öncü bir aktör olarak kritik bir rol üstlenmektedir (Ball Dunlap & Michalowski, 2024; Ceviz & Özden, 2025; Gupta ve ark., 2025; Maguluri ve ark., 2024; Nurkalem & Gülseven Karabacak, 2025; Spencer ve ark., 2025; WHO, 2024).

Tartışma

Literatür genel olarak yapay zekânın sağlık ekonomisine çok boyutlu katkılar sunduğunu göstermektedir. Klinik hata oranlarının azalması, hasta güvenliğinin artması, hizmet kalitesinin yükselmesi ve kaynak kullanımının optimize edilmesi, YZ'nin hemşirelikten genel sağlık yönetimine uzanan geniş etkilerini güçlendirmektedir. de Vos ve ark. (2022) tarafından yoğun bakımda yürütülen maliyet-etkinlik modeli, YZ çözümlerinin ekonomik değerini nicel olarak ortaya koymakta; veri temelli erken uyarı sistemlerinin zamansız taburculuk ve yeniden yatış oranlarını azaltarak hasta güvenliğini artırdığını ve kurum düzeyinde kaynak tahsisini iyileştirdiğini göstermektedir. Bununla birlikte Wolff (2020) ve Vithlani (2023) gibi çalışmalar, uzun dönemli maliyet-yarar analizlerinin hâlâ yetersiz olduğuna; yüksek başlangıç maliyetleri ve veri standardizasyonundaki eksikliklerin özellikle gelişmekte olan ülkelerde YZ uygulamalarının ölçeklenmesini zorlaştırdığına dikkat çekmektedir. Güncel literatür ayrıca YZ'nin sağlık sistemlerinde gecikmeli veya sınırlı kullanımının, uzun vadede hem klinik hem de ekonomik kayıplara neden olabileceğini göstermektedir. Spencer ve ark. (2025) tarafından vurgulanan "bytes to bedside" yaklaşımı, yapay zekânın yalnızca laboratuvar ortamlarında değil, gerçek klinik uygulamalarda hızla hayata geçirilmesi gerektiğini ortaya koymaktadır. Aksi durumda, YZ'nin "uygulanmaması" dahi bir fırsat maliyeti yaratmakta; bu gecikme hem hasta güvenliğini hem de kurumsal sürdürülebilirliği olumsuz etkilemektedir.

Yoğun bakım ortamlarında erken uyarı sistemlerinin yapay zekâ ile bütünleştirilmesi, yalnızca klinik sonuçları iyileştirmekle kalmayıp aynı zamanda maliyet etkinliğini de güçlendirmektedir. Yuan ve ark. (2020) tarafından geliştirilen modelin %82 doğruluk ve %88 özgüllük oranı, YZ tabanlı karar destek sistemlerinin sepsisi daha erken saptayarak komplikasyonları ve yatış sürelerini azalttığını; böylece sağlık harcamaları açısından sürdürülebilir bir çözüm sunduğunu göstermektedir. YZ destekli

hemşirelik sistemleri de benzer biçimde otonom asistanlar ve IoT tabanlı izleme teknolojileriyle hem bakım kalitesini artırmakta hem de iş gücü verimliliğinde anlamlı kazanımlar yaratmaktadır. Ancak bu dönüşümün kalıcı etkiler üretebilmesi için etik yönetişim, veri güvenliği, dijital yetkinliklerin artırılması ve uzun dönemli ekonomik analizlerin yapılması gereklidir.

Gelecek araştırmaların özellikle YZ tabanlı hemşirelik uygulamalarının uzun dönemli ekonomik etkilerini kapsamlı modelleme yaklaşımlarıyla değerlendirmesi önem taşımaktadır. Markov tabanlı maliyet-etkinlik analizleri, duyarlılık analizleri ve dinamik maliyet simülasyonları; erken tanı, komplikasyon önleme, bakım süresi, iş gücü verimliliği ve yaşam kalitesi (QALY) çıktılarının zaman içindeki değişimini daha bütüncül biçimde değerlendirme olanağı sunmaktadır. Salcedo ve ark. (2021) tarafından yapılan modelleme çalışması, ilaç uygulamalarının manuel gözetimi ile YZ tabanlı otomatik izleme sistemlerini karşılaştırmış; manuel incelemenin hasta başına yaklaşık 1.500 ABD doları tasarruf sağladığını, ancak YZ tabanlı sistemin bu senaryoya kıyasla yaklaşık 700 ABD doları ek avantaj sunduğunu göstermiştir. Bu fark, yapay zekâ teknolojilerinin ölçek büyüdükçe kurum bütçelerine ciddi tasarruf etkileri sağlayabileceğine işaret etmektedir. Benzer biçimde Li ve ark. (2023) ve Gefen (2025) tarafından yürütülen Markov modelleri, YZ tabanlı tarama ve yara bakım sistemlerinin uzun dönemli maliyet-etkinliğini kanıtlamaktadır.

Tüm bulgular bir arada değerlendirildiğinde, YZ'nin hemşirelik ve sağlık sistemlerinde ekonomik etkisinin yalnızca mevcut uygulama alanlarına değil, aynı zamanda erken tanı, izlem, karar destek, bakım planlaması ve iş gücü yönetimi gibi geniş bir yelpazeye yayıldığı görülmektedir. Hemşireler bu dönüşümde yalnızca bakım hizmeti sunan profesyoneller değil, aynı zamanda veri temelli sistemlerin tasarımına yön veren, dijital süreçlerin güvenliğini sağlayan ve teknolojik gelişmelerin etik çerçevede uygulanmasına liderlik eden stratejik aktörler hâline gelmektedir.

Sonuç ve Öneriler

Bu geleneksel derleme çalışması, yapay zekâ teknolojilerinin sağlık ekonomisi ve hemşirelik hizmetleri üzerinde çok boyutlu ve dönüştürücü etkiler yarattığını ortaya koymaktadır. Bulgular, YZ'nin klinik doğruluğu artırdığını, hata oranlarını azalttığını, tanı ve tedavi süreçlerini hızlandırdığını ve bakım maliyetlerini düşürdüğünü göstermektedir. Hemşirelik hizmetlerinde ise YZ; iş gücü verimliliğini artırmakta, idari yükleri azaltmakta, bakım kalitesini yükseltmekte ve hasta güvenliğini güçlendirmektedir. Bu kapsamda yapay zekâ, yalnızca teknolojik bir yenilik değil; sağlık sistemlerinde ekonomik sürdürülebilirliği, kaliteli hizmet üretimini ve toplumsal eşitliği destekleyen stratejik bir araç olarak görülmelidir. Dijital dönüşümün merkezinde yer alan hemşirelerin, bu teknolojilerin yalnızca kullanıcıları değil; aynı zamanda güvenli, adil ve insancıl bir şekilde uygulanmasını sağlayan kritik aktörler olduğu açıktır.

Önerimiz, yapay zekâ uygulamalarının sağlık sistemlerinde etkin ve sürdürülebilir biçimde yer alabilmesi için hemşirelerin dijital yetkinliklerinin artırılması, veri güvenliği ve etik yönetişim süreçlerinin güçlendirilmesi, hemşireliğe özgü ulusal veri tabanlarının oluşturulması ve YZ'nin uzun dönemli etkilerini değerlendiren ekonomik modelleme çalışmalarının yaygınlaştırılmasıdır.

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QUALITY OF LIFE IN ESKİŞEHİR: SPATIAL ANALYSIS AND DEVELOPMENT OF A NEW INDEX

Eray KOÇ

Researcher Student, Eskişehir Technical University
E-mail: eraykoc@ogr.eskisehir.edu.tr
ORCID ID: 0009-0002-6175-0596

Yeliz MERT KANTAR

Professor, Eskişehir Technical University
E-mail: ymert@eskisehir.edu.tr
ORCID ID: 0000-0001-7101-8943

Abstract

This study aims to develop a new Quality of Life Index for Tepebaşı and Odunpazarı, two large districts of Eskişehir. The index includes basic demographic, socioeconomic and environmental indicators such as population density, age structure, income level, house prices, gender distribution and marital status. Global Moran I and Local Moran I analyses were used to identify differences and similarities between neighborhoods. These findings are expected to support sustainable urban planning in Eskisehir, improve health and safety at the neighborhood level, guide policies to improve living conditions and contribute to future investment decisions. Overall, the study aims to contribute to sustainable urban development and scientific improvement of social welfare.

Keywords: Quality of Life Index (QoL), spatial statistics, spatial cluster analysis

INTRODUCTION

Quality of life (QoL) is an important concept that encompasses the physical, social and economic well-being of individuals and is at the center of sustainable urbanization and regional development policies (Sapena et al., 2020; Iamtrakul et al., 2023). Today, the rapidly increasing population of cities, environmental degradation, economic inequalities and problems experienced in accessing various services have made it important to consider and improve QoL and conduct research on this subject (Yang et al., 2023; Zhang et al., 2024). Studies conducted in this direction reveal the necessity of determining social, economic and environmental variables affecting the quality of life and analyzing these variables at the spatial level (Sepúlveda Murillo et al., 2019; Faka et al., 2022).

This study aims to obtain a high-level result by examining the factors affecting QoL on a neighborhood basis in Tepebaşı and Odunpazarı districts of Eskişehir, one of the leading cities of Türkiye, and by revealing spatial differences and regional inequalities and clusters between neighborhoods. QoL was developed by conducting spatial analyses with coordinated data based on population density, per capita income, household income, gender distribution and marital status. QoL levels of neighborhoods were determined through this index and regions with low and high quality of life were identified. In the study, neighborhood interactions and regional imbalances between neighborhoods were analyzed in detail using spatial statistical methods such as Global Moran's I, Local Moran's I and spatial K-means (Grekousis, 2020; Anselin, 1995). It contributed to the presentation of spatial distributions at the neighborhood level in a clearer and more understandable way with various graphics (Tobler, 1970).

Although there are many national and international studies on QoL in the literature, spatial analyses at the neighborhood level in Turkey are limited (Sepúlveda Murillo et al., 2019; Faka et al., 2022). Although studies such as TÜİK's "Quality of Life Module" focus on social satisfaction and participation levels, they do not reveal differences at the neighborhood level. In addition, the geographical distribution of QoL, regional clustering structures and spatial injustices caused by local inequalities are often

overlooked (Yang et al., 2023; Zhang et al., 2024). Most previous studies have been conducted at the city or regional scale and relied on non-spatial or aggregate statistical methods, which overlook intra-urban variations (Iamtrakul et al., 2023). By integrating spatial statistical techniques with socio-demographic indicators at the neighborhood level, this study provides a more detailed and spatially explicit understanding of urban inequalities (Sapena et al., 2020; Faka et al., 2022). Therefore, it fills an important gap in the existing literature by combining spatial analysis and QoL assessment in a localized, data-driven framework (Sepúlveda Murillo et al., 2019). This study is an important step towards eliminating this deficiency.

The main question of the study is to reveal the social, economic, environmental and other variables that determine the quality of life in the neighborhoods of Tepebaşı and Odunpazarı districts and the spatial distribution structure of these variables. The hypothesis developed in this context suggests that QoL shows significant spatial differences between neighborhoods in terms of these indicators and that these differences are shaped by local interactions and regional clusters (Grekousis, 2020; Anselin, 1995).

The results of the study aim to demonstrate that the QoL measurement model can be adapted not only to Eskişehir but also to other cities in Turkey. In addition, the findings are aimed to contribute to urban planning and social policy development processes in line with the United Nations Sustainable Development Goals (SDG 3: Healthy Individuals, SDG 10: Reducing Inequalities, SDG 11: Sustainable Cities and Communities) (Iamtrakul et al., 2023; Zhang et al., 2024).

In this respect, the study offers a unique and guiding contribution to both academic literature and practitioners in the field of sustainable urbanization and quality of life.

MATERIALS AND METHODS

The main objective of this study is to construct a QoL measure by examining the social, economic and environmental factors affecting well-being at the neighbourhood level in Tepebaşı and Odunpazarı districts of Eskişehir, Turkey. To achieve this, a multi-stage methodological framework consisting of data collection, variable selection, statistical analysis and spatial analysis techniques has been adopted. The study assesses the quality of life at the neighbourhood level in these two large districts and identifies spatial inequalities by developing a composite QoL index. Various demographic, socioeconomic and environmental indicators were considered as independent variables that could potentially affect the quality of life. These variables include population density, house prices, per capita income, average household income, gender distribution and marital status, which were selected based on their well-known relevance in the literature (e.g. Yang et al., 2023; Sepúlveda Murillo et al., 2019). The dependent variable is the composite quality of life index obtained by normalizing and weighting the selected indicators.

Research Design

This study aims to assess the quality of life at the neighborhood level in Tepebaşı and Odunpazarı, two large districts of Eskişehir. The findings were used to construct a composite QoL and reveal spatial differences.

Independent Variables

In this study, while analysing the demographic, socioeconomic, and environmental variables that are considered to affect quality of life (QoL), the dependent variables include population density, income level (per capita and household income), housing prices, gender distribution, and marital status. These variables are reported in the literature to have strong relationships with QoL. Population density influences access to infrastructure and services, whereas income level determines access to health, education, and social facilities. Gender distribution and marital status, on the other hand, indirectly affect

QoL by shaping the structure of social support and community life. (e.g., Yang et al., 2023; Sepúlveda Murillo et al., 2019; Sapena et al., 2020).

Dependent Variable

The dependent variable of this study is QoL, a composite measure calculated by normalizing and weighting the independent variables mentioned above.

Data

This study utilizes neighborhood-level demographic, socioeconomic, and spatial data obtained from reliable online platforms including Endeksa, Sahibinden, and Yandex Maps for the 2024–2025 period. The variables, their sources, and the weighting percentages used in constructing the QoL Index are summarized in Table 1.

Tablo 1: Variables, Time Periods and Data Sources

Variables	Term	Source	Sample size
Population Density	**2024-2025**	**Endeksa**	**%20**
Per Capita Income	**2024-2025**	**Endeksa**	**%10**
Household Income	**2024-2025**	**Endeksa**	**%10**
House Prices	**2024-2025**	**Sahibinden**	**%10**
Gender and Marital Status	**2024-2025**	**Endeksa**	**%5-%10**
Coodinates	**2024-2025**	**Yandex Haritalar**	**-**

Normalization

Due to the heterogeneity of the units of measurement among the variables, min-max normalization was applied to bring them to a comparable scale.

$$X'_{ij} = \frac{X_{ij} - \min(X_j)}{\max(X_{ij}) - \min(X_j)}$$

- X_{ij}: Raw value of the *j-th* variable of the *i-th* observation
- X'_{ij}: Normalized value
- $\max(X_{ij})$: Minimum value of the *j-th* variable
- $\min(X_{ij})$: Maximum value of the *j-th* variable

Weighting

The weights used in this study were determined based on the relative impact of each variable on quality of life (QoL) and follow a rationale supported by literature. Previous studies have shown that some variables explain QoL more strongly than others (Sapena et al., 2020; Faka et al., 2022; Yang et al., 2023; Sepúlveda Murillo et al., 2019); therefore, higher weights were assigned to variables with greater influence. This weighting approach aligns with the methodologies and findings highlighted in the selected references (Grekousis, 2020; Iamtrakul et al., 2023) and reflects the importance of considering both direct and indirect effects of variables in spatial QoL analyses. In other words, the weights were assigned based on a logical framework derived from these references rather than randomly.

Index Construction

The QoL was computed by combining the normalized and weighted variables using the following formula:

$$Quality\ Of\ Life\ Index_i = \sum_{j=1}^{n} w_j\ .X'_{ij}$$

- X'_{ij}: It is the normalized value of the *j-th* variable in the *i-th* neighborhood.
- w_j: The weight assigned to the *j-th* variable.

This formulation enabled a standardized comparison of quality of life across neighborhoods.

Spatial Data Analysis

Spatial data analysis was employed to examine geographic patterns and spatial dependencies across neighborhoods. Guided by Tobler's First Law of Geography—which states that nearby areas tend to be more similar than distant ones—this approach allows the detection of non-random spatial structures. Accounting for spatial dependence is essential, as ignoring it may lead to biased statistical results.

Spatial Autocorrelation

Spatial autocorrelation measures whether similar values of a variable are close to each other in space. It is analyzed at two levels: Global Moran I, which provides a single measure of overall spatial clustering or dispersion, and Local Moran I (LISA), which identifies specific local clusters and outliers. Global Moran I indicates whether the pattern is clustered, random or dispersed, while Local Moran I reveals High-High, Low-Low, High-Low and Low-High spatial patterns and their statistical significance. These measures help to identify spatial inequalities and guide targeted policy and planning decisions.

Spatial Weight

In this study, a Queen contiguity spatial weight matrix was used to capture the spatial relationships among observations in the Odunpazarı and Tepebaşı neighborhoods of Eskişehir. The Queen method considers both edge- and corner-sharing neighborhoods as neighbors, allowing for a more comprehensive representation of spatial interactions and ensuring that spatial autocorrelation is properly incorporated into the analysis (Anselin, 1995; Tobler, 1970; Grekousis, 2020).

Global Moran's I

Global Moran's I is one of the most widely used indicators for measuring spatial autocorrelation at the global level. (Anselin, 1995). It assesses whether a spatial pattern is clustered, dispersed, or random based on both the locations and attribute values of observations.

Formula:

$$I = \frac{n}{\sum_{i=1}^{n}(x_i - \bar{x})^2} x \frac{\sum_{j=1}^{n}\sum_{j=1}^{n} W_{ij}(x_i - \bar{x})\,(x_j - \bar{x})}{\sum_{j=1}^{n}\sum_{j=1}^{n} W_{ij}}$$

- n: Number of data
- W_{ij}: Spatial weight matrix
- x_i, x_j: Observation location
- $\bar{x}$: Mean value of X

The index ranges from -1 to +1:

- **+1** indicates perfect positive spatial autocorrelation (strong clustering),
- **0** suggests a random spatial pattern,
- **-1** reflects perfect negative spatial autocorrelation (dispersion).

Local Moran's I

Local Moran's I is a measure of local spatial autocorrelation, showing the degree of similarity or dissimilarity between each observation and its neighbors.

Formula:

$$I_i = (x_i - \bar{x}).\frac{\sum_{j=1}^{N} w_{ij}\left(x_j - \bar{x}\right)}{\frac{1}{N}\sum_{j=1}^{N}(x_i - \bar{x})^2}$$

- I_i: Local Moran's I value
- W_{ij}: Spatial weight matrix
- x_i, x_j: Value of *i-th* and *j-th* observation
- $\bar{x}$: Mean value of X
- N: Total number of observations

LISA maps typically consist of two components:

Cluster Map: Displays the type of spatial association:

- **High-High (HH)**: A location with high values surrounded by high values.
- **Low-Low (LL)**: A location with low values surrounded by low values.
- **High-Low (HL)**: A high-value location surrounded by low-value areas (outlier).
- **Low-High (LH)**: A low-value location surrounded by high-value areas (outlier).

Local Moran's I allow policymakers and researchers to detect **spatial heterogeneity,** prioritize interventions in disadvantaged regions, and understand underlying spatial structures.

FINDINGS

The Quality of Life (QoL) Index developed in this study provides a spatial analysis of neighborhood-

level living conditions in the Tepebaşı and Odunpazarı districts of Eskişehir. The findings reveal significant spatial disparities among neighborhoods, shaped by socioeconomic and demographic variables. In Tepebaşı, a marked difference was observed between the ten neighborhoods with the highest and lowest QoL scores, indicating a strong pattern of intra-district inequality. The calculated Global Moran's statistic (0.64) demonstrates a high level of spatial autocorrelation, confirming the presence of distinct spatial clustering. Local Moran's I (LISA) analysis identified four cluster types: HH, LL, HL, and LH. H-H clusters generally represent affluent neighborhoods with good access to services, whereas L-L clusters are concentrated in socioeconomically disadvantaged areas.

A similar spatial pattern was observed in Odunpazarı, where neighborhoods with low QoL scores were generally located in urban peripheries characterized by low population density and limited access to services. The Global Moran's I value for Odunpazarı was 0.56, indicating a moderate degree of spatial dependence. Interestingly, while population density exhibited a strong clustering tendency, housing prices displayed a spatially random distribution, suggesting that different indicators may vary in their spatial structures and impacts. The figures in this study present various visualizations related to the Quality of Life (QoL) in Eskişehir, focusing on the Tepebaşı and Odunpazarı districts. Specifically, the figures include Local Moran's I graphs for both districts, which highlight statistically significant clusters of high and low QoL neighborhoods. In addition, Global Moran's I plot is provided to show the overall spatial autocorrelation within each district. Finally, QoL distribution graphs illustrate the relative levels of quality of life across neighborhoods in Tepebaşı and Odunpazarı. Together, these visualizations provide a clear representation of spatial patterns, disparities, and neighborhood-level interactions within the two districts.

Local Moran's I Diagram for Odunpazarı and Tepebaşı Districts

Figure 9: Local Moran's I for Tepebaşı District

Figure 1 shows that the Local Moran's I diagram illustrates the spatial clustering of neighborhoods in the Tepebaşı district based on their Quality of Life (QoL) values. Neighborhoods classified as high-high (HH, red) represent areas with high QoL surrounded by similarly high values, while low-low (LL, blue) clusters indicate neighborhoods with low QoL concentrated nearby. The high-low (HL, purple) and low-high (LH, orange) categories reveal spatial outliers, highlighting neighborhoods whose QoL levels differ significantly from their surroundings. The figure shows that high-QoL neighborhoods are primarily concentrated in central areas, whereas low-QoL neighborhoods are mostly located on the periphery.

Figure 2: Local Moran's I for Odunpazarı District

Figure 2 shows that the local spatial clustering patterns within the Odunpazarı district can be classified into four distinct cluster types: high-high, high-low, low-high, and low-low. High-high clusters represent areas where high index values are spatially concentrated, typically corresponding to zones with favorable socio-economic or environmental conditions. In contrast, low-low clusters, often located in rural or peripheral parts of the district, indicate concentrations of low index values, reflecting relatively disadvantaged areas. High-low and low-high clusters reveal spatial inconsistencies or transitions, where areas with contrasting index values are adjacent to one another, suggesting potential spatial inequalities or mixed development patterns within Odunpazarı.

Global Moran's I Graphs for Odunpazarı and Tepebaşı Districts

Figure 3: Global Moran's I for Tepebaşı District

Figure 3 shows that the Global Moran's I value was calculated as 0.64 when all variables were evaluated collectively. This value reflects the degree of spatial autocorrelation, with values closer to 1 indicating stronger spatial similarity among observations. Based on this result, neighborhoods with similar characteristics in the Tepebaşı district tend to be spatially clustered.

Figure 4: Global Moran's I for Odunpazarı District

Figure 4 shows that Global Moran's I is a widely used measure of spatial autocorrelation, capturing the degree to which similar values are clustered or dispersed across a geographic area. In the Odunpazarı district, population density demonstrates a pronounced spatial clustering pattern, with neighborhoods of high population density tending to be located near one another, and similarly, low-density areas also grouping together. In contrast, housing prices appear to be spatially independent, showing no clear pattern of clustering or dispersion across the district. When all variables, including socio-economic and infrastructural indicators, are considered collectively, the Global Moran's I value is calculated as 0.56. This indicates a moderate level of spatial autocorrelation among the combined indicators, suggesting that while some spatial dependence exists, there is also considerable variation across neighborhoods. These findings underscore the importance of considering spatial relationships in urban analyses, as ignoring spatial autocorrelation may lead to biased interpretations and suboptimal policy decisions.

QoL Index for Odunpazarı and Tepebaşı Districts

Figure 5: QoL Index Graph for Tepebaşı District

Figure 5 shows that the ten neighborhoods in the Tepebaşı district with the highest and lowest QoL Index scores. A substantial difference is evident between neighborhoods with low and high index values, highlighting the spatial disparities within the district. Neighborhoods with higher QoL scores tend to exhibit better access to services, infrastructure, and social amenities, whereas those with lower scores face challenges related to living conditions, accessibility, and overall well-being. This visualization underscores the need for targeted interventions to address inequalities and improve QoL across all areas of the district.

Figure 6: QoL Index Graph for Odunpazarı District

Figure 6 shows that the ten neighborhoods with the highest and lowest Quality of Life (QoL) Index scores in the Odunpazarı district. Notably, neighborhoods with the lowest index values tend to be sparsely populated and located on the urban periphery, reflecting a spatial pattern of socio-economic

disadvantage. In contrast, neighborhoods with higher QoL scores are generally more densely populated and situated closer to the city center, benefiting from better access to public services, infrastructure, and social amenities. This spatial distribution highlights the existence of pronounced intra-district inequalities and underscores the importance of targeted policy interventions aimed at improving living conditions and reducing disparities. A similar pattern of socio-spatial inequality was also observed by Yang and colleagues (2023) in their analysis, supporting the notion that urban peripheries often experience lower levels of well-being compared to central areas.

DISCUSSION AND CONCLUSION

This study highlights significant spatial variations in the Quality of Life (QoL) across neighborhoods in the Odunpazarı and Tepebaşı districts of Eskişehir. The findings reveal that certain neighborhoods, particularly those with low QoL scores, tend to be located on the urban periphery and exhibit sparse population densities, while high-QoL neighborhoods are more centrally concentrated. Such spatial patterns underscore the presence of socioeconomic inequalities and indicate the need for targeted urban planning interventions.

These findings have several important implications for urban planning and policy. The observed neighborhood-level disparities in QoL scores suggest that prioritizing investments and planning efforts in areas with lower QoL can effectively address spatial and social inequalities. In particular, enhancing transportation infrastructure, healthcare services, educational facilities, and social amenities in these areas can directly improve the living standards of residents and promote equitable access to essential services. Social policies that encourage community participation and engagement are equally crucial, as they foster social cohesion, empower local populations, and facilitate more inclusive decision-making processes.

Moreover, the development and enhancement of green spaces, parks, and social activity venues can significantly improve environmental quality while supporting both the physical and social well-being of residents. Such interventions not only enhance the overall livability of urban areas but also promote healthier lifestyles and stronger community interaction. Furthermore, implementing socioeconomic support programs aimed at increasing employment opportunities and household incomes can help reduce economic disparities, enabling disadvantaged neighbors to overcome structural challenges and achieve more balanced and sustainable development outcomes.

Based on the results of this study, several practical recommendations can be proposed for urban development in Eskişehir. First, urban planners and policymakers should prioritize neighborhoods with low QoL scores when allocating resources, focusing on comprehensive improvements in infrastructure and public services to mitigate spatial and socioeconomic inequalities. Second, investments in healthcare, education, and transportation networks in these neighborhoods are essential to raise residents' quality of life directly. Third, social programs that foster active community participation, engagement, and empowerment should be integrated into local planning frameworks, ensuring that residents have a voice in shaping the development of their neighborhoods. Fourth, increasing the availability and accessibility of green areas, parks, and social activity spaces can improve environmental conditions and enhance both social and physical well-being. Finally, participatory, neighborhood-based planning processes should be embedded in urban governance strategies, guaranteeing that local communities are actively involved in decision-making and that urban development initiatives are responsive to the specific needs of residents.

In conclusion, this study emphasizes that addressing spatial disparities in QoL requires a multidimensional approach, integrating infrastructure development, social policy, environmental planning, and participatory governance. By strategically targeting low-QoL neighborhoods with coordinated interventions, urban planners can promote equitable development, reduce socioeconomic inequalities, and foster a higher overall standard of living in Eskişehir. These insights provide a robust

evidence base for future urban planning and policy initiatives aimed at creating more inclusive, sustainable, and resilient urban environments.

This research is a pilot study and is based on subjective weighting approaches and certain proxy data. Therefore, it is important to use a larger and more comprehensive set of variables in future studies in order to increase both the robustness and the theoretical validity of the developed index. In particular, the inclusion of additional socio-economic and environmental variables such as household welfare indicators, education level, access to health services, transport infrastructure, environmental quality, crime rates, air pollution, green space access and social participation indicators in the model will significantly increase the representativeness of the index. Furthermore, the use of statistical methods such as Principal Component Analysis (PCA) and multi-criteria decision-making techniques such as Analytic Hierarchy Process (AHP) based on expert opinions to objectively capture multidimensional relationships between variables and to determine variable weights in a data-driven manner will strengthen both the objectivity and consistency of the weighting process. This study is limited to the current data structure and provides a framework that is open to be developed with more detailed, up-to-date and expanded data sets in the future.

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DUAL-MODE APPROACH IN EMPLOYEE COMPETENCY MANAGEMENT: ADAPTIVE TASK ASSIGNMENT BASED ON LEARNING AND PRODUCTION GOALS

Buğra Ayan

Other, T.C. Cumhurbaşkanlığı

E-mail: bugraayan.com@iletisim.gov.tr

ORCID ID: 0000-0002-4915-4970

Prof. Dr. Sinem Sinangil

Prof., T.C. Cumhurbaşkanlığı

E-mail: sinem.sinangil@tccb.gov.tr

Abstract

In today's dynamic business environment, organizations face two fundamental yet often conflicting objectives: maximizing employee performance while simultaneously fostering continuous competency development. This study addresses this dilemma by presenting an innovative theoretical framework adapted from human-AI collaboration models to the field of organizational behavior: Dual-Mode Adaptive Task Assignment. The proposed model employs two distinct task assignment strategies depending on whether the employee's immediate goal is production or learning. The Similarity mode assigns tasks aligned with the employee's existing competencies, targeting short-term performance and efficiency. The Complementarity mode, conversely, assigns tasks that challenge the employee's developmental areas, supporting long-term competency acquisition and career advancement. This conceptual paper establishes the theoretical foundation of the model by drawing on Cognitive Load Theory, the Dreyfus Model of Skill Acquisition, and the Zone of Proximal Development, and proposes its mathematical formulation. The study concludes by offering practical implications for integrating this model into human resource management, performance evaluation, and career planning processes.

Keywords: Competency Management, Adaptive Task Assignment, Organizational Behavior, Performance Optimization, Dual-Mode Model

INTRODUCTION

With the rise of the knowledge economy, human capital has become the most valuable asset of organizations. In this context, optimizing employee performance while ensuring their continuous professional development is fundamental to achieving sustainable competitive advantage (Snell & Bohlander, 2010). However, these two objectives often conflict in practice. On one hand, organizations expect employees to complete tasks in their areas of expertise most efficiently to meet short-term production goals. On the other hand, employees acquire new skills through tasks that challenge their existing capabilities and push them beyond their comfort zones, which can lead to short-term efficiency losses and increased error rates (Vygotsky, 1978).

Existing performance management and task assignment models in the literature tend to prioritize one of these two objectives. Traditional task assignment approaches typically focus on efficiency and

specialization (Taylor, 1911), while modern talent management systems emphasize development and learning opportunities (CIPD, 2023). However, there is a notable absence of an integrated model that dynamically and situationally balances these two purposes.

This study aims to fill this gap by drawing inspiration from recent developments in human-AI collaboration and adaptive learning systems. Particularly, "dual-mode" systems that offer different interaction modes based on user goals (Ayan, 2025) present significant potential when adapted to organizational contexts. The fundamental research question of this paper is: How can an adaptive task assignment model be designed that simultaneously optimizes employees' immediate performance and long-term competency development?

To answer this question, we propose the Dual-Mode Adaptive Task Assignment theoretical framework, which dynamically manages the alignment between employee goals (production-oriented vs. learning-oriented) and task characteristics.

CONCEPTUAL FRAMEWORK

The proposed model is built upon three fundamental theories at the intersection of organizational behavior, cognitive psychology, and educational sciences.

Cognitive Load Theory (CLT): Developed by Sweller (1988, 2011), this theory posits that human working memory has limited capacity and that learning can be optimized through instructional designs that do not exceed this capacity. In the context of task assignment, when an employee is assigned a task far beyond their current competency level, cognitive load increases, which diminishes performance and impedes learning. The Similarity mode in our model aims to minimize cognitive load and maximize performance by offering tasks aligned with the employee's existing schemas.

Dreyfus Model of Skill Acquisition: Developed by Dreyfus and Dreyfus (1986), this model identifies five stages individuals progress through when acquiring a skill: novice, advanced beginner, competent, proficient, and expert. This model emphasizes that competency is not static but develops through experience. Our task assignment system should use an employee's Dreyfus level in a particular competency domain as input to assign appropriately challenging tasks. The Complementarity mode aims to offer tasks that will advance the employee from their current level to the next.

Zone of Proximal Development (ZPD): Introduced by Vygotsky (1978), this concept refers to the area between what an individual can do independently and what they can accomplish with guidance from someone more knowledgeable (or, in this study, a properly designed task). Effective learning and development occur precisely within this zone. The Complementarity mode in our model aims to foster maximum competency development by matching employees with tasks positioned within their ZPD. Tasks that are too easy lead to boredom, while tasks that are too difficult cause anxiety; tasks within the ZPD offer motivating challenges.

PROPOSED MODEL: DUAL-MODE ADAPTIVE TASK ASSIGNMENT

The model represents an employee's competency profile and a task's requirement profile as vectors. The employee's competency vector Cu and the task's requirement vector Ct are defined across n key competency dimensions identified by the organization.

$Cu = [u_1, u_2, ..., u_n]$

$Ct = [t_1, t_2, ..., t_n]$

Here, ui and ti are scores ranging from [1-5] according to the Dreyfus model. The core of the model is the adaptive task recommendation function R(u, t, G), which is activated based on the employee's stated immediate goal (G). The goal takes a value from the set $G \in \{learning, production\}$.

Similarity Mode

If G = production, the system activates the similarity mode. The objective is to maximize the overlap between the employee's existing competencies and the task's requirements. The similarity score S(u, t) can be calculated as cosine similarity or simply as the inverse of the Euclidean distance between vectors:

$$S(u, t) = 1 - \sqrt{[\Sigma^{n}_{i=1}(u_i - t_i)^2]} / (n \times 4)$$

The system recommends the task that maximizes the S(u, t) score. This mode is ideal for projects with tight deadlines, operations requiring high precision, or situations where boosting employee morale and confidence is the goal.

Complementarity Mode

If G = learning, the system activates the complementarity mode. The objective is to maximize the match between the employee's developmental areas (low ui) and the opportunities offered by the task (high ti). The complementarity score D(u, t) measures how challenging the task is in areas where the employee is weak:

$$D(u, t) = \Sigma^{n}_{i=1} w_i \times f(t_i - u_i)$$

Here, f(x) is a function that returns positive values when x > 0 (specifically when ti > ui) (e.g., f(x) = max(0, x)), and wi is a weight indicating the strategic importance of that competency. The system recommends the task that maximizes the D(u, t) score while adhering to ZPD principles and ensuring cognitive load does not become excessive. This mode is critical for long-term talent development programs, career rotation, and succession planning.

Adaptive Hybrid Mode

For scenarios requiring both performance and development, the model can implement an adaptive hybrid mode that dynamically balances both strategies based on a learning goal parameter $g \in [0,1]$:

$$Rhybrid(u, t, g) = (1-g) \times S(u, t) + g \times D(u, t)$$

When g=0, the system operates in pure similarity mode; when g=1, it operates in pure complementarity mode. Intermediate values allow for flexible balancing of short-term performance and long-term development needs.

DISCUSSION AND CONCLUSION

This study contributes to the organizational behavior literature by introducing the Dual-Mode Adaptive Task Assignment model, which recognizes the dynamic nature of employees' task goals and adapts task assignment strategies accordingly. Rather than viewing the traditional trade-off between performance and development as a static problem, the model reframes it as a dynamic balancing problem that can be managed situationally.

The theoretical contribution of the model lies in its integration of diverse theoretical perspectives—Cognitive Load Theory, the Dreyfus Model, and the Zone of Proximal Development—within a unified and formal structure. This represents a previously unmodeled quantitative approach in the field of competency management.

From a practical perspective, the model has the potential to be integrated into modern Human Resource Information Systems (HRIS) and Talent Management Platforms. Such a system could assist managers in making data-driven task assignment decisions. Employees, in turn, could input their task preferences based on their career goals (whether they wish to learn more or be productive with their current skills),

experiencing a more personalized work environment. This has the potential to increase employee engagement, motivation, and retention rates.

Future research should focus on empirically testing this theoretical model. Case studies or simulation-based experiments investigating the model's validity across different sectors and organizational cultures will provide valuable insights into its effectiveness and limitations. Additionally, the reliability of employee goal declarations (learning/production) and the individual and situational factors influencing these goals are important topics that warrant investigation.

In conclusion, the Dual-Mode Adaptive Task Assignment model offers a flexible, personalized, and strategic approach to managing human capital in the complex business environment of the 21st century. By recognizing that employees have different needs at different times—sometimes requiring challenges for growth, other times needing familiar territory for efficient execution—organizations can simultaneously optimize both immediate productivity and long-term capability development.

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THE RELATIONSHIP BETWEEN EXTERNAL DEBT AND ECONOMIC FREEDOM: AN EMPIRICAL ANALYSIS ON ASIAN COUNTRIES

Ali Fuat URUŞ
Research Assistant, PhD, İzmir Kâtip Çelebi University, Faculty of Economics and Administrative Sciences, Department of Public Finance, alifuat.urus@ikc.edu.tr, ORCID ID: 0000-0002-3716-3298

Fadime Ayca CEYLAN
PhD., Independent Researcher, f.aycaceylan@gmail.com, ORCID ID: 0000-0002-4116-4170

Abstract

Over the last three decades, globalization, liberalization of capital flows, and the deepening of financial markets have led to a rapid rise in external borrowing, particularly among developing Asian economies. Capital inflows have become a crucial policy instrument for many Asian countries to finance economic growth, expand infrastructure investments, and support macroeconomic stability. However, the sustainability of external debt and the relationship between debt dynamics and the level of economic freedom have emerged as significant areas of debate in recent years. Economic freedom is considered a fundamental factor shaping market efficiency, institutional quality, and the investment climate, thereby playing a decisive role in determining the nature and management of external borrowing. This study aims to empirically examine the relationship between economic freedom and external debt dynamics in Asian countries. Although there are studies in the literature addressing the nexus between economic freedom and indebtedness, comprehensive comparative empirical research focusing specifically on the Asian region remains limited. In this context, the study seeks to contribute to the literature by analyzing both temporal trends and structural relationships using data from selected Asian economies between 2013 and 2023.

Keywords: External Debt, Economic Freedom, Asia

INTRODUCTION

The relationship between economic freedom and external debt holds strategic importance, particularly for developing economies, in terms of fiscal autonomy and institutional sustainability. Economic freedom—through elements such as the protection of property rights, the effective functioning of market mechanisms, and the limitation of government intervention—directly influences both the investment climate and access conditions to external financing. External borrowing, beyond being merely a financing instrument, is one of the key factors shaping a country's fiscal maneuverability and policy independence.

This study aims to contribute to the literature at both theoretical and methodological levels by examining the effect of economic freedom on the dynamics of external debt within a panel data framework. Existing studies generally focus on the unidirectional effects of economic freedom on growth, investment, or macroeconomic performance (Barro, 1996; Dreher, 2006; Gouider & Saafi, 2022). However, the short-term dynamic effects of changes in economic freedom on the level and sustainability of external borrowing—particularly in the context of developing countries—have been addressed only to a limited extent. To fill this gap, the present study analyzes how annual changes in economic freedom influence annual changes in external debt by employing dynamic panel data techniques.

Methodologically, the study employs the Difference-GMM (Arellano–Bond) approach on a panel dataset to simultaneously account for dynamic effects and potential endogeneity concerns (Arellano & Bond, 1991). This enables the inclusion of lagged values of the dependent variable in the model—an advantage not offered by conventional fixed effects (FE) or OLS estimators. In addition, the use of first-differenced variables ensures stationarity while eliminating country-specific fixed effects. In this

respect, the study provides results that are both theoretically consistent (appropriate for non-stationary and non-cointegrated series) and empirically robust.

Furthermore, the study period (2013–2023) encompasses a global context characterized by post-pandemic debt surges, fluctuations in interest rates, and geopolitical disruptions, making the findings directly relevant to contemporary policy debates. The growing divergence between economic freedom indices and public debt ratios in recent years has intensified discussions on fiscal autonomy, particularly in transition economies such as those in Asia. In this context, the study not only fills an empirical gap but also contributes to the reassessment of the impact of liberalization policies on fiscal sustainability.

METHODS

In this study, the selection of dependent and independent variables is based on the core research question, which seeks to analyze the direction of causality and the mutual interaction between economic freedom and external debt: *"How do changes in the level of economic freedom affect countries' external borrowing behavior, and do these debt dynamics, in turn, shape their sphere of economic freedom in the long run?"*

Within this framework, the external debt indicator (Debt) is designated as the main dependent variable, as it reflects a country's fiscal dependence, external financing needs, and overall position in international markets. Changes in debt levels constitute a key indicator that directly affects countries' policy autonomy, budgetary flexibility, and economic sovereignty. In contrast, the economic freedom index (Freedom) represents the quality of economic governance and the effectiveness of market mechanisms. Therefore, this index serves as the main independent variable that captures how political and institutional domains of freedom are translated into economic behavior. Moreover, considering the panel structure of the dataset and institutional heterogeneity across countries, the variables are used in differenced form (Freedom_diff, Debt_diff). This specification highlights short-term dynamic effects and allows the analysis to focus on annual changes rather than long-term levels. Such an approach both mitigates non-stationarity problems and enables the examination of how year-to-year policy adjustments influence external borrowing behavior. Consequently, the choice of variables is based not only on data availability, but also on coherence with the study's central research hypothesis: that increases in economic freedom may encourage external borrowing in the short term by improving access to international markets, yet may simultaneously restrict fiscal autonomy in the long term by increasing dependence on external financing.

In this study, Asian countries were selected as the sample to examine the relationship between economic freedom and external debt. Time-series data covering the period 2013–2023 were compiled for 27 countries for which both debt and economic freedom indicators were available. All analyses were conducted in Python version 3.13 using the pandas, numpy, linearmodels, arch.unitroot, and statsmodels libraries.

A multi-step econometric approach was adopted, taking into account stationarity and long-run equilibrium properties. First, panel unit root tests were applied to determine the statistical characteristics of the series over time and to assess whether the variables were stationary. Subsequently, the Engle–Granger panel cointegration test was employed to investigate the existence of a long-run equilibrium relationship between the non-stationary variables. The results of these preliminary tests indicated that both economic freedom and external debt are integrated of order one (I(1)), yet no significant cointegration relationship exists between them. Therefore, the analysis focused on short-run dynamics, for which the Difference-GMM method developed by Arellano and Bond (1991) was applied. This approach allows for the simultaneous control of dynamic effects and potential endogeneity issues in panel data—such as the bidirectional interaction between freedom and debt. In this way, the study aims to produce estimates that are both statistically consistent and economically meaningful.

Unit Root Test

The unit root test is a fundamental preliminary procedure used to examine the stationarity properties of variables in time-series and panel data analyses. Stationarity refers to a series whose mean and variance remain constant over time. If the variables are non-stationary—meaning they exhibit random trends or cumulative deviations—this may lead to spurious regression results (Granger & Newbold, 1974). In particular, regressions conducted without ensuring stationarity in panel data settings are prone to generating misleading relationships (Baltagi, 2021). For this reason, a Unit Root Test (Stationarity Test) was conducted as the first step of the analysis.

Table 1. Panel ADF (Augmented Dickey-Fuller) Results

Country	ADF_Freedom_stat	ADF_Freedom_p	ADF_Debt_stat	ADF_Debt_p
Armenia	-4.3505	0.0004	1.7423	0.9982
Azerbaijan	-1.6853	0.4387	-2.6227	0.0884
Bangladesh	-2.5095	0.1132	2.0527	0.9987
Bhutan	-2.1337	0.2312	-3.3133	0.0143
Cambodia	0.5772	0.987	-1.6761	0.4435
China	-1.6281	0.4685	-0.9199	0.7813
Georgia	-1.5443	0.5115	0.9473	0.9937
India	-3.0208	0.033	-0.4004	0.91
Indonesia	-1.4224	0.5715	-2.248	0.1893
Iran	-3.587	0.006	-1.627	0.4691
Jordan	0.4743	0.9841	3.1847	1
Kazakhstan	-2.059	0.2613	3.2899	1
Kyrgyzstan	-2.0874	0.2496	0.3566	0.9798
Lebanon	-0.11	0.9484	-2.6103	0.0909
Maldives	-4.4737	0.0002	-2.0081	0.283
Mongolia	1.4252	0.9972	-2.1971	0.2073
Nepal	-4.5488	0.0002	1.4052	0.9971
Pakistan	-0.4916	0.8937	-0.7399	0.8361
Philippines	-0.7679	0.8284	0.7904	0.9915
Sri Lanka	0.9485	0.9937	-3.9024	0.002
Tajikistan	-1.8771	0.3429	-0.9757	0.762
Thailand	-2.0274	0.2747	-0.51	0.8901
Timor-Leste	-2.4239	0.1351	0.2645	0.9757
Turkey	-0.6563	0.8578	-0.0686	0.9525

Turkmenistan	-2.1704	0.2172	1.4593	0.9974
Uzbekistan	-0.9824	0.7596	3.8524	1
Vietnam	-0.1339	0.946	-1.754	0.4035

The results of the unit root tests indicate that the Freedom and Debt variables in the panel dataset are largely non-stationary. Stationarity implies that the mean and variance of a series remain constant over time. However, the test results show that the Freedom variable is stationary at a statistically significant level ($p < 0.05$) in only five countries (Armenia, India, Iran, Maldives, and Nepal). The Debt variable, in turn, was found to be stationary in only two countries (Bhutan and Sri Lanka).

Panel ADF (Augmented Dickey–Fuller) unit root tests show that the series are non-stationary in their level forms but become stationary once first-differenced. This finding indicates that both variables follow an I(1) process, implying that conventional fixed-effects or OLS models may be subject to the risk of spurious regression. Therefore, the next step in the analysis involved testing for a potential cointegration relationship between the variables.

Cointegration Test

The cointegration test is applied to determine whether a long-run equilibrium relationship exists between non-stationary (I(1)) series (Engle & Granger, 1987). Since time series and panel data often contain trends and structural breaks, analyzing such variables in their level forms may lead to the risk of spurious regression (Granger & Newbold, 1974). However, even if two or more variables are individually non-stationary, a particular linear combination of them may become stationary (Engle & Granger, 1987; Pedroni, 1999). In such cases, the variables are said to be cointegrated and move together in the long run. Economically, this implies that the variables share a long-term equilibrium, that deviations are temporary, and that the system tends to return to equilibrium over time (Gujarati & Porter, 2009; Baltagi, 2021). In the context of this study, the cointegration test is essential for examining whether economic freedom (Freedom) and external debt (Debt) exhibit not only short-run interactions but also a long-run equilibrium relationship.

Table 2. Engle-Granger Results

Country	coint_stat	p_value	Country	coint_stat	p_value
Armenia	-1.6142	0.7148	Maldives	-2.2366	0.4056
Azerbaijan	-2.7338	0.1877	Mongolia	-1.8489	0.6057
Bangladesh	-2.4918	0.2827	Nepal	-1.3433	0.8163
Bhutan	-1.185	0.8618	Pakistan	-1.7261	0.6649
Cambodia	-0.5304	0.9621	Philippines	-2.4186	0.3161
China	-1.6176	0.7134	Sri Lanka	-1.9314	0.564
Georgia	-1.8138	0.623	Tajikistan	-1.0616	0.8905
India	-1.6302	0.708	Thailand	-0.9837	0.9059
Indonesia	-2.6811	0.2064	Timor-Leste	-3.3282	0.051
Iran	-1.5744	0.7316	Turkey	-2.8438	0.1521
Jordan	-3.7234	0.0171	Turkmenistan	-2.967	0.1182

Kazakhstan	-0.4054	0.9704	Uzbekistan	-23.129	0
Kyrgyzstan	-0.5651	0.9594	Vietnam	-2.3454	0.3511
Lebanon	-1.4461	0.7813			

The results of the Engle–Granger cointegration test indicate that the Freedom and Debt series generally do not exhibit a long-run equilibrium relationship. Within the panel, only two countries (Jordan and Uzbekistan) have p-values below the 5% significance level ($p < 0.05$), suggesting that the series do not move together in the long run. Therefore, the relationship between economic freedom and external debt over the examined period appears to stem from short-term fluctuations rather than a structural long-term link. This outcome shows that Freedom (economic freedom) and Debt (external debt) do not move together in the long run for the majority of countries in the sample.

In other words, changes in economic freedom levels do not systematically determine debt dynamics in the long run, nor do increases in external debt generate permanent shifts in economic freedom. The presence of only two long-run relationships suggests that, in these specific countries, economic freedom policies may have formed a certain structural link with debt sustainability. However, overall, this relationship appears weak and country-specific across the sample. Economically, this implies that the Freedom–Debt relationship is short-term, cyclical, and policy-driven. That is, when countries implement economic freedom reforms, they may experience an increase in external financing flows in the short run; however, the long-run effects on debt levels are neither permanent nor structural.

To investigate whether a long-run equilibrium relationship exists between the non-stationary series, the Engle–Granger cointegration test was applied. The test results indicate that there is no cointegration between the Freedom and Debt variables at the 5% significance level ($p > 0.05$). This finding suggests that although the two variables do not move together in the long run, they may exhibit a dynamic structure in which they influence each other in the short run. Therefore, the analysis focuses on short-term interactions rather than a long-run equilibrium relationship.

Econometric Structure of the Model and Implementation Framework

Difference-GMM (Arellano–Bond)

To examine the short-term dynamics between economic freedom and external debt, this study employs a dynamic panel data model estimated in first differences. The structure of the model is based on the assumption that a country's current change in external debt (ΔDebt) is influenced both by its own past values (the inertia effect of debt accumulation) and by annual changes in economic freedom (Freedom). Within this framework, the baseline model is specified as follows:

$$\Delta\, Debt_{it} = \alpha + \rho \Delta Debt_{i,t-1} + \beta \Delta Freedom_{it} + \varepsilon_{it}$$

Here, *i* denotes the country and *t* denotes the year. The coefficient α represents the constant term, while ρ captures the sensitivity of current debt changes to their past values (the dynamic effect). The coefficient β reflects the short-term impact of changes in economic freedom on changes in external debt. The error term ε_it represents the random component that remains after country-specific fixed effects have been removed..

However, in this model, the variable ΔDebt $_{i,t-1}$ is potentially endogenous, which means that estimating it using the conventional fixed-effects method may lead to biased results. To address this issue, the Difference-GMM approach developed by Arellano and Bond was employed. In this framework, the equation is first-differenced to eliminate country-specific fixed effects, and the second and third lags of debt (Debt $_{i,t-2}$, Debt $_{i,t-3}$) are used as instrumental variables for ΔDebt $_{i,t-1}$. This procedure corrects both endogeneity and autocorrelation problems, yielding consistent estimates

appropriate for a dynamic panel data structure.Ekonometrik olarak tahmin edilen model şu şekilde formüle edilmiştir:

$$\Delta\, Debt_{it} = \alpha + \gamma \Delta Debt_{i,t-1} + \delta \Delta Freedom_{it} + u_{it}$$

$$[\Delta Debt_{i,t-1} \sim \Delta Debt_{i,t-2}, \Delta Debt_{i,t-3}]$$

The expression in square brackets indicates that the lagged level values of the differenced dependent variable are used as instruments. The model is estimated using a heteroskedasticity-robust variance–covariance matrix. In this way, country-specific short-term policy effects and debt dynamics are analyzed in a statistically consistent and meaningful manner.

FINDINGS

The Difference-GMM (Arellano–Bond type) model applied in this analysis aims to test the relationship between economic freedom (Freedom) and external debt (Debt) by accounting for short-term dynamics and potential endogeneity issues. By taking the first differences of the series, stationarity is ensured, and lagged debt variables are used as instruments. In this way, both the lagged effects of the variables are captured and potential bidirectional causality is effectively controlled for.

Table 3. Dynamic Panel Difference-GMM (Arellano–Bond) Test Results

Model Statistics						
F-statistic:	6.2366					
p (F-stat):	0.0442					
N	216					
Instruments (instrumental variables used to address endogeneity):	Debt_lag2, Debt_lag3					
Covariance estimator:	Robust (Heteroskedastic)					
Variable Statistics						
Variable	Coefficient	Std. Error	t-Statistic	p-Value	Lower CI	Upper CI
Intercept	619.51	4106.9	0.1508	0.8801	-7429.9	8668.9
Freedom_diff	2771.1	2421.4	1.1444	0.2525	-1974.8	7516.9
Debt_diff_lag1	1.339	0.9341	1.4335	0.1517	-0.4917	3.1697

Since the model is subject to potential heteroskedasticity and autocorrelation, standard errors were computed using a robust (heteroskedasticity-consistent) covariance estimator. This estimator corrects for heteroskedasticity in the error terms and allows for the consistent estimation of coefficient standard errors (Arellano & Bond, 1991; Blundell & Bond, 1998). As a result, the significance tests of the model become more reliable.

According to the estimation results of the model, the coefficient of the *Freedom_diff* variable is approximately 2771.1, with a p-value of 0.2525. This indicates that a one-unit increase in economic freedom has a positive but statistically insignificant short-run effect on the annual change in external debt. Meanwhile, the coefficient of *Debt_diff_lag1* is 1.339 with a p-value of 0.156, which likewise renders the coefficient statistically insignificant. This suggests that debt increases tend to exhibit

persistence (i.e., some inertia from previous-period debt changes), although this effect is not statistically significant. The overall significance of the model is confirmed by the F-statistic (6.23, p = 0.044), indicating that the model as a whole is statistically significant.

The results indicate a positive yet statistically insignificant relationship between the annual change in economic freedom scores and the annual change in external debt. This finding suggests that short-term reforms in economic freedom may have weak or heterogeneous effects on debt dynamics. Moreover, the insignificance of the *Debt_diff_lag1* coefficient, together with the earlier cointegration tests showing no general long-run equilibrium relationship, implies that the interaction between economic freedom and external debt is temporary and short-lived in nature.

DISCUSSION AND CONCLUSION

The primary objective of this study is to analyze the nature of the relationship between economic freedom and external debt in a sample of developing economies by employing dynamic panel data methods. The results of the Panel ADF unit root tests and the Engle–Granger cointegration test indicate that the series are non-stationary and do not exhibit a long-run cointegration relationship. Consequently, the analysis focuses on the short-term dynamics between the variables, and the Difference-GMM approach in the style of Arellano and Bond is applied. The model results reveal that short-run increases in economic freedom positively influence external debt levels, although this effect is statistically insignificant.

The findings indicate that annual changes in economic freedom have a positive but statistically insignificant effect on short-term fluctuations in external debt. Similarly, the one-period lag of debt change is also positive, as theoretically expected, but statistically insignificant. These results suggest that external debt dynamics largely evolve independently of freedom-related reforms and that short-term policy adjustments do not produce a marked impact on debt levels.

The overall statistical significance of the model (F-statistic, $p < 0.05$) indicates that the instrumental variables used and the model specification are appropriate. However, the insignificance of the individual coefficients suggests that the relationship between the variables is weak and temporary in nature. This outcome is also consistent with the earlier tests, which showed no general long-run cointegration relationship. Therefore, in this sample, the relationship between economic freedom and external debt appears to manifest as cyclical and short-term fluctuations rather than as a structural long-term linkage.

Overall, the study demonstrates that short-term reforms in economic freedom do not exert a decisive influence on external debt, and that debt dynamics are shaped predominantly by macroeconomic conditions, financial depth, exchange rate movements, and country-specific fiscal policies. In this respect, the impact of improvements in economic freedom on debt sustainability should be evaluated over a longer time horizon and within broader institutional frameworks. Furthermore, the results indicate that developing more comprehensive models focusing on the structural determinants of external borrowing would provide valuable contributions to the literature.

This study is based on a panel dataset covering 27 countries for the period 2013–2023 and conducts its analysis using two key variables—economic freedom (Freedom) and external debt (Debt). While this scope preserves methodological consistency, it also entails certain limitations. First, the analysis focuses exclusively on these two core variables and does not incorporate potential control variables such as economic growth, inflation, interest rates, or institutional quality. This omission may result in disregarding indirect factors that influence the relationship. Second, although the Difference-GMM method is effective in capturing short-term effects, it cannot model long-run equilibrium dynamics. Future research could benefit from employing methods such as Panel ARDL or FMOLS, which would provide deeper insights into the temporal dimension of the freedom–debt relationship. Lastly, although the dataset includes the period affected by the COVID-19 pandemic and regional geopolitical shocks, these events were not incorporated into the model as structural break variables. Including such break

indicators could yield a more accurate explanation of debt dynamics, particularly for the post-2020 period.

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UNVEILING THE ECONOMIC AND FINANCIAL DRIVERS OF SUSTAINABILITY IN BANGLADESHI BANKS: INSIGHTS USING PANEL DATA ANALYSIS

Rejaul KARIM

Department of Business Administration

Varendra University, Rajshahi 6204, Bangladesh

E-mail: rkarimreja@gmail.com

ORCiD: https://orcid.org/0000-0001-6175-8825

Abstract

The Bangladeshi banking industry is simultaneously navigating traditional profitability pressures and growing demands for environmental, social and governance (ESG)–aligned finance. Recent evidence shows that bank performance in emerging economies is increasingly shaped by both internal balance-sheet structures and macro-financial conditions, while sustainability metrics become more central for regulators, investors and depositors. This paper examines how macroeconomic factors (economic growth and inflation) and bank-specific characteristics (loan–deposit ratio, loan–asset ratio, capital-to-risk-weighted-assets ratio, financial assets, firm size and leverage) jointly influence two complementary measures of sustainability for Bangladeshi banks: accounting-based sustainability (return on assets, ROA) and market-based sustainability (Tobin's Q). Using an unbalanced panel of scheduled commercial banks and applying a dynamic System Generalized Method of Moments (System GMM) estimator, we address profit persistence, endogeneity and unobserved heterogeneity. The results show that sound capitalization, prudent leverage and a moderate loan–deposit ratio are associated with higher and more sustainable bank performance, whereas excess loan concentration and high inflation weaken sustainability. These findings carry clear implications for bank management and regulators seeking to align profitability, resilience and sustainability in Bangladesh's banking system.

Keywords: Banks' sustainability, banking sector, profitability, financial performance, leverage, panel data

1. Introduction

The banking sector plays a pivotal role in the economic development of emerging economies by channeling savings into productive investments, facilitating payment systems, and supporting financial inclusion. In Bangladesh, banks dominate the financial system and are central to financing trade, industrial expansion, and infrastructure development. Ensuring the sustainability of banks—understood here as their ability to maintain stable profitability, sound asset quality, and resilience to shocks over time—is therefore critical not only for the stability of the financial system but also for the broader macroeconomic performance of the country (Bony, 2021). The recent episodes of global financial turbulence, domestic governance challenges, and rising regulatory scrutiny have highlighted the need to understand the economic and financial drivers that underpin the sustainable performance of Bangladeshi banks (Hossain & Ahamed, 2021).

Bank sustainability can be assessed from multiple perspectives. Market-based indicators, such as Tobin's Q, capture how investors perceive the value and long-term prospects of banks, while accounting-based measures such as return on assets (ROA) reflect internal efficiency in generating profits from existing resources (Đurđević & Furtula, 2023). Focusing on both dimensions allows for a more comprehensive assessment: a bank can appear profitable in the short term yet be undervalued by the market if investors anticipate heightened risks, weak governance, or unsustainable business models.

In a rapidly evolving financial landscape—characterized by digitalization, regulatory reforms, and heightened competition—understanding how macroeconomic conditions and bank-specific financial structures jointly shape these performance indicators is indispensable (Dhar et al., 2025; Karim, Dhar, et al., 2025; Karim & Kumar Dhar, 2025; Mamun et al., 2025; S. Sarker et al., 2025)

The main objective of this study is to uncover the economic and financial determinants of sustainability in Bangladeshi banks by examining the impact of macroeconomic factors and bank-level characteristics on ROA and Tobin's Q (Bhowmik et al., 2025; Gazi, Karim, et al., 2024; Jie et al., 2025; Karim, Roshid, Dhar, et al., 2024). Specifically, the study investigates how inflation (INFL), economic growth (EG), loan-to-deposit ratio (LDR), loan-to-asset ratio (LAR), capital-to-risk-weighted asset ratio (CRWAR), firm age (FA), firm size (FS), and leverage (LEV) affect both accounting-based and market-based measures of bank sustainability. By doing so, the paper aims to shed light on whether macroeconomic stability and internal balance sheet structures promote or undermine sustainable performance in the Bangladeshi banking industry (Ahmad et al., 2025; Karim, 2020; Karim et al., 2017, 2018, 2024; Karim, Kamruzzaman, et al., 2022; Karim, Khatun, et al., 2023; Karim, Mamun, et al., 2023; Karim, Roshid, et al., 2023; Miah et al., 2019).

Methodologically, the study employs an unbalanced panel dataset of 26 listed commercial banks in Bangladesh over the period 2012–2024, yielding 338 firm-year observations. Panel data techniques are used to exploit both the cross-sectional and temporal dimensions of the data. After conducting a series of diagnostic tests—including tests for cross-sectional dependence, unit roots, heteroskedasticity, and serial correlation—fixed and random effects models are initially estimated. Subsequently, the Hausman specification test indicates the presence of endogeneity and unobserved heterogeneity biases that cannot be fully addressed by static models. In response, the study adopts a dynamic panel generalized method of moments (GMM) estimator, allowing lagged dependent variables and potential endogeneity in explanatory variables to be handled in a robust manner.

This paper contributes to the literature in several ways. First, it focuses specifically on sustainability in the banking sector of an emerging economy, using both market-based (Tobin's Q) and accounting-based (ROA) performance proxies, rather than relying on a single indicator. Second, unlike much of the previous work that applies simple ordinary least squares or static panel estimators, this study applies dynamic GMM techniques that explicitly account for endogeneity, persistence in performance, and firm-specific unobserved heterogeneity. Third, it integrates macroeconomic conditions and granular bank-level financial indicators within a unified framework, thereby illustrating how external and internal forces interact to shape sustainability. Finally, the study offers policy-relevant insights for regulators, bank managers, and policymakers in Bangladesh regarding how to foster a more sustainable and resilient banking sector.

2. Literature Review

2.1 Bank Sustainability and Performance Measures

Bank sustainability is often operationalized through profitability and market valuation indicators, which reflect the ability of banks to generate returns, manage risks, and sustain investor confidence over time (Siswanti et al., 2024; Wan et al., 2023a). Accounting-based measures such as ROA capture how efficiently a bank uses its total assets to generate earnings, while market-based indicators such as Tobin's Q reflect market perceptions of the bank's future earnings potential and risk profile (Curi & Lozano-Vivas, 2020; Veríssimo et al., 2021).

Prior studies on bank performance have typically focused on either profitability or market valuation, but relatively few have simultaneously examined both as complementary dimensions of sustainability in emerging markets (Abou-El-Sood & Shahin, 2023; Azmi et al., 2021).

Many existing works also rely on static models that ignore performance persistence and potential endogeneity between bank characteristics and profitability, thereby limiting the robustness of their conclusions. This research, in contrast, applies a dynamic panel generalized method of moments approach, which accounts for the persistence of profitability over time and mitigates concerns about endogeneity by instrumenting for potentially endogenous variables (Varghese & Haque, 2021).

2.2 Macroeconomic Determinants

2.2.1 Inflation

Inflation affects banks through multiple channels, including interest margins, loan quality, and real value of assets and liabilities (Veríssimo et al., 2021b). Several studies have found that moderate inflation can be associated with higher bank margins if banks adjust lending rates faster than deposit rates, whereas high or volatile inflation tends to deteriorate asset quality and increase uncertainty, ultimately harming profitability (Sánchez Serrano, 2025a; Tsegaye et al., 2024). However, much of the existing literature treats inflation as a control variable rather than a focal determinant and often uses time-series or cross-sectional data for single countries (Bortoluzzo et al., 2024). Furthermore, many earlier studies do not account for dynamic adjustments or cross-sectional dependence across banks, which may bias estimates of the inflation–profitability relationship. The impact of inflation on bank profitability is not consistently established in the literature, with some studies indicating a positive relationship in certain contexts, such as China, while others, like those in Bangladesh, Sri Lanka, and Pakistan, find no significant effect, suggesting a nuanced and context-dependent influence(Bortoluzzo et al., 2024). The ability of banks to anticipate inflation and adjust interest rates accordingly can lead to increased profitability, as revenues may grow faster than costs (Forte et al., 2020a).

2.2.2 Economic Growth

Economic growth is generally expected to foster bank sustainability by enhancing demand for credit, reducing default risk, and improving overall financial conditions (Mehedi et al., 2023; Veríssimo et al., 2021b). Empirical studies typically find a positive relationship between GDP growth and bank profitability, as stronger economic activity leads to higher loan volumes and better asset quality. Nonetheless, many existing studies examine this relationship using short time periods or small samples and often focus on advanced economies or cross-country settings. For emerging markets like Bangladesh, the evidence remains relatively sparse, and earlier analyses rarely consider how growth simultaneously affects both ROA and Tobin's Q (Abedin et al., 2022; Khan et al., 2025).Moreover, the failure to adopt dynamic panel techniques may obscure the persistence of profitability and the feedback effects between bank performance and economic growth. Inconsistency in findings regarding the relationship between GDP growth and bank profitability, particularly in Bangladesh, suggests that a simple linear analysis may be insufficient to capture the complex dynamics at play, necessitating a conditional analysis (Apau & Sibindi, 2023).

. Indeed, some research indicates a positive relationship between economic growth and bank profitability, attributed to increased credit demand and improved solvency during economic booms (Danye, 2020). Conversely, other studies highlight that rapid economic expansion might incentivize banks to engage in excessive risk-taking, potentially eroding long-term stability and performance, especially in less regulated environments (Blattner et al., 2023).

2.3 Bank-Specific Financial Determinants

2.3.1 Loan-to-Deposit Ratio (LDR)

The loan-to-deposit ratio is a key indicator of bank intermediation and liquidity management. A higher LDR suggests more aggressive lending relative to the deposit base, which may increase interest income but also raises liquidity and credit risks (Forte et al., 2020b). Prior research has shown that moderate

levels of LDR can enhance profitability, whereas excessively high levels may lead to funding stress and asset quality problems. However, many studies treat LDR as a linear predictor, overlooking possible nonlinearities or threshold effects (Hughes et al., 2019a). In addition, earlier works often ignore the risk that LDR is endogenously determined by profitability expectations—banks expecting higher returns may deliberately expand lending—leading to biased coefficient estimates when using simple regression approaches (Blattner et al., 2023). Furthermore, the impact of LDR on bank profitability can be moderated by other bank-specific factors, such as capital adequacy and asset quality, which warrants a more comprehensive model specification to fully capture these interactions. Moreover, the relationship between LDR and profitability might vary significantly across different market conditions or bank business models, suggesting the need for more nuanced analyses that consider such heterogeneity.

2.3.2 Loan-to-Asset Ratio (LAR)

The loan-to-asset ratio captures the extent to which bank assets are concentrated in loans rather than liquid or low-risk securities (Bitar et al., 2018). A higher LAR implies greater exposure to credit risk and dependence on loan performance. Evidence from earlier studies is mixed: some find that higher LAR improves profitability by aligning assets with higher-yielding loans, while others report negative effects due to increased non-performing loans and provisioning costs (Bitar et al., 2018; Thornton & Tommaso, 2020).

Many of these studies do not explicitly examine sustainability or long-term resilience; instead, they focus on short-term profitability. Moreover, the majority of prior work fails to address cross-sectional dependence and potential simultaneity between loan growth and performance, which may lead to misleading conclusions about the true impact of LAR (Tarawneh et al., 2024). The integration of information asymmetry proxies, such as earnings forecast error and illiquidity ratios, could offer deeper insights into how the LAR influences debt financing costs and, consequently, bank sustainability(Shi et al., 2024). Similarly, the equity-to-assets ratio, which indicates the overall capital strength, offers insights into a bank's financial health, where a decline may signal increased debt financing or a reduction in total assets, posing financial risks (Durguti, 2020).

2.3.3 Capital to Risk-Weighted Asset Ratio (CRWAR)

A robust capital to risk-weighted asset ratio is fundamental for bank stability, reflecting a bank's capacity to absorb unexpected losses and maintain solvency (Apau & Sibindi, 2023). A higher Capital Adequacy Ratio is generally preferred as it signifies the bank's capability to finance operations internally, thus reducing reliance on external funding (Tsegaye et al., 2024). Well-capitalized institutions, by either decreasing risk-weighted assets or boosting portfolios of risk-weighted instruments, contribute positively to banking sector stability and profitability (Adem, 2023; Priharta & Gani, 2023).

However, studies also reveal that the relationship between capital adequacy and profitability is complex, with varying effects across different economic contexts and regulatory frameworks (Abou-El-Sood & Shahin, 2023).

Specifically, an increased capital-to-risk-weighted asset ratio can lead to higher profitability by bolstering investor confidence and enabling banks to pursue growth opportunities more aggressively, while also mitigating systemic risks (Varghese & Haque,' 2021).

Conversely, an overly conservative capital structure might constrain lending activities and reduce profitability by increasing the cost of equity (Bitar et al., 2018). Furthermore, while a greater capital adequacy ratio is associated with a stronger capital cushion to absorb losses, suggesting resilience against adverse economic conditions (Wan et al., 2023). This relationship can be complex, and some alternative estimation techniques may show contradictory results, emphasizing the need for further research to delineate optimal capital structures. Some studies suggest that beyond a certain threshold,

increased capital may not proportionately enhance profitability, potentially leading to opportunity costs by limiting profitable growth opportunities (Le, 2020).

2.3.4 Firm Age (FA)

Firm age proxies for experience, reputation, and established relationships with customers and regulators. Older banks may benefit from accumulated knowledge and customer loyalty, which can support stable earnings. However, older institutions may also suffer from inertia, outdated technologies, and rigid organizational structures, potentially hindering their adaptability to evolving market dynamics and innovation. Moreover, younger banks might leverage technological advancements and innovative business models to gain a competitive edge, though they may face higher initial operational costs and reputational challenges compared to their more established counterparts (Apau & Sibindi, 2023).

. The impact of firm age on profitability can therefore be ambiguous, requiring empirical investigation to discern the predominant effect within a specific banking sector. Conversely, younger banks may encounter higher initial operational costs and reputational hurdles while also potentially leveraging technological advancements and innovative business models to gain a competitive advantage (Ononye & Aloamaka, 2025).

This duality underscores the necessity for empirical studies to determine whether the benefits of experience or the agility of youth predominantly influence financial performance in a given banking landscape. Older banks, due to their experience, are also often better equipped to identify essential resources for survival and maintain their reputation through social actions, which can positively influence long-term sustainability(Wasiu Abiodun et al., 2023). However, some research suggests that older firms might exhibit greater rigidity and resistance to innovation, potentially limiting their adaptability to new market conditions and technological shifts, which could ultimately impede their long-term financial performance. Conversely, other studies have found that age can contribute to greater stability and risk management, allowing older institutions to navigate economic downturns more effectively due to their established practices and larger capital bases (Mehedi et al., 2023).

2.3.5 Firm Size (FS)

Firm size is one of the most extensively examined determinants of bank performance. Larger banks may benefit from economies of scale and scope, diversified portfolios, and stronger market power. However, they may also suffer from managerial complexity, coordination problems, and “too-big-to-manage” challenges (Katsiampa et al., 2022; Laeven et al., 2014). The literature thus reports both positive and negative associations between size and profitability, depending on the institutional context and time period. A key limitation of earlier work is that it often assumes a monotonic relationship between size and performance and does not account for potential endogeneity—successful banks may grow larger, making size both a cause and a consequence of performance (Hughes et al., 2019). However, many studies indicate that larger banks often benefit from economies of scale, leading to cost advantages and enhanced profitability (Katsiampa et al., 2022). Conversely, an inverted U-shaped relationship has also been observed, suggesting that while an increase in assets can positively impact profitability up to a certain point, further growth may lead to diminishing returns or even decreased profitability due to increased complexity and regulatory burdens (Mahmudova, 2023).

2.3.6 Leverage (LEV)

Leverage captures the level of debt financing relative to equity. Higher leverage can amplify returns on equity when returns exceed the cost of debt but also increases the risk of distress in downturns

(Varghese & Haque, 2021).

Traditional theories of capital structure suggest a trade-off between tax benefits of debt and bankruptcy costs. Empirical studies on banks frequently find that moderately leveraged institutions are more

profitable, although excessive leverage is associated with instability and crisis vulnerability. Nonetheless, many existing analyses focus on non-financial firms or advanced economies, and the evidence for emerging banking sectors remains limited. Furthermore, leverage is inherently endogenous to profitability and risk, which static estimation techniques often fail to address (Dell'ariccia et al., 2017). Therefore, understanding the nuanced relationship between leverage and bank performance requires dynamic models that account for these interdependencies and are tailored to specific market conditions (Bortoluzzo et al., 2024; Washington et al., 2022). However, some research indicates a positive relationship between leverage and firm profitability, particularly in banks, implying that increased financial leverage can enhance performance (Mahmudova, 2023). However, other studies suggest that an inverse relationship between leverage and bank profitability exists, possibly due to increased risk and financial fragility associated with higher debt levels (Veríssimo et al., 2021).

2.4 Gaps in the Existing Literature

Overall, previous studies have provided valuable insights into the determinants of bank performance but exhibit several limitations. First, many works consider only a subset of macroeconomic or bank-specific variables and do not jointly examine how they shape both market-based and accounting-based measures of sustainability (Menicucci & Paolucci, 2023).

Second, most studies rely on static models that cannot adequately capture persistence in performance, endogeneity in balance sheet variables, or cross-sectional dependence across banks. Third, empirical evidence specific to Bangladeshi banks—particularly using recent data and rigorous dynamic panel techniques—remains scarce (Hossain & Ahamed, 2021; Md. F. Khan et al., 2023).

By addressing these gaps through the application of GMM estimators to a comprehensive panel dataset, this paper seeks to provide more robust evidence on the sustainability drivers of Bangladeshi banks. This approach enables a more thorough analysis of how capital structure choices, encompassing various debt ratios, influence profitability and overall financial stability within this emerging market context (Ima et al., 2024; Rudiningtyas et al., 2023). Moreover, while some studies touch upon the general capital structure of firms in Bangladesh, there is a distinct lack of empirical research focusing specifically on the interplay between capital structure and bank performance (Sarker & Islam, 2021; Siddik et al., 2017).

3. Methods:

3.1 Sample firms and data

All of Bangladesh's listed banks make up the population for this study. We chose 26 commercial banks for this analysis out of the 33 listed banks on the Dhaka Stock Exchange (DSE). The financial statements of the banks, which were obtained from their individual websites and the DSE library, were used to generate the panel data. The analysis includes 338 firm-year data throughout the course of 13 fiscal years, from 2012 to 2024. These banks were chosen based on data accessibility, capitalization, and economic importance in Bangladesh. These elements guarantee the sample's representativeness and shed light on how audit committee traits impact business performance in Bangladesh's banking industry. Missing data for institutions were excluded during the study period to ensure the robustness of the analysis.

3.2 Variables

In line with prior research, several key variables were used to measure audit committee characteristics and their impact on firm performance. This study focuses on critical aspects widely associated with audit committees in emerging markets across various sectors, especially financial institutions. The variables are classified into dependent, independent, and control variables.

3.2.1 Dependent Variables

Return on Assets (ROA):

This metric, often denoted as ROA, assesses the efficiency with which a bank's assets are utilized to generate profits. It is calculated as net income divided by total assets, reflecting management's ability to convert assets into earnings, thereby serving as a robust indicator of financial performance (Mehedi et al., 2023).

Tobin's Q (TQ): This forward-looking measure reflects the market's perception of a company's future performance and is computed as the market value of a firm divided by the replacement cost of its assets (Shi et al., 2024; Zubair & Huang, 2025).

. Tobin's Q, as a market-based performance metric, offers a distinct perspective by incorporating investor expectations regarding the firm's growth opportunities and intangible assets, which accounting-based measures like ROA may not fully capture (Abedin et al., 2022).

3.2.2 Independent Variables

3.2.2.1 Inflation (INFL)

Inflation assumes that prices will increase (Tran et al., 2023). It is an increase in prices, which signifies a deterioration of purchasing power over time. The pace of decline in purchasing power can be indicated by the average price escalation of a curated basket of goods and services over time. The standard metric for inflation is the inflation rate, which represents the annual percentage change in the overall price level.

3.2.2.2 Economic Growth

Economic growth, often measured by the annual percentage change in Gross Domestic Product, reflects the expansion of a country's economy and its capacity to produce goods and services

(Thornton & Tommaso, 2020),

growth rates generally correlate with a more favorable operating environment for banks, leading to increased loan demand and improved asset quality. Conversely, sluggish economic growth or recessionary periods can adversely affect bank profitability through reduced business activity, higher loan defaults, and diminished investment opportunities.

3.2.2.3 Loan to Deposit Ratios (LDR)

The Loan to Deposit ratio is a crucial liquidity indicator for banks, calculated by dividing a bank's total loans by its total deposits. A higher ratio indicates that a bank is lending out a larger portion of its deposits, potentially increasing profitability but also exposing it to greater liquidity risk if deposit outflows occur unexpectedly

(Apau & Sibindi, 2023)

. Conversely, a lower ratio might suggest more conservative lending practices and ample liquidity, albeit possibly at the expense of maximizing interest income. This ratio is a critical component in assessing a bank's financial stability and its ability to manage both asset utilization and funding costs effectively. It is also a key determinant of a bank's capacity to generate revenue from its primary lending activities (Rolle et al., 2020).

3.2.2.4 Loan to Asset Ratio (LAR)

This metric assesses the proportion of a bank's assets allocated to loans, reflecting its core business focus and risk appetite. A higher loan-to-asset ratio often implies an aggressive lending strategy, potentially enhancing profitability but also elevating credit risk exposures, whereas a lower ratio may suggest a more conservative approach with greater liquidity (Onorato et al., 2024a). This ratio is particularly relevant in evaluating how effectively a bank deploys its assets to generate interest income, balancing the imperative for growth with prudent risk management. Thus, it directly influences a bank's net interest margin and overall financial performance (Mahmudova, 2023).Furthermore, the ratio serves as an indicator of a bank's asset structure and its reliance on interest-bearing assets to drive revenue growth (Bakoush et al., 2019).

3.2.2.5 Capital to Risk Weighted Asset Ratio

This ratio, commonly known as the Capital Adequacy Ratio, is a critical prudential metric that measures a bank's capital in relation to its risk-weighted assets, indicating its financial strength and ability to absorb potential losses. A higher ratio signifies a bank's enhanced capacity to withstand adverse economic shocks, thereby ensuring its stability and safeguarding depositor interests. This robust capital buffer enables banks to maintain operations during periods of financial distress, reducing the likelihood of systemic risk and promoting long-term sustainability within the banking sector (Mahmudova, 2023). Moreover, it directly influences a bank's lending capacity and its competitiveness in the financial market, as regulatory requirements often tie capital levels to permissible risk exposures.

3.2.3 Control Variables:

Firm Age (FA): The age of a bank can influence its operational efficiency and risk management capabilities, with older institutions potentially benefiting from established client relationships and more sophisticated internal controls. Conversely, newer banks may exhibit greater agility and innovation in their service offerings. Bank Size: Larger banks often benefit from economies of scale and diversified portfolios, which can enhance their stability and competitive advantage, though excessive size can lead to managerial inefficiencies and "too big to fail" moral hazard issues(Mahmudova, 2023). The number of years since the firm was incorporated. Older firms tend to have more established governance practices, which may influence their performance (Sánchez Serrano, 2025).

Firm Size (FS): Measured as the natural logarithm of total assets, firm size is a widely used control variable that accounts for scale-related advantages in financial performance (Karim et al., 2022). Larger firms frequently have greater access to capital markets, enabling more diversified investment opportunities and potentially lower funding costs. Conversely, smaller firms may exhibit greater flexibility and niche market specialization, potentially leading to higher growth rates in specific segments.

Firm Leverage (LEV): The debt-to-equity ratio, which is used to control the impact of a firm’s capital structure on its performance. Higher leverage can increase financial risk, potentially affecting firm performance (Onorato et al., 2024). This variable, often measured as the total debt to total assets ratio, indicates a firm's reliance on borrowed capital, which can amplify both returns and risks for shareholders. High leverage can increase financial fragility and susceptibility to economic downturns, whereas lower leverage typically implies a more conservative financial structure.

The inclusion of control variables such as firm size, age, and leverage is essential, as they account for firm-specific factors that could influence financial performance independently of audit committee characteristics. These variables are well-established in corporate governance literature and have been shown to significantly affect financial outcomes (Veríssimo et al., 2021).

3.3 Econometric Specification

To investigate the determinants of bank sustainability, the study specifies dynamic panel models for both accounting-based and market-based performance measures. For bank *i* in year *t*, the general functional form is:

$$Y_{it}= \alpha_0+\rho Y_{i,t-1}+\beta_1 INFL_{it}+\beta_2 EG_{it}+\beta_3 LDR_{it}+\beta_4 LAR_{it}+\beta_5 CRWAR_{it}+\beta_6 FA_{it}+\beta_7 FS_{it}+\beta_8 LEV_{it}+\mu_i+\varepsilon_{it}$$

Where Y_{it} denotes either ROA or Tobin's Q, $Y_{i,t-1}$ is its lagged value capturing persistence of performance, μ_i represents unobserved time-invariant bank-specific effects, and ε_{it} is the idiosyncratic error term.

Including the lagged dependent variable allows for dynamic adjustment and recognizes that current performance is influenced by past profitability and market valuation. However, this feature renders standard fixed-effects or random-effects estimators biased and inconsistent in short panels because $Y_{i,t-1}$ is correlated with the error term through the bank-specific effect μ_i. In addition, several regressors—particularly LDR, LAR, CRWAR, FS, and LEV—may be endogenously determined by bank performance, as more profitable or highly valued banks can adjust their lending, capitalization, size, and leverage in response to market conditions.

3.4 Diagnostic Tests

Before selecting the appropriate estimator, a series of diagnostic tests are conducted. First, tests for cross-sectional dependence (Pesaran's CSD, Breusch–Pagan LM, and Friedman tests) suggest significant interdependence among banks in both ROA and Tobin's Q models, reflecting common shocks and systemic linkages across institutions. Second, panel unit root tests (Levin–Lin–Chu, ADF–Fisher, and IPS) are applied to all variables. The results indicate that ROA, Tobin's Q, and all explanatory variables are stationary at levels, ensuring that the regressions do not suffer from spurious relationships.

Third, heteroskedasticity tests (White test, Breusch–Pagan/Cook–Weisberg, and modified Wald) reveal the presence of heteroskedasticity in both models, indicating that error variances differ across banks and over time. Fourth, tests for serial correlation (Breusch–Godfrey LM, Durbin–Watson, and Wooldridge test for autocorrelation in panel data) indicate no severe first-order autocorrelation in the residuals of the conventional panel models. Together, these diagnostics highlight the need for robust estimators that can accommodate cross-sectional dependence, heteroskedasticity, and potential endogeneity.

3.5 Model Selection: Fixed Effects, Random Effects, and Hausman Test

Static fixed effects (FE) and random effects (RE) models are first estimated as benchmark specifications. The FE estimator controls for unobserved bank-specific heterogeneity by allowing each bank to have its own intercept, while the RE estimator assumes that unobserved effects are uncorrelated with the regressors. To decide between FE and RE, the Hausman specification test is employed.

The Hausman test results (Table 7) report chi-square statistics of 57.836 for the ROA model and 17.369 for the Tobin's Q model, both significant at the 1% level. These findings reject the null hypothesis that the RE estimator is consistent, implying that bank-specific effects are correlated with the explanatory variables. As a result, FE is preferred over RE in the static setting. However, even the FE estimator becomes biased in the presence of the lagged dependent variable and endogenous regressors, motivating the use of dynamic GMM techniques.

3.6 Dynamic Panel GMM Estimation

To address the endogeneity of the lagged dependent variable and other potentially endogenous regressors, the study adopts the system GMM approach, which combines equations in first differences

and levels and uses appropriate lags of the variables as internal instruments. This estimator is well-suited for panels with a relatively large cross-sectional dimension (N) and a moderate time dimension (T), like the dataset used in this study.

In the first-differenced equation, lagged levels of the dependent and endogenous variables are used as instruments to remove the bank-specific effect μ_i and mitigate simultaneity bias. In the level equation, lagged differences of the variables serve as instruments under the assumption that these differences are uncorrelated with the bank-specific effect. Robust standard errors are computed to account for heteroskedasticity and cross-sectional dependence. The validity of the instruments is assessed using the Hansen J-test of overidentifying restrictions and the Sargan test, while Arellano–Bond tests for first- and second-order serial correlation in the differenced residuals (AR(1) and AR(2)) are used to verify the absence of higher-order serial correlation.

The final GMM estimations, presented in Table 8, form the basis for the discussion of the main empirical results.

4. Results

4.1 Descriptive Statistics

Table 1 presents the descriptive statistics for all variables. The mean ROA is 0.214 with a standard deviation of 0.286, indicating moderate profitability but considerable variation across banks and over time. Tobin's Q averages 4.864 with a relatively large standard deviation of 9.490, reflecting substantial dispersion in market valuations and potential episodes of over- or undervaluation. The macroeconomic variables—average inflation (6.856%) and economic growth (6.643%)—highlight a generally high-growth and moderately inflationary environment in Bangladesh over the sample period.

The bank-specific ratios also show notable variability. The mean loan-to-deposit ratio (65.564%) suggests that, on average, banks are moderately aggressive in converting deposits into loans, but the wide range (32.475% to 115.432%) indicates heterogeneity in intermediation strategies. The loan-to-asset ratio averages 59.657%, suggesting that a substantial proportion of bank assets consists of loans. The CRWAR mean of 37.576 reflects relatively high capitalization, though the range includes some negative values, likely driven by data anomalies or restructuring episodes. Firm age averages around 25 years, indicating a mix of relatively young and well-established banks, while firm size (measured by the logarithm of total assets) displays moderate dispersion. Leverage averages 11.324 with a considerable spread, pointing to diverse funding structures.

Variance inflation factors (VIFs) are all close to unity, with a mean VIF of 1.441, indicating no serious multicollinearity among regressors. This supports the reliability of the regression estimates in identifying the distinct effects of each variable.

Table 1: Descriptive Statistics

Variable	Mean	Std. Dev.	Min	Max	VIF	1/VIF
ROA	0.214	0.286	0.000	2.631		
TQ	4.864	9.490	0.881	32.077		
INFL	6.856	0.9126	5.512	7.723	1.057	0.946
EG	6.643	1.003	3.448	7.882	1.100	0.909
LDR	65.564	16.345	32.475	115.432	1.168	0.856

LAR	59.657	14.564	29.765	81.645	2.324	0.430
CRWAR	37.576	7.765	-46.645	86.456	1.856	0.538
FA	24.675	11.443	10.000	63.000	1.326	0.754
FS	25.986	0.816	23.134	28.124	1.489	0.671
LEV	11.324	6.975	-4.211	69.654	1.207	0.8285
Mean VIF					1.441	

Note: The number of observations = 338

4.2 Pairwise Correlations and Multicollinearity

The pairwise correlations in Table 2 indicate generally moderate relationships among the variables. ROA is positively associated with firm age, size, and leverage, suggesting that larger, older, and more leveraged banks tend to display higher accounting profitability. The correlation between ROA and LAR is negative and significant, indicating that higher loan concentration in assets is associated with lower profitability, possibly due to increased credit risk or non-performing loans. Tobin's Q exhibits weaker correlations with several variables but shows negative associations with LAR and some risk-related indicators, consistent with investor concern about risk exposure.

The correlation structure does not reveal any pair of regressors with excessively high correlation, and combined with the low VIF values, confirms that multicollinearity is not a major issue in the empirical models. This allows for a more precise interpretation of the individual coefficient estimates in the regression analysis.

Table 2: Pairwise Correlations and Multicollinearity

Variable	**ROA**	**TQ**	**INFL**	**EG**	**LDR**	**LAR**	**CRWAR**	**FA**	**FS**	**LEV**
ROA	1.000									
TQ	0.004	1.000								
INFL	-0.058	-0.029	1.000							
EG	0.007***	0.111**	-0.021	1.000						
LDR	-0.029	0.047	0.055	0.117*	1.000					
LAR	-0.128**	-0.143**	0.155***	0.014	0.300***	1.000				
CRWAR	-0.084	-0.030	0.048	-0.159***	-0.221***	0.285***	1.000			
FA	0.494***	-0.036	-0.148*	0.036	-0.163*	-0.112*	0.399***	1.000		

			*		**					
FS	0.543	-0.456***	0.435	0.231	0.463**	0.234	0.432**	0.143	1.000	
LEV	0.213***	0.321	-0.324***	0.397**	0.207**	0.543***	0.189	0.278*	0.378**	1.000

4.3 Cross-sectional Independence

Table 3 reports the results of cross-sectional dependence tests. For both the ROA and Tobin's Q models, the Pesaran CSD, Breusch–Pagan LM, and Friedman tests yield statistics that are highly significant, indicating the presence of cross-sectional dependence among banks. This is not surprising in a banking system where institutions are exposed to common macroeconomic shocks, regulatory changes, and market sentiments. Cross-sectional dependence underscores the importance of robust estimators and appropriate standard errors, as ignoring such dependence could lead to underestimated standard errors and overstated statistical significance.

Table 3: Cross-sectional Independence

	Pesaran CSD		**Breusch-Pagan LM**		**Friedman's test**	
	Test statistic	**p-value**	**Chi2 (66)**	**Prob > chi2**	**Test statistic**	**p-value**
Model 1 (ROA)	12.321	0.0000	175.498	0.0000	78.508	0.0000
Model 2 (Tobin's Q)	7.376	0.0000	121.231	0.0000	43.259	0.0000

4.4 Unit Root Test

Panel unit root test results, reported in Table 4, show that ROA, Tobin's Q, and all explanatory variables are stationary at levels. The Levin–Lin–Chu, ADF–Fisher, and IPS tests consistently reject the null of a unit root at conventional significance levels. These findings suggest that the variables fluctuate around stable means over the sample period and that the estimated relationships are unlikely to be spurious. Consequently, it is appropriate to estimate the models in levels without requiring differencing to ensure stationarity.

Table 4: LLC, ADF-Fisher, IPS Test

	LLC		ADF-Fisher		IPS	
	statistic	p-value	statistic	p-value	statistic	p-value
ROA	-11.738	0.000***	11.328	0.000***	-18.756	0.000***
TQ	-4.453	0.000***	13.312	0.000***	-14.675	0.000***

INFL	-2.498	0.0011***	-4.845	0.046***	-4.854	0.021**
EG	-11.540	0.000***	-6.548	0.000***	-2.756	0.000***
LDR	-8.847	0.000***	-9.478	0.000***	-9.576	0.000***
LAR	-2.604	0.000***	-5.647	0.000***	-8.476	0.000***
CRWAR	-9.923	0.000***	9.478	0.000***	-12.756	0.000***
FA	-7.834	0.000***	10.381	0.000***	-6.758	0.000***
FS	-8.432	0.000***	8.934	0.000***	-7.472	0.000***
LEV	-2.435	0.000***	3.672	0.000***	-3.653	0.000***

Notes: "The symbol *** indicates significance at the 1% level. Both the Levin–Lin–Chu and Augmented Dickey-Fuller-Fisher tests are conducted at the level".

4.5 Heteroscedasticity

As shown in Table 5, the White test and Breusch–Pagan/Cook–Weisberg test indicate the presence of heteroskedasticity in both the ROA and Tobin's Q models. The modified Wald test similarly confirms groupwise heteroskedasticity in the panel. These results imply that the variance of the error term differs across banks and over time, making classical ordinary least squares assumptions invalid. The use of robust standard errors in the GMM estimations mitigates the impact of heteroskedasticity and improves the reliability of inference.

Table 5: White, BPCW, MW Test for Heteroscedasticity

	White Test		**Breusch-Pagan/Cook-Weisberg test**		**Modified Wald test**	
	Chi2	Prob > chi2	Chi2	Prob > chi2	Chi2	Prob > chi2
Model 1 (ROA)	65.453	0.015	271.254	0.0000	10729.77	0.0000
Model 2 (Tobin's Q)	32.734	0.1089	37.843	0.000	20782.16	0.0000

4.6 Autocorrelation

Table 6 presents the results of autocorrelation tests. The Breusch–Godfrey LM test and the Wooldridge test for autocorrelation in panel data do not indicate significant first-order serial correlation in either model, and the Durbin–Watson statistics are close to 2, suggesting that residuals are not severely autocorrelated in the static specifications. In the dynamic GMM framework, the Arellano–Bond AR(1) test is expected to detect first-order serial correlation in the differenced residuals, while the AR(2) test should not indicate second-order correlation if the instruments are valid. The reported AR(1) p-values are effectively zero, while AR(2) p-values are well above conventional significance levels, confirming the appropriateness of the instrument set and the absence of higher-order serial correlation.

Table 6: BGLM, DW, and Wooldridge Test

	Breusch-Godfrey LM		**Durbin-Watson test**	**Wooldridge test**	
	Chi2	Prob > chi2	D-W Statistic	F (1, 11)	Prob > chi2
Model 1 (ROA)	6.836	0.127	1.893	3.654	0.430
Model 2 (Tobin's Q)	2.827	0.486	2.167	0.657	0.563

4.7 Model Selection and GMM Estimation Results

The Hausman test results in Table 7 reject the random effects specification in favor of fixed effects for both performance measures, indicating that bank-specific effects are correlated with the regressors. Nevertheless, given the dynamic nature of the models and potential endogeneity of key variables, the study proceeds to estimate dynamic GMM models.

Table 8 reports the GMM regression results. For ROA, the lagged dependent variable (L.DEP) has a positive and significant coefficient (0.045), indicating persistence in accounting profitability: banks with higher ROA in the previous period tend to maintain relatively high ROA in the current period. A similar pattern is observed for Tobin's Q, where the lagged dependent variable coefficient (0.074) is significantly positive, reflecting persistence in market valuation.

Inflation exerts a negative and highly significant effect on both ROA (−0.321) and Tobin's Q (−0.234). This suggests that higher inflation erodes bank profitability and diminishes investor valuations, likely by increasing costs, reducing real returns, and heightening macroeconomic uncertainty. In contrast, economic growth has a positive and significant impact on both performance measures: the coefficient on EG is 0.431 for ROA and 0.310 for Tobin's Q, indicating that stronger economic activity supports higher profitability and better market valuations by stimulating demand for credit and improving asset quality.

Among bank-specific factors, the loan-to-deposit ratio negatively and significantly affects ROA (−0.054), implying that more aggressive lending relative to deposits may undermine profitability, perhaps due to liquidity strains or higher credit risk. However, its effect on Tobin's Q is negative but statistically insignificant, suggesting that investors may not respond strongly to variations in LDR once other factors are controlled. The loan-to-asset ratio exerts a robust and negative impact on both performance measures, with coefficients of −0.432 for ROA and −0.034 for Tobin's Q (both significant). This indicates that a higher concentration of assets in loans reduces both profitability and market valuation, consistent with increased exposure to credit risk and non-performing loans.

The capital-to-risk-weighted asset ratio (CRWAR) has a negative but insignificant effect on ROA, while it significantly reduces Tobin's Q (−0.438). This pattern suggests that, in the Bangladeshi context, higher capitalization does not necessarily translate into higher accounting profitability and may even be perceived by the market as a signal of risk or regulatory pressure rather than proactive risk management. Alternatively, high capital buffers might reflect underutilized lending capacity or conservative risk-taking that suppresses returns.

Firm age negatively affects both performance measures, with a strong and significant coefficient for ROA (−0.543) and a weaker but significant effect for Tobin's Q (−0.843 at the 10% level). This implies that older banks tend to be less profitable and less valued by the market, possibly due to rigid organizational structures, legacy systems, and lower adaptability to innovation. Firm size has an insignificant positive effect on ROA but a significant negative effect on Tobin's Q (−0.723), indicating

that the market tends to discount larger banks, perhaps due to concerns about inefficiency, governance issues, or "too-big-to-manage" risks, even if their accounting profitability is not markedly different.

Finally, leverage (LEV) exerts a positive and highly significant impact on both ROA (0.043) and Tobin's Q (0.743). This suggests that, within the observed range, higher leverage enhances profitability and market valuations, likely by amplifying returns when economic conditions are favorable. However, such benefits may come at the cost of increased systemic risk, particularly during downturns, and must be interpreted with caution.

The diagnostic tests for the GMM models indicate that the instrument sets are generally acceptable. The AR(1) tests confirm expected first-order correlation, while AR(2) tests do not reject the null of no second-order correlation. The Sargan test p-values are above conventional significance levels, suggesting that overidentifying restrictions are not rejected. The Hansen test results show low p-values in some specifications, hinting at potential instrument proliferation or specification sensitivity, which is acknowledged as a limitation and addressed in the discussion.

Table 7: Hausman Specification

Model 1 (ROA)	Coef.	Model 2 (Tobin's Q)	Coef.
Chi-square test value	57.836	Chi-square test value	17.369
P-value	0.000	P-value	0.000

Table 8: GMM Regression Results

Variables	ROA		Tobin's Q	
	Coef.	p-value	Coef.	p-value
L.DEP	0.045	0.000***	0.074	0.000***
INFL	-0.321	0.000***	-0.234	0.000***
EG	0.431	0.000***	0.310	0.000***
LDR	-0.054	0.020**	-0.088	0.345
LAR	-0.432	0.000***	-0.034	0.023**
CRWAR	-0.342	0.235	-0.438	0.024**
FA	-0.543	0.000***	-0.843	0.065*
FS	0.756	0.324	-0.723	0.025**
LEV	0.043	0.000***	0.743	0.000***
Constant	2.753	0.000***	1.693	0.000***
AR (1)	0.000		0.000	
	z = -4.854		z= -8.085	
AR (2)	0.335		0.453	

	z = 3.465	z = 7.867
Hansen	0.003	0.000
Sargen	0.231	0.187
Number of obs.	265	270

Note(s): *** p<0.01, ** p<0.05, * p<0.10

5. Discussion and Policy Implications

The empirical results reveal a coherent picture of how macroeconomic conditions and bank-specific financial structures jointly shape the sustainability of Bangladeshi banks. The positive and significant impact of economic growth on both ROA and Tobin's Q underscores the importance of a vibrant real economy for bank sustainability. When economic activity expands, demand for loans increases, default rates decline, and overall financial conditions improve, thereby enhancing both current profitability and future growth expectations (Ahmad et al., 2024; Al Mamun et al., 2025; Gazi, Islam, et al., 2024; Islam et al., 2025; Karim, Bhowmik, et al., 2025; Karim, Chakrobortty, et al., 2022; Karim et al., 2024; Karim, Kamruzzaman, et al., 2023; Karim, Roshid, & Waaje, 2024b, 2024a; Karim, Waaje, et al., 2025; Kuri et al., 2025; Nahiduzzaman et al., 2025; Roshid, Karim, et al., 2025, 2024; Roshid, Saiyed, et al., 2025; Roshid, Waaje, et al., 2025, 2024; Roshid, Yeamin, et al., 2025; Song et al., 2025; Sultana et al., 2025; Waaje et al., 2024, 2025; Zhu et al., 2025). This aligns with the broader literature on the bank–growth nexus in emerging markets.

Conversely, the negative effects of inflation on both performance measures suggest that inflationary pressures undermine bank sustainability by eroding real returns, increasing uncertainty, and potentially encouraging speculative rather than productive borrowing. In a moderately inflationary environment like Bangladesh, banks may struggle to fully adjust their lending and deposit rates in tandem, resulting in compressed net interest margins. Moreover, high inflation can weaken borrower repayment capacity and impair asset quality, further undermining profitability and investor confidence.

Bank-specific factors reveal that balance sheet structure and risk-taking behaviors are critical determinants of sustainability. The negative effects of LDR and LAR on performance indicate that aggressive expansion of lending relative to deposits and asset base can be detrimental when not supported by sound credit risk management. High loan concentration may initially boost interest income but eventually lead to elevated non-performing loans and provisioning costs, which depress both profitability and market valuation. The finding that LDR significantly affects ROA but not Tobin's Q suggests that the market may anticipate or discount such risks ahead of their full impact on accounting figures or may weigh other factors—such as leverage and capitalization—more heavily.

The mixed evidence on capitalization is particularly noteworthy. While capital adequacy is conventionally associated with stability, the negative impact of CRWAR on Tobin's Q suggests that, in the Bangladeshi context, high capital ratios may be interpreted as a response to elevated risk or regulatory pressure rather than a sign of strength. Alternatively, banks that hold excessive capital might forgo profitable lending opportunities, resulting in lower expected returns. This underscores the need for a nuanced approach to capital regulation that balances safety with incentives for efficient intermediation.

The negative relationship between firm age and performance highlights the potential challenges faced by older banks in adapting to technological change, digital banking, and evolving customer preferences.

Legacy systems, bureaucratic structures, and entrenched practices may hinder innovation and efficiency, causing older institutions to lag behind younger or more agile competitors. The market's negative response to firm size in terms of Tobin's Q further suggests concerns about complexity, governance, and risk management in large banks, even if their accounting profitability is not dramatically different from smaller peers.

Leverage emerges as a double-edged sword. The positive effect of leverage on both ROA and Tobin's Q indicates that Bangladeshi banks have, on average, used debt financing to enhance returns and signal growth opportunities to investors. However, high leverage can magnify losses in downturns and heighten systemic risk. In the absence of strong risk management and regulatory oversight, the observed benefits of leverage could be fragile and susceptible to rapid reversal in the face of adverse shocks.

The findings of this study carry several important implications for bank managers and boards of directors in Bangladesh. First, banks should strive to align their growth strategies with macroeconomic conditions, capitalizing on periods of strong economic growth while building buffers for downturns. Prudent credit risk management is essential to ensure that loan expansion does not erode asset quality. This includes robust underwriting standards, effective monitoring of borrower performance, and timely recognition and provisioning of non-performing loans. Second, banks need to carefully manage their loan-to-deposit and loan-to-asset ratios. While lending is the core business of banking, excessive reliance on loan assets and high LDRs can undermine liquidity and increase exposure to credit risk. Banks should diversify their income sources, invest in liquid and low-risk securities where appropriate, and maintain adequate liquidity buffers. Active asset–liability management and stress testing can help banks identify vulnerabilities under different macroeconomic scenarios and adjust their balance sheets accordingly. Third, the results suggest that the benefits of high capitalization are not automatic. Banks should treat capital as a strategic resource rather than merely a regulatory requirement. Maintaining adequate capital buffers is essential for absorbing shocks, but excessively high capital ratios without corresponding improvements in risk management or lending efficiency may signal underutilization of resources. Bank management should therefore integrate capital planning with long-term business strategies, ensuring that capital is deployed to support high-quality lending and sustainable growth. Fourth, the negative effect of firm age and size on performance calls for reforms in internal governance and organizational design. Older and larger banks may need to undertake structural and digital transformation to remain competitive. This includes upgrading core banking systems, adopting fintech innovations, streamlining decision-making processes, and fostering a culture of innovation. Strengthening board oversight, enhancing transparency, and aligning executive incentives with long-term sustainability goals can also mitigate governance challenges in complex institutions. Finally, banks should pay close attention to leverage and risk-taking behavior. While moderate leverage can enhance returns, excessive reliance on debt financing can increase vulnerability to shocks. Banks should establish clear risk appetite frameworks, conduct regular stress tests, and ensure that leverage is consistent with their capital positions and risk management capacity. Transparent disclosure of leverage, risk exposures, and capital adequacy can also improve market discipline and investor confidence. Overall, a stable macroeconomic environment, prudent regulation, and strong internal governance in banks are mutually reinforcing pillars of a sustainable banking system. By jointly addressing macroeconomic and microeconomic determinants of sustainability, policymakers and bank managers can foster a more resilient and growth-supportive financial sector in Bangladesh.

Conclusion

This study examined the economic and financial drivers of sustainability in Bangladeshi banks using panel data for 26 listed banks over the period 2012–2024. Employing dynamic panel GMM estimators to address endogeneity, persistence in performance, and unobserved heterogeneity, the analysis demonstrated that macroeconomic conditions and bank-specific financial structures jointly shape both accounting-based (ROA) and market-based (Tobin's Q) measures of sustainability. Economic growth

enhances, while inflation undermines, bank performance. At the bank level, high loan concentration and aggressive intermediation are detrimental to sustainability, whereas leverage supports performance within the observed range, albeit with potential risks. Firm age and size present challenges in terms of adaptability and market perception, and capitalization must be managed strategically to balance stability and profitability.

The findings underscore the importance of aligning macroeconomic policies, regulatory frameworks, and internal bank strategies to foster a sustainable and resilient banking system. For Bangladesh, this implies maintaining macroeconomic stability, refining prudential regulation, and encouraging technological and organizational innovation in banks.

Limitations and Future Guidelines

Despite its contributions, the study has several limitations. First, the analysis is restricted to listed commercial banks, which may differ from non-listed or specialized institutions in terms of governance, risk profiles, and regulatory treatment. Future research could extend the sample to include a broader set of banks or other financial institutions. Second, the study relies on secondary data, which may be subject to measurement errors, reporting inconsistencies, or classification issues—particularly for variables such as CRWAR and non-performing loans.

Third, while dynamic GMM techniques address several econometric challenges, they are sensitive to instrument choice and may suffer from instrument proliferation. Future studies could experiment with alternative instrument reduction strategies or employ complementary estimation methods, such as bias-corrected least squares dummy variable (LSDVC) estimators. Fourth, the current analysis focuses on macroeconomic and financial ratio determinants; incorporating additional dimensions—such as corporate governance, digitalization, ESG practices, and institutional quality—could provide a more holistic picture of bank sustainability.

Finally, comparative studies across countries or regions could help identify whether the patterns observed in Bangladesh are specific to its regulatory and institutional context or representative of broader trends in emerging markets. Such work would further enrich the understanding of how economic and financial drivers shape the sustainable development of banking sectors worldwide.

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DONALD TRAMPIN İKİNCİ PREZİDENTLİK DÖVRÜNDƏ ABŞ-Aİ MÜNASİBƏTLƏRİ

Cavid İBAYEV

Magistrant, Bakı Dövlət Universitet
E-mail: javid.ibayev@gmail.com
ORCID ID: 0009-0007-2745-7843

Xülasə

Donald Trampın ikinci prezidentlik dövrü ABŞ-Avropa İttifaqı münasibətlərində yeni mərhələ kimi qiymətləndirilə bilər. Bu mərhələdə transatlantik əlaqələrdə uzun illər boyu mövcud olmuş qarşılıqlı etimad böhranla əvəz olundu. Tramp administrasiyasının əsas iqtisadi siyasətlərindən biri "reciprocal tariffs" adlanan qarşılıqlı tariflər konsepsiyası oldu. ABŞ bu siyasət çərçivəsində Avropa mallarına yüksək tariflər tətbiq edərək iqtisadi təzyiq mexanizmini gücləndirdi. 2025-ci ilin yayında bağlanan "15 faiz tarif anlaşması" isə əsas problemləri həll etmədi; əksinə, tərəflər arasında asimmetriyanı qorudu. Avropa İttifaqı buna cavab olaraq 26 milyard avro dəyərində qarşı tədbirlər paketi elan etdi. Eyni zamanda NATO daxilində müdafiə məsuliyyətinin bölüşdürülməsi məsələsi də gərginlik mənbəyinə çevrildi. ABŞ-ın Avropadan müdafiə xərclərini 5 faizə qədər artırmağı tələb etməsi sosial və iqtisadi çətinliklər yaratdı, Avropa liderlərini isə "strateji müstəqillik" axtarışına yönəltdi. Tramp administrasiyasının sağçı-populist qüvvələrə dolayı dəstəyi Avropa daxilində ideoloji parçalanmanı dərinləşdirdi və liberal-mühafizəkar qarşıdurmalarını gücləndirdi. Münhen Təhlükəsizlik Konfransında vitse-prezident JD Vensin sərt bəyanatları ABŞ-ın Avropa ilə münasibətlərində ideoloji şərtləri ön plana çıxardığını göstərdi. Bütün bu proseslər göstərir ki, ABŞ və Avropa İttifaqı münasibətləri qarşılıqlı əməkdaşlıqdan daha çox rəqabət, etimadsızlıq və təzyiq mühitinə keçid edir. Bu tendensiyalar yalnız Avropa üçün deyil, qlobal siyasi və iqtisadi balanslar üçün də strateji əhəmiyyət kəsb edir.

Açar sözlər: ABŞ, Avropa İttifaqı, Donald Tramp, ticarət münasibətləri, təhlükəsizlik siyasəti

Giriş

Donald Trampın ikinci prezidentlik dövründə ABŞ-Avropa İttifaqı münasibətlərində kəskin dəyişikliklər müşahidə olunur. Ticarət müharibələri, təhlükəsizlik məsələlərində qarşılıqlı ittihamlar, ideoloji və siyasi gərginliklər transatlantik münasibətlərin əvvəlki etibar və əməkdaşlıq çərçivəsindən uzaqlaşdığını göstərir. ABŞ-ın proteksionist iqtisadi siyasəti, NATO çərçivəsində müdafiə məsuliyyətləri ilə bağlı tələbləri və Avropada populist qüvvələrə dolayı dəstəyi Avropa İttifaqının daxili sabitliyini sarsıdır. Bu, qlobal güc balansına təsir göstərməklə yanaşı, beynəlxalq münasibətlər sistemində yeni qarşıdurma xətləri yaradır. Azərbaycan Respublikası üçün ABŞ-Avropa İttifaqı münasibətlərindəki gərginlik birbaşa strateji əhəmiyyət kəsb edir. Avropa İttifaqı Azərbaycanın əsas enerji tərəfdaşlarından biri olduğu halda, ABŞ-la münasibətlərdə də təhlükəsizlik və regional sabitlik məsələləri ön plana çıxır. Transatlantik münasibətlərdəki böhran Azərbaycanın enerji ixracatına, Qafqazdakı geosiyasi balanslara və Cənubi Qaz Dəhlizi kimi beynəlxalq layihələrin gələcəyinə təsir göstərə bilər. Bundan başqa, Qərb blokunun parçalanması fonunda Azərbaycan öz xarici siyasətində balanslaşdırılmış mövqeyini daha diqqətlə formalaşdırmalı olur.

Bu baxımdan, tədqiqatımızın məqsədi Donald Trampın ikinci prezidentlik dövründə ABŞ-Avropa İttifaqı münasibətlərində iqtisadi, təhlükəsizlik və ideoloji müstəvidə baş verən dəyişikliklərin mahiyyətini təhlil etmək və onların Azərbaycan üçün mümkün nəticələrini qiymətləndirməkdir.

İqtisadi və ticarət münasibətlərində gərginliklər

Donald Trampın ikinci prezidentlik dönəmində ABŞ-ın ticarət siyasətində mərkəzi anlayışlardan biri "reciprocal tariffs", yəni qarşılıqlı tariflər konsepsiyası oldu. Tramp 2025-ci ilin aprelin 2-də böyük ticarət defisitini milli təhlükə kimi elan etdi və aprelin 5-dən etibarən ABŞ-a gətirilən bütün mallara minimum 10 faiz tarif tətbiq ediləcəyini açıqladı. Bu yanaşma ABŞ-Çin münasibətləri ilə

məhdudlaşmadı, Avropa İttifaqı da bu siyasətin əsas hədəflərindən biri oldu. Trampın arqumenti ondan ibarət idi ki, ABŞ digər ölkələrin ixracatçıları üçün açıq bazar təqdim etdiyi halda, qarşı tərəfdən eyni dərəcədə ədalətli şərtlər almır və buna görə də balansı "məcburi qarşılıqlı addımlarla" bərpa etmək lazımdır. Bu, xüsusilə Avropa mallarının ABŞ bazarında daha sərt şərtlərlə üzləşməsinə səbəb oldu. Tarif dərəcələrinin yüksəldilməsi ikinci prezidentlik müddətində ən çox diqqət çəkən hadisələrdən biri idi. ABŞ administrasiyası polad, alüminium və mis kimi əsas xammal məhsullarına tətbiq olunan tarifləri 50 faizə qədər qaldırdı. Avropa İttifaqından gətirilən maşınlar, avtomobil ehtiyat hissələri, dərman preparatları və yarımkeçiricilər üçün isə ümumi 15 faiz tarif nəzərdə tutuldu. Bu qərar Trampın özünün "15 faiz tarif razılaşması" kimi təqdim etdiyi plan çərçivəsində elan edildi. ABŞ bu yolla ticarət balansındakı mənfi göstəriciləri azaltmağa çalışırdı, amma Avropa ölkələri bu tariflərin haqsız olduğunu düşünür və mübahisəli şəkildə qəbul edirdi [3]. Avropa İttifaqının bəzi sektorları, məsələn polad və alüminium istehsalı, bu sərt tarif rejimindən heç bir istisna qazanmadı və nəticədə Avropa iqtisadiyyatının strateji sahələri birbaşa təsirləndi [4].

2025-ci ilin yayında ABŞ ilə Avropa İttifaqı arasında imzalanan razılaşma "15 faiz tarif anlaşması" kimi təqdim olundu. Bu razılaşmaya görə, Avropa İttifaqı ABŞ-a ixrac etdiyi mallar üçün 15 faiz tarif ödəməyi qəbul edir, eyni zamanda ABŞ iqtisadiyyatına 600 milyard dollarlıq sərmayə yatırmaq və ABŞ-dan enerji idxalını artırmaq öhdəliyini götürürdü. Amma bu sənəd əslində Tramp dövründə mövcud olan digər yüksək tariflərə təsir göstərmədi. Polad və alüminium idxalında tətbiq edilən 50 faizlik tariflər qüvvədə qaldı. Analitiklər hesab edirdilər ki, bu razılaşma Avropa üçün qənaətbəxş deyil, çünki ABŞ tərəfi rəqəmsal bazarlarda, mənşə qaydalarında və qeyri-tarif maneələrdə sərt tələblər qoyaraq üstün mövqeyini qoruyurdu. Avropa bu şərtlərin qlobal rəqabət mühitində öz ixracatçılarını ciddi çətinliklərə sürüklədiyini qeyd edirdi [6].

Avropa İttifaqı bu siyasətə cavab olaraq 2025-ci ildə 26 milyard avro dəyərində qarşı tədbirlər paketini elan etdi. Bu tədbirlərə ABŞ-dan gətirilən viski, geyim məhsulları, avtomobil sektoru malları və digər istehlak məhsulları daxil idi. Avropa ölkələri bununla göstərmək istəyirdilər ki, Trampın sərt addımları yalnız ABŞ üçün deyil, qlobal iqtisadi sabitlik üçün də təhlükə yaradır. Brüssel eyni zamanda bir daha vurğuladı ki, Avropa Birliyi ölkələrinin ticarət siyasəti ayrı-ayrı paytaxtların qərarı ilə deyil, Avropa Komissiyasının səlahiyyətləri çərçivəsində müəyyən edilir. Bu, həm də ABŞ-a siqnal idi ki, Avropa ilə danışıqlarda parçalanma taktikasına ümid etməməlidir [5].

Mövcud ticarət həcmləri fonunda bu gərginliklərin miqyası daha aydın görünürdü. 2024-cü ildə ABŞ və Avropa İttifaqı arasında mallar və xidmətlər üzrə ümumi ticarət dövriyyəsi 1,6 trilyon avroya çatmışdı ki, bu da təxminən gündəlik 4,2 milyard avro dəyərində mübadilə demək idi. Trampın yeni tarif rejimi bu möhtəşəm ticarət həcminə ciddi risk yaradırdı. Xüsusilə avtomobil sənayesi və nəqliyyat sektoru kimi Avropa iqtisadiyyatının əsas dayaqları 50 faizlik tariflərin təsiri ilə rəqabət gücünü itirə bilərdi. Analitiklər xəbərdarlıq edirdilər ki, belə bir vəziyyət Avropa ixracatının böyük hissəsini ABŞ bazarından sıxışdırıb çıxara bilər.

Dünya Ticarət Təşkilatının (WTO) təsiri də bu prosesdə zəifləyirdi. Tramp administrasiyası WTO-nun Apellyasiya Məhkəməsinin fəaliyyətini məhdudlaşdırmaq və öz tarif rejimini qlobal norma halına gətirmək istiqamətində addımlar atdı. Bir sıra ölkələr ABŞ-ın qərarlarını WTO mexanizmləri çərçivəsində mübahisələndirmək istəsələr də, ABŞ-ın təşkilatın fəaliyyətinə maliyyə töhfələrini dayandırması və Apellyasiya Məhkəməsinin işini bloklaması effektiv nəticələrin qarşısını aldı. Bu, qlobal ticarət rejiminə etimadı daha da azaltdı və çoxqütblü iqtisadi münasibətlərdə qeyri-müəyyənlik yaratdı. ABŞ daxilində bu siyasətin əsaslandırılması "America First" sənaye strategiyası ilə bağlı idi. Tramp istehsalın ölkəyə qaytarılması və idxaldan asılılığın azaldılması üçün tarifləri əsas vasitə kimi təqdim edirdi [1]. Amma aparılan iqtisadi təhlillər göstərirdi ki, tariflər nəticəsində yaranan əlavə xərclər birbaşa idxalçı şirkətlər və nəticə etibarilə istehlakçılar tərəfindən qarşılanır. Başqa sözlə, tariflər daxili bazarda qiymət artımına səbəb olurdu. Bu, istehsalçıları qismən qorusa da, ABŞ vətəndaşlarının gündəlik xərclərini artırdı. Beləliklə, iqtisadi siyasətin real yükü sıravi istehlakçının üzərinə düşürdü.

Gələcək perspektivlərə baxdıqda, ABŞ və Avropa İttifaqı arasındakı tarif gərginliklərinin davamlı bir xəttə çevrilməsi ehtimalı yüksək görünür. Avropa Birliyi artıq "geoiqtisadi qarşısının alınması" siyasətini gündəmə gətirərək, yeni ticarət ittifaqları yaratmaq, strateji sənaye sektorlarını qorumaq və tədarük zəncirlərini şaxələndirmək kimi addımlar atmağa məcbur olur. Analitiklər hesab edirlər ki, ABŞ-la ticarət münasibətləri etibar və əməkdaşlıqdan çox qarşılıqlı təzyiq üzərində formalaşacaq. Bu isə yalnız iqtisadi sferada deyil, Avropanın siyasi və geosiyasi strategiyalarında da dərin izlər buraxacaq.

Təhlükəsizlik, siyasi etimad və ideoloji təsirlər

Donald Trampın ikinci prezidentlik dövründə transatlantik münasibətlərdə etimadın kəskin şəkildə zəiflədiyi müşahidə olundu. ABŞ rəhbərliyi hələ ilk 100 gün ərzində həm ritorik, həm də praktik addımlarla Avropa ölkələrinə qarşı sərt yanaşma nümayiş etdirdi. Bu yanaşma uzun illər ərzində formalaşmış qarşılıqlı etibar strukturunu ciddi şəkildə sarsıtdı. Avropa ictimaiyyətində və siyasi dairələrdə ABŞ-ın Avropa üzərindəki status quo maraqlarını yenidən nəzərdən keçirdiyi barədə şübhələr geniş yayıldı. Bunun nəticəsi olaraq Avropa daxilində "müdafiə məsələsini öz üzərinə götürmək" çağırışları getdikcə gücləndi və AB-nin öz təhlükəsizlik arxitekturasını qurması zərurəti gündəmə gəldi. NATO daxilində münasibətlər də bu dövrdə ciddi gərginliklərlə yadda qaldı. Tramp administrasiyası Avropa ölkələrindən müdafiə xərclərini yalnız 2 faizlik öhdəlik səviyyəsində deyil, ən azı 5 faizə qədər artırmağı tələb etdi [2]. Bu tələb Avropa ölkələri üçün sosial və iqtisadi prioritetlərlə ziddiyyət təşkil edirdi, çünki belə böyük bir yük dövlət büdcələrinə ciddi təzyiq demək idi. Avropa liderləri bu məsələdə ABŞ-la ortaq nöqtə tapmaqda çətinlik çəkdilər və nəticədə qitə daxilində müdafiə məsuliyyətini bölüşmək, ABŞ-ın azalan dəstəyini kompensasiya etmək üçün yeni strategiyalar axtarışına çıxdılar. Bu isə Avropanın təhlükəsizlik məsələlərində daha müstəqil mövqeyə yönəlməsinə səbəb oldu.

2025-ci ilin fevralında Münhen Təhlükəsizlik Konfransında ABŞ vitse-prezidenti JD Vensin çıxışı münasibətlərə əlavə gərginlik gətirdi. O, Avropa liderlərini demokratiyanı zədələməkdə, senzura tətbiq etməkdə və seçki proseslərinə müdaxilə etməkdə ittiham etdi. Vens açıq şəkildə bildirdi ki, ABŞ-ın Avropaya dəstəyi yalnız demokratik prinsiplərin qorunması ilə şərtlənəcək [8]. Bu çıxış Avropa ictimaiyyətində güclü narazılıq doğurdu və "ideoloji savaş" ritorikasının sadəcə daxili siyasətdə deyil, həm də transatlantik diplomatiyada əsas xəttə çevrildiyini göstərdi. Avropa paytaxtlarında ABŞ-ın münasibətlərə açıq şərtlərlə yanaşması ciddi narahatlıqla qarşılandı.

Tramp administrasiyasının ən diqqətçəkən yanaşmalarından biri Avropada "mədəni savaş" strategiyasına xüsusi önəm verməsi idi. ABŞ rəhbərliyi Avropadakı sağçı-populist partiyaları özünə ideoloji müttəfiq kimi görməyə başladı. Bu partiyalara açıq və gizli dəstəyin verilməsi, Avropanın liberal seçki sistemlərinin tənqid olunması qitədə siyasi qütbləşməni daha da dərinləşdirdi [7]. Nəticədə liberal və mühafizəkar düşərgələr arasında qarşıdurmalar kəskinləşdi və Avropa daxilində siyasi parçalanma tendensiyaları gücləndi. Bu siyasət həmçinin Avropa İttifaqının institusional bütövlüyünə təhdid kimi qəbul edildi.

Trampın prezidentliyi Avropadakı radikal sağ partiyalara motivasiya verir. Bu partiyalar özlərini daha fəal şəkildə təqdim etməyə başladılar və beynəlxalq müstəvidə görünürlük qazandılar. Münhen konfransında vitse-prezident Vensin Almaniyada AfD lideri ilə görüşməsi bunun bariz nümunəsi oldu. Bu, Avropa siyasi dairələrində ABŞ-ın qitənin daxili siyasi balansına birbaşa təsir göstərməsi kimi qiymətləndirildi [10]. Bununla belə, radikal sağ hərəkatların tam siyasi hakimiyyət iddiası hələ də məhdudiyyətlərlə üzləşir, çünki onlar ideoloji tutarlılıq, daxili birləşmə və Avropa qurumlarının təsirindən kənarda müstəqil hərəkət etməkdə çətinlik çəkirlər. AB ilə ABŞ arasında ideoloji parçalanma da dərinləşməyə başlayır. Tramp administrasiyası Avropanın öz dəyərlərinə, qərar qəbuletmə səlahiyyətlərinə meydan oxuyan bir siyasət yürütməyə çalışdı. Avropa tərəfi bu siyasəti "mədəni və ideoloji manipulyasiya" kimi qiymətləndirdi. Avropa institutları özlərini artıq yalnız təhlükəsizlik tərəfdaşı deyil, həm də ABŞ-ın ideoloji nəzarət obyektinə çevrilmiş kimi hiss etməyə başladılar. Bu isə Avropanın siyasi identitetinin qorunması uğrunda mübarizəni daha da aktuallaşdırdı və qitənin liberal-demokratik institutlarını müdafiə etmə zərurətini ön plana çəkdi.

Trampın təhlükəsizlik siyasəti Avropada strateji müstəqillik çağırışlarını gücləndirir. ABŞ-ın dəstəyinin qeyri-müəyyənləşməsi Avropa liderlərini hərbi sənaye və müdafiə sahəsində öz güclərinə arxalanmağa məcbur etdi. Bu çərçivədə Avropa ölkələri birgə müdafiə layihələrinə daha çox sərmayə qoymağa, təhlükəsizlik sahəsində ABŞ-dan asılılığı azaltmağa çalışdılar. Bu proses Avropanın gələcəkdə müstəqil aktor kimi çıxış etməsinin zəruriliyini daha aydın göstərdi və "strateji avtonomiya" anlayışı əsas müzakirə mövzularından birinə çevrildi [9].

Diplomatik müstəvidə də gərginliklər artmaqda davam edir. ABŞ-ın Avropa liderlərinin seçkilərinə dolayı müdaxilə niyyətləri barədə yayılan iddialar Avropa ictimaiyyətində güclü rezonans doğurdu. Avropa dövlətləri ABŞ-ın qitə daxilində təsir imkanlarını məhdudlaşdırmaq üçün öz strateji institutlarını möhkəmləndirməyə çalışdılar. Bu tendensiyanın davamlılığı ABŞ və Avropa arasında münasibətlərin gələcəkdə daha ehtiyatlı, daha çox strateji rəqabət və ideoloji diskurs üzərində qurulacağını göstərir. Belə bir şəraitdə tərəflər arasında etimadın əvvəlki səviyyəyə qayıtması yaxın perspektivdə real görünmür.

NƏTİCƏ

Donald Trampın ikinci prezidentlik dövründə ABŞ-Avropa İttifaqı münasibətləri həm iqtisadi, həm də təhlükəsizlik və ideoloji müstəvidə dərin gərginliklərlə xarakterizə olunmuşdur. Tarif siyasəti, müdafiə məsuliyyətləri, transatlantik etimadın zəifləməsi və Avropada siyasi qütbləşmənin güclənməsi bu münasibətlərin əsas xüsusiyyətlərini müəyyənləşdirir. Bütün bunlar göstərir ki, transatlantik münasibətlərdə əvvəlki dövrdə mövcud olan əməkdaşlıq və qarşılıqlı etibar artıq davamlı şəkildə sarsılmışdır. Bu baxımdan, tədqiqatımızın nəticələrini aşağıdakı kimi ümumiləşdirmək mümkündür:

– Tramp administrasiyasının tətbiq etdiyi "reciprocal tariffs" siyasəti və yüksək tariflər Avropa İttifaqının strateji sahələrini ciddi zərbə altında qoydu, iqtisadi münasibətləri qarşıdurma müstəvisinə gətirdi.

– ABŞ və Avropa arasında bağlanan "15 faiz tarif anlaşması" əsas problemləri həll etmədi, əksinə, tərəflər arasında ticarət münasibətlərində asimmetriyanı qorudu.

– Avropa İttifaqı ABŞ-ın sərt addımlarına qarşı 26 milyard avro dəyərində cavab tədbirləri elan etməklə özünü müdafiə etmək məcburiyyətində qaldı.

– NATO daxilində ABŞ-ın müdafiə xərclərini 5 faizə qədər artırmaq tələbi Avropada həm siyasi, həm də iqtisadi narazılıq yaratdı və "strateji müstəqillik" çağırışlarını gücləndirdi.

– ABŞ administrasiyasının ideoloji yanaşmaları, o cümlədən sağçı-populist partiyalara dəstək verməsi Avropa daxilində siyasi qütbləşməni dərinləşdirdi və demokratik institutların sabitliyini şübhə altına aldı.

– Bütün bu amillər ABŞ-AB münasibətlərinin yaxın illərdə etibar və əməkdaşlıq üzərində deyil, qarşılıqlı ehtiyat və strateji rəqabət üzərində qurulacağını göstərir.

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IDENTIFYING CRITICAL SUCCESS FACTORS FOR ADOPTING SUSTAINABLE TOURISM IN EMERGING ECONOMIES

Md. Soleman Mollik

Lecturer

Department of Business Administration in Marketing

Faculty of Business Studies

Bangladesh University of Professionals

Mirpur Cantonment, Dhaka-1216

Email: solemanmollik1993@gmail.com

ORCID ID: 0009-0003-5703-0606

Dr. Rejaul Karim

Associate Professor and Coordinator

Department of Business Administration

Varendra University, Bangladesh

Email: rkarimreja@gmail.com

http://orcid.org/0000-0001-6175-8825

Sumon Mahmud

MBA, Department of Marketing

Begum Rokeya University, Rangpur

Email: sumonmahmud251@gmail.com

ORCID: 0009-0002-0785-0537

Abstract

Sustainable tourism has become a global imperative for achieving economic, environmental, and social balance, yet its adoption in emerging economies remains limited due to institutional, financial, and behavioral constraints. This study fills the gap by empirically identifying the critical success factors (CSFs) that influence the adoption of sustainable tourism practices (ASTP) in developing nations. Grounded in the Theory of Planned Behavior (TPB), the research integrates institutional, resource-based, and stakeholder perspectives to examine how Regulatory and Policy Support (RPS), Access to Green Financing (AGF), Stakeholder Awareness and Attitude (SAA), and Community Participation (CP) influence the adoption of sustainable tourism through Perceived Behavioral Control (PBC) as a mediating variable, and Economic Development Level (EDL) as a moderator. Using a quantitative cross-sectional survey of 334 tourism stakeholders across emerging economies, data were analyzed through Partial Least Squares Structural Equation Modeling (PLS-SEM). The findings reveal that RPS, AGF, SAA, and CP significantly enhance PBC, which in turn positively affects ASTP, while EDL does not moderate this relationship. Academically, the study extends TPB by incorporating contextual and institutional dimensions within the sustainable tourism framework. From a policy perspective, it

highlights the importance of coherent regulatory frameworks, accessible green financing, and active community engagement in promoting sustainable transitions. Socially, the study highlights the empowerment of local communities through participatory approaches to tourism development. The key limitation lies in the non-representative sample confined to specific emerging regions, suggesting the need for comparative cross-country analyses in future research. Future studies may also integrate cultural, technological, and environmental dynamics to develop a more holistic understanding of sustainability adoption in tourism.

Keywords: Sustainable tourism adoption, Emerging economies, Critical success factors, Theory of Planned Behavior (TPB)

INTRODUCTION

Tourism has become one of the fastest-growing industries in the world and an essential contributor to socioeconomic progress, particularly in emerging economies. It generates employment, foreign exchange earnings, and regional development opportunities (Telfer & Sharpley, 2015). However, the unregulated expansion of tourism often produces adverse impacts on the environment, culture, and social structures, including resource depletion, waste generation, and cultural erosion (Baker, 2024). Due to such repercussions, the idea of sustainable tourism has emerged as a priority in order to ensure both current and future generations can meet their own needs (Volgger et al., 2025). Sustainable tourism combines the three dimensions of development (economic, social and environmental) while securing that the growth of tourism brings benefits both to destinations' communities and to nature (Afaq et al., 2025).

The purpose of this paper is to highlight and empirically ascertain the key factors that drive sustainable tourism practice adoption in developing countries. In detail, the present study aims to investigate how Regulatory and Policy Support (RPS), Access to Green Financing (AGF), Stakeholder Awareness and Attitude (SAA) and Community Participation (CP) impact the adoption of sustainable tourism with Perceived Behavioral Control (PBC) as mediated power. In addition, it also intends to examine the role of Economic Development Level (EDL) in moderating the relationship between PBC and ASTP. Through the combination of institutional and behavioral viewpoints, this study aims to draw a holistic picture that can contribute to our understanding on how sustainable tourism adoption may be motivated as well as offering some practical implications for policy makers, tourism operators, and local communities to promote sustainability transitions within emerging economies.

Despite its significance worldwide, the adoption of sustainable tourism practices (ASTP) is limited and variable in emerging economies. However, advanced countries have mainstream sustainability guidelines; the basing of emerging destinations still poses difficulties on Click "Collaborate with our partners". including undeveloped legislation systems, lack of funds, weak institutional cooperation, and low community awareness (Karim et al., 2025b; Telfer & Sharpley, 2015). These barriers prevent the translation of sustainability policies into actionable practices. Therefore, identifying the critical success factors (CSFs) that foster sustainable tourism adoption is essential to achieving long-term development goals in these regions (Dangi & Jamal, 2016).

Regulatory and policy support serves as the foundation for sustainable tourism by providing legislative direction, environmental guidelines, and incentive mechanisms (Scott, 2011). Access to green financing ensures that tourism enterprises—especially small and medium-sized operators—have the financial capacity to invest in sustainable infrastructure and technologies (Gössling et al., 2020). Stakeholder awareness and attitude (SAA) determine how tourism operators, visitors, and local residents perceive and value sustainable practices (Luong, 2025). Finally, community involvement enhances social ownership and guarantees that tourism development aligns with local values and strengthens (Aref, 2011; Tosun, 2006). These are the ingredients together with the institutional and social environment in which sustainable tourism can thrive. This study is grounded in the theoretical framework of the TPB

(Ajzen, 1991), which suggests that intention and actual behaviors are determined by attitudes, subjective norms, and PBC—the perceived ease or difficulty with respect to performing a behavior. PBC in the context of the sustainable tourism industry includes stakeholders' beliefs regarding their capability to perform sustainably as well (Han, 2015). The four critical success factors are expected to enhance PBC, which, in turn, drives the adoption of sustainable tourism practices (ASTP). Furthermore, the model includes the Economic Development Level (EDL) as a moderating variable, as it is believed that these relationships may be conditioned by the level of development of a country (Telfer & Sharpley, 2015). More economically developed areas have better institutional capacities, more environmental literacy, and better access to finance to realize the positive effect of PBC on ASTP.

This study is important as it represents an inclusive perspective on the institutional and behavioral aspects related to the adoption of sustainable tourism in developing nations. Although sustainable tourism has been studied from policy and community perspectives before, little has integrated policies with communities to develop a comprehensive model covering the coexistence of structural drivers, individual attitudes as well as contextual boundary conditions (Afaq et al., 2025; Dangi & Jamal, 2016). This analysis will further be extended to the development of perception of control on perceived behavioral control and adoption intention, where it wears out its significance by examining different regulatory modes, financial access evenness, stakeholder attitude, and community participation. Policy implications: the results should help inform policymakers in shaping enabling regulatory and financial systems, practitioners on how to prepare the ground for stakeholder involvement, and local communities about ways in which they can contribute to transition dynamics.

Most of the current literature has examined sustainable tourism implementation in developed countries, but little attention has been directed to this topic under institutional frameworks and resource availability conditions that are different than those observed in developing economies (Gössling et al., 2020). Among developing countries, little empirical research has been conducted to examine inclusive models that include both internal (behavioral) and external (institutional) factors influencing the adoption of ST in this context. Furthermore, although the TPB has been broadly employed in individual-level environmental behavior (Han, 2015; Luong, 2025), its potential use for tourism organizations and communities in resource-limited contexts is under-researched. In addition, the moderating effect of Economic Development Level (EDL) on these relationships was rarely examined in previous empirical studies. This study fills these gaps by examining an integrated perspective, including mediating (PBC) and moderating (EDL) mechanisms.

To sum up, authors add to the stimulating debate about sustainable tourism by establishing and testing empirically a comprehensive model that incorporates institutional, behavioral, and structural views. The model expands on the Theory of Planned Behavior (TPB) and brings insights into how economic development contexts affect sustainability outcomes. Through identifying what are the key success factors in the adoption of ST in a developing country, this paper provides important policy implications for resilient, inclusive, and environmentally friendly tourism systems.

Literature Review and Hypothesis Development

Theoretical Background

Sustainable guiding has been identified as a strategic necessity in promoting long-term socio-economic and environmental sustainability, especially for developing countries depending on tourism as a major development booster (Roshid et al., 2025a; Waaje et al., 2025). This study is based on the theoretical framework of the Theory of Planned Behavior (TPB) (Ajzen, 1991), which suggests that behavior intentions and actions are driven by attitudes, subjective norms, and perceived behavioral control (PBC). In the context of sustainable tourism, TPB offers a strong structure to demonstrate how external and internal factors can impact tourism stakeholders' adoption of sustainability-oriented practices (Khatun et al., 2025; Han, 2015). Perceived behavioral cost (PBC) as a mediating construct mirrors the perceived

ease or difficulty of carrying out sustainable tourism based on available resources and opportunities (Lam & Hsu, 2004).

Although from an institutional aspect, RPS is a critical indicator for sustainable tourism implementation. According to Institutional Theory (Pathak et al., 2025), organizational activities are partly influenced by coercive pressures like policies and regulations imposed by the government. In developing countries, appropriate regulatory and policy practices act as drivers to enable the conditions for voluntary adoption of sustainability standards (Nunkoo et al., 2013; Roshid et al., 2025b). Weak governance and poor policy implementation, on the other hand, can undermine sustainable tourism initiatives (Afaq et al., 2025). Therefore, RPS can support perceived behavioral control by offering structural and legal backing to sustainability-related behavior. Sufficient access to Green Financing (AGF) also enhances the capacity of tourism companies to operate with sustainable measures. Following this, Resource-Based Theory (El Nemar et al., 2025) asserts that the availability of financial resources is a fundamental organizational capability that affects strategic behavior. Economic instruments, for example, green credit, eco-grants, and carbon funding, are used to promote and implement energy-efficient infrastructure and support sustainable business practices (Baker, 2024). In developing countries, where financial constraints are prevalent, AGF appears to influence PBC in a direct way by making resources attainable and mitigating perceived financial risks.

Another important factor is Stakeholder Awareness and Attitude (SAA). According to Pham et al. (2025), "Stakeholder Theory suggests that sustainable tourism requires the participation and favorable interaction of many sources such as local people, tourists, and decision-makers". Raising awareness and having a positive attitude toward sustainability encourages stakeholders to engage in and promote green programs (Luong, 2025). Community participation, rooted in the participatory development theory, emphasizes bottom-up involvement rather than top-down decision-making (Tosun, 2006). Active community participation can enhance sustainability by allowing community needs and values to be integrated into tourism practices and programs, thus reinforcing social legitimacy, as well as the practicality of implementation (Aref, 2011). The Economic Development Level (EDL) is suggested as a moderator that influences the dimensions of these relationships. According to Development Economics Theory, greater levels of economic development result in superior institutional capacity, infrastructure, and technological readiness for the delivery of sustainability (Hossain & Mollik, 2022; Mollik et al., 2024; Telfer & Sharpley, 2015). Thus, the effect of PBC on sustainable tourism adoption would be stronger in more mature LDCs.

Consequently, ASTP at the micro level has been depicted as: a Dependent variable encompassing how much destination participants have incorporated environmental, socio-cultural, and economic sustainability into their performance. By combining TPB, Institutional Theory, Resource-Based Theory, and Stakeholder Theory into a unified framework, the present model addresses the complexity of sustainable tourism practice adoption in developing countries.

Hypothesis Development

Regulatory and Policy Support (RPS) and Perceived Behavioral Control (PBC)

The support of regulation and policy is vital for the encouragement of sustainable tourism, particularly in developing countries where there are prevalent weak or inconsistent institutional frameworks. Clear regulatory framework, government support, and enforcement aid in reducing uncertainty for the adoption of ST (Chowdhury et al., 2025). As per the institutional theory, supportive policies lead to a facilitative environment, enhancing stakeholder confidence in their ability to take sustainable actions (Sun et al., 2025). Moreover, in the context of the Theory of Planned Behavior (TPB), when external factors such as regulatory facilitation exist, individuals' perceived behavioral control (PBC), that is, their perceived ease or difficulty of performing a behavior, tends to increase (Ajzen, 1991).

Strong policy system encourages entrepreneurs and local operators to implement sustainability initiatives (Nunkoo et al., 2013; Nguyen et al., 2024). When government agencies provide incentives such as subsidies, tax exemptions, or simplified licensing for sustainable practices, it boosts perceived behavioral control among tourism stakeholders. Therefore, it can be posited that:

H1: Regulatory and Policy Support (RPS) has a positive and significant effect on Perceived Behavioral Control (PBC).

Access to Green Financing (AGF) and Perceived Behavioral Control (PBC)

Access to financial capital is widely recognized as one of the most critical enablers for implementing sustainability initiatives. In developing regions, limited access to credit, high interest rates, and a lack of sustainability-oriented financial products often restrict the adoption of green practices (Baker, 2024). When tourism enterprises have access to green financing, including environmental funds, microloans, or sustainability-linked credit, they are more capable of investing in eco-friendly infrastructure and waste management systems.

According to the resource-based view (RBV), organizations with greater financial and resource capacity can more effectively translate intentions into sustainable actions (El Nemar et al., 2025). From a TPB perspective, financial accessibility enhances individuals' perceived control over behavior by lowering constraints and enabling the implementation of sustainable initiatives (Han & Kim, 2010). Empirical studies further support the fact that financial incentives and credit availability are positively related to the perceived capacity of stakeholders to act sustainably (Chen et al., 2025; Rahman et al., 2024).

H2: Access to Green Financing (AGF) positively influences Perceived Behavioral Control (PBC).

Stakeholder Awareness and Attitude (SAA) and Perceived Behavioral Control (PBC)

Sustainable tourism adoption heavily depends on stakeholders' level of awareness and their attitude toward sustainability. When tourism operators, employees, and community members understand the benefits of sustainable practices, they are more confident in their ability to execute them (Lee & Jan, 2019). The TPB asserts that both attitudes and perceived behavioral control are key determinants of behavioral intentions (Ajzen, 1991). A well-informed and positively inclined stakeholder group is likely to feel empowered and capable of performing sustainable actions.

Awareness campaigns, training programs, and educational initiatives improve knowledge about environmental management, reducing psychological barriers and enhancing control perceptions (Chen & Tung, 2014). For example, if stakeholders understand the propensities of energy-saving and eco-certification, their confidence in taking sustainability action would be stronger (Pham et al., 2025). Thus, influencing awareness of and attitude toward issues might significantly enhance PBC on sustainable tourism management.

H3: Stakeholder Awareness and Attitude (SAA) has a positive effect on Perceived Behavioral Control (PBC).

Community Participation (CP) and Perceived Behavioral Control (PBC)

Community-based participation is one of the basic pillars of sustainable tourism. The involvement of communities in decision-making and benefit sharing contributes to social legitimacy and empowerment (Byrd et al., 2008). Utilisation of the community in this manner consolidates sustainability measures with local knowledge and culture, reinforcing ownership and control for stakeholders.

Social support and shared participation could enhance perceived control by offering social resources and joint responsibility in TPB (Ajzen, 1991). Previous research has also proven that the closer communities are participating in tourism planning and resource management, the more control they feel

they have over tourism activities (Idziak et al., 2018; Rasoolimanesh & Jaafar, 2017), and therefore, their residents are more concerned about sustainability. Thus, community participation serves as a source of both motivation and facilitation, strengthening perceived behavioral control on the part of participants.

H4: Community Participation (CP) positively influences Perceived Behavioral Control (PBC).

Perceived Behavioral Control (PBC) and Adoption of Sustainable Tourism Practices (ASTP)

Perceived Behavioral Control (PBC) has a direct effect on the intention to adopt sustainable tourism behaviors. In Ajzen's (1991) Theory of Planned Behavior, PBC refers to people's beliefs about their capability of executing behavior under certain contingencies. They are more likely to commit such activities if they believe that they could use pro-environmental practices (which may include conservation of energy, recycling of waste, and protection of biodiversity) in the tourism industry (Singh & Bhardwaj, 2025).

The empirical evidence also indicates that PBC significantly predicts behavioral intention and actual behavior in the context of sustainability studies (Lam & Hsu, 2006; Han & Kim, 2010). In cases of tourism, those who feel greater control over their circumstances have a high propensity to carry out green certifications, eco-industry, and community-related projects (Zientara, Zamojska, 2018).

H5: Perceived Behavioral Control (PBC) positively influences the Adoption of Sustainable Tourism Practices (ASTP).

The Moderating Role of Economic Development Level (EDL)

Proposed Hypothesis: The influence of perceived behavioral control on the adoption of sustainable tourism practice may be contingent upon the economic development status of a region. In advanced economies, better infrastructure, institutions, and technological coverage facilitate stakeholders to convert perception of control into sustainable actions (Telfer & Sharpley, 2015). In contrast, in emerging or low-income contexts, despite high stakeholders' perceived control, the relationship may be weakened because of the shortage of resources and institutional constraints (Hall, 2019).

Accordingly, economic development serves as a contextual moderator further conditioning the effect of PBC on sustainable tourism adoption. PBC is more likely to generate behavior when populations are embedded in areas with a better economy.

H6: Economic Development Level (EDL) moderates the relationship between Perceived Behavioral Control (PBC) and the Adoption of Sustainable Tourism Practices (ASTP), such that the relationship is stronger in higher economic development contexts.

Figure 1: Theoretical Framework

METHODOLOGY

Research Design

The method used for the study was a Quantitative research design, which systematically investigated critical success factors influencing sustainable tourism adoption in emerging economies. The design was selected to measure the associations among variables and to test them statistically. Innovation perspective, the research model draws from technology, organization, and environment (TOE) theory (Cantisani, 2006) and the theory of planned behavior (TPB) (Ajzen, 1991), to provide an integrated view

on technological-, organizational-, and behavioral determinants of sustainability adoption. The main constructs of the study, Regulatory and Policy Support (RPS), Access to Green Financing (AGF), Stakeholder Awareness and Attitude (SAA), Community Participation (CP), Perceived Behavioral Control (PBC), and Economic Development Level (EDL), which predict the whole Adoption of Sustainable Tourism practices (ASTP).

Research Approach and Rationale

The cross-sectional survey approach was applied to one point in time data collection, aiming at the estimation of attitudes and behavioral patterns for sustainable tourism acceptance. This approach is suitable to elucidate interactions between variables and the perception by different stakeholders in a particular temporal social-economic context (Chapman et al., 2005).

Population and Sampling Technique

The study participants were actors engaged in tourism, which included tourism operators, government officials, hotel managers, travel agents, and representatives of local communities from developing countries. Due to difficulty in locating a comprehensive sampling frame, the researcher used convenience sampling, which is applicable in exploration and behavioral research (Etikan, 2016). In total, 334 valid questionnaires were retrieved from both online and offline studies by covering varied geographic areas, professional qualifications, and demographic attributes.

Research Instrument

An instrument, containing close-ended questions rated on a five-point Likert scale from strongly disagree (1) to strongly agree (5), was formulated. The constructs were derived from validated scales from extant literature of sustainable tourism and adoption in organizations (Arbolino et al., 2021; Nunkoo, 2017). A pilot study of 30 participants was carried out to maintain clarity and consistency during final data collection. Feedback from the pilot test was included to revise ambiguous or redundant items, thereby increasing content validity and internal consistency.

Data Collection Procedure

Information was obtained from online as well as field-based surveys, enabling participation from multiple quarters. Ethical issues of voluntary participation and the anonymity of respondents were followed.

Data Analysis Technique

The data obtained were processed with Partial Least Squares Structural Equation Modelling (PLS-SEM) using SmartPLS 4.0 software. This approach was selected as appropriate for complex models with several latent variables and small to medium-sized samples (Hair et al., 2019). The analysis involved two stages: 1. Measurement Model Assessment: Reliability, Convergent, and Discriminant Validity tested via Cronbach's alpha, Composite Reliability (CR), and Average Variance Extracted (AVE). 2. Structural model testing: that is, establishing the relationships postulated among the variables, and in addition, which success factors are most significant to sustainable tourism adoption. Adoption of PLS-

SEM ensured the study was sound and predictions accurate, facilitated theory development, and provided a clear direction for policy makers, tourism planners, and practitioners who seek to promote sustainable tourism in developing nations.

FINDINGS

Demographic analysis of **Table 1** is very useful for extracting key success factors for the implementation of ST in developing countries (Cambodia). The gender distribution (54.8% male and 45.2% female) also shows more balanced participation of individuals in sustainable tourism; hence, whenever planning policies or initiatives, consideration should be given to both genders as well. Higher education rates (46.1% completed a Bachelor's and 29.9% a Master's degree) mean educated people could be more knowledgeable about sustainability-related matters, and therefore more approachable in terms of adopting ST practices. The age distribution indicates that the biggest group, 36.8% of the respondents in the 26–35-year-old range, might tend to favor ST owing to a relatively high level of environmental awareness, occasionally found in younger generations. Most of the tourists belong to the 20,001–40,000 BDT and 40,001–60,000 BDT income group which indicates that middle-income groups can take the burden of eco-friendly tourism facilities. Furthermore, 35.9% of the respondents who have tourism working experience from 1 to 3 years suggest that a large proportion are newcomers in the tourism sector, and these are key stakeholders where action can take place at an early stage, allowing for their influence on adopting sustainable behaviors during their professional life. Overall, these demographic factors can inform sustainable tourism strategies targeted to meet the needs and profile of the target population in emerging economies.

Table 1: Demographic Analysis

Category	Sub-Category	Frequency (n)	Percentage
Gender	Male	183	54.8
	Female	151	45.2
Education Level	High School	47	14.1
	Bachelor	154	46.1
	Master	100	29.9
	PhD	33	9.9
Age Group	18–25 Years	89	26.6
	26–35 Years	123	36.8
	36–45 Years	75	22.5
	46–55 Years	29	8.7
	Above 56 Years	18	5.4
Monthly Income (BDT)	Below 20,000	60	18.0
	20,001–40,000	102	30.5
	40,001–60,000	78	23.4
	60,001–80,000	56	16.8

	Above 80,000	38	11.4
Tourism Experience	Less than 1 year	75	22.5
	1–3 years	120	35.9
	4–6 years	85	25.4
	7+ years	54	16.2

Source: Authors' Work

Table 2 presents the convergent validity and internal consistency reliability of different constructs on sustainable tourism adoption. All the constructs exhibit satisfactory convergent validity (all factor loadings > 0.7) with indicator loadings ranging between 0.722 and 0.869 across all the constructs considered as recommended by Hair et al. (2019). For example, AGF indicators (AGF1–AGF4) have the factor loadings λ values between 0.780 and 0.831, which indicates that the measurement model can effectively explain the meaning of green financing in sustainable tourism. Also, both ASTP and RPS have high factor loadings and confirm their relevant functions in relation to sustainable tourism adoption.

The reliability of the constructs is also supported by Composite Reliability (CR) and Cronbach's alpha, or internal consistency reliability. Values greater than the recommended cut-off point of 0.7 (e.g., CR for AGF =0.887, Cronbach's alpha for PBC = 0.814) indicate high internal consistency, which in turn indicates that the items measure their variables consistently (Shea & Fortna, 2011). These findings support the idea that the model is valid and reliable and provide a solid basis for evaluating critical success factors in sustainable tourism adoption.

Table 2: Convergent Validity and Internal Consistency Reliability

Construct	Indicators	Convergent Validity		Internal Consistency Reliability	
		Factor loading	AVE	Composite Reliability	Cronbach's alpha
AGF	AGF1	0.818	0.661	0.887	0.830
	AGF2	0.780			
	AGF3	0.831			
	AGF4	0.823			
ASTP	ASTP1	0.801	0.659	0.885	0.828
	ASTP2	0.826			
	ASTP3	0.838			
	ASTP4	0.782			
CP	CP1	0.837	0.653	0.882	0.827
	CP2	0.722			
	CP3	0.834			
	CP4	0.834			

	EDL1	0.806			
	EDL2	0.830			
EDL	EDL3	0.808	0.652	0.832	0.824
	EDL4	0.784			
	PBC1	0.799			
	PBC2	0.794			
PBC	PBC3	0.837	0.642	0.878	0.814
	PBC4	0.773			
	RPS1	0.869			
	RPS2	0.775			
RPS	RPS3	0.793	0.662	0.887	0.830
	RPS4	0.815			
	SAA1	0.723			
	SAA2	0.794			
SAA	SAA3	0.786	0.633	0.873	0.807
	SAA4	0.872			

Source: Authors' Work

In **Figure 2,** the measurement model represents the links among different elements that influence the adoption of sustainable tourism in developing countries. Significant independent variables (RPS, AGF, and SAA) are those of key influence on PBC, with path coefficients ranging from 0.166 to 0.869. PBC has a substantial impact on the Adoption of Sustainable Tourism Practices (ASTP) (0.314), highlighting its important role in the adoption behavior. Although the direct effect of Economic Development Level (EDL) on ASTP (0.073) is weak, it indirectly impacts PBC, revealing the significance of behavioral control to break through obstacles. The model thus suggests RPS and PBC as important facilitators of the adoption of sustainable tourism.

Figure 2: Measurement Model

Table 3 shows the Heterotrait-Monotrait Ratio (HTMT) values for discriminant validity among constructs associated with sustainable tourism adoption in emerging economies. Values of HTMT less than the cut-off of 0.85 (or in some circumstances, 0.90) imply that constructs are discriminated against from each other as proposed by Henseler et al. (2015). The HTMT values for AGF, ASTP, CP, EDL, PBC, RPS, and SAA are all less than the threshold in this case, indicating good discriminant validity. For example, the HTMT value of AGF and ASTP is 0.113, and by this, we can say that Access to Green Financing (AGF) and Adoption of Sustainable Tourism Practices (ASTP) are not the same construct. The correlation of PBC and EDL × PBC is also low (0.108), indicating that the interaction factor is hardly associated with other constructs in the model. These findings validate the unique impact of RPS, CP, and EDL on implementing sustainable tourism practices, as revealed from the questionnaire survey,

which verifies the solid results for investigating CSFs in emerging markets (Fornell & Larcker, 1981; Henseler et al., 2015).

Table 3: Heterotrait-Monotrait Ratio (HTMT) Analysis

	AGF	ASTP	CP	EDL	PBC	RPS	SAA	EDL x PBC
AGF								
ASTP	**0.113**							
CP	**0.148**	**0.086**						
EDL	**0.103**	**0.217**	**0.053**					
PBC	**0.373**	**0.506**	**0.335**	**0.075**				
RPS	**0.232**	**0.155**	**0.180**	**0.045**	**0.477**			
SAA	**0.154**	**0.206**	**0.269**	**0.051**	**0.440**	**0.224**		
EDL x PBC	**0.141**	**0.032**	**0.027**	**0.060**	**0.108**	**0.040**	**0.067**	

Source: Authors' Work

The discriminant validity of the constructs is evaluated by the Fornell-Larcker Criterion, which compares the square root of average variance extracted (AVE) with other latent construct correlations as given in **Table 4**. According to Fornell and Larcker (1981), the AVE score of each construct should be greater than the correlations between them to maintain discriminant validity. For example, the AVE of AGF is 0.813, which is greater than its correlations with other variables (e.g., ASTP: 0.085 and CP: 0.131), indicating discriminant validity for this measure. Political advertising attitudes (PAA) also has an AVE of 0.801 and coefficients less than the square root of its AVE on all other constructs. This shows that PBC is discriminated from constructs such as Regulatory & Policy Support and Community Participation. The findings also indicate that SAA (0.795) is clearly separable, thus confirming the discriminant validity of each construct in measuring sustainable tourism adoption in emerging economies. These results support the construct validity of the model (Fornell & Larcker, 1981).

Table 4: Fornell Lacker Creation

	AGF	**ASTP**	**CP**	**EDL**	**PBC**	**RPS**	**SAA**
AGF	0.813						
ASTP	0.085	0.812					
CP	0.131	0.043	0.808				
EDL	-0.083	0.185	-0.019	0.807			
PBC	0.313	0.418	0.291	0.050	0.801		
RPS	0.196	0.131	0.151	0.014	0.395	0.814	
SAA	0.127	0.171	0.225	0.000	0.364	0.188	0.795

Source: Authors' Work

The structural model (**Figure 3**) has the predictors-- Regulatory and Policy Support (RPS), Access to Green Financing (AGF), Stakeholder Awareness and Attitude SAA, Community Participation (CP) explaining 31.4% variance in Perceived Behavioral Control (PBC), whereas PBC along with Economic Development Level (EDL) explains 20.6% variance in Adoption of Sustainable Tourism Practices (ASTP). But the strength of these chaining linkages (path coefficients) is not very strong or significant because, in this study, they do not have a direct impact on perceived control and sustainable practice adoption.

RPS and AGF have weak positive relationships with PBC, meaning that encouraging policies and financial availability are present, but do not significantly contribute confidence of stakeholders to adopt sustainable tourism. SAA and CP, as well, have little impact, indicating that mere knowledge of and interest in a cybersecurity career is not enough to develop perceived behavioral control. PBC's direct impact on ASTP is also low, which suggests that stakeholders may experience structural or financial obstacles to implementation even when they believe themselves able.

EDL has a larger moderating influence (β = 0.173) on the PBC–ASTP relationship, denoting that economic context only slightly bolsters the PBC effect on ASTP; stakeholders in more economically developed or MRDD regions are somewhat more likely to act sustainably given perceived control. In sum, the findings indicate that both institutional support and financial and social support are required to guide a positive climate for inducing the needed changes surrounding the acceptance of sustainable tourism practices in emerging economies.

Figure 3: Structural Model

Results: The path coefficients and statistical testing of the hypotheses associated with sustainable tourism adoption in emerging economies are provided in **Table 5**. Hypotheses are tested using the T-statistic and P-value, which provide information on the support of postulated relationships.

H1 (RPS→PBC): The effect of Regulatory & Policy Support (RPS) on Perceived Behavioral Control (PBC). The support for this hypothesis is strong, with a path coefficient value of 0.284 (T = 6.562, P = 0.000) that is statistically significant. This suggests that effective policies and regulations play a key role in empowering stakeholders to implement sustainable tourism practices, consistent with Ajzen's (1991) Theory of Planned Behavior, where external factors such as regulation influence perceived control. H2 (AGF → PBC) indicates that AGF has a positive impact on PBC. The 0.204 path coefficient (T = 4.706, P = 0.000) indeed indicates that green financing is a salient facilitator for stakeholders to pursue the implementation of sustainable tourism practices. Consistent with Kharb et al., this evidence indicated that access to financial resources can be the old power required to achieve sustainability in emerging economies (Kharb et al., 2025). H3 (SAA → PBC) emphasizes that Stakeholder Awareness & Attitude (SAA), is, in fact, significant on PBC. The results reveal that awareness and positive attitudes on sustainability contribute in a highly significant manner to improving perceived control toward adopting sustainable tourism practices (path coefficient = 0.248, T = 5.667, P = 0.000). H4 (CP → PBC) posits that CP affects HBC. Positive path coefficient of 0.165 (T = 3.440, P = 0.001) indicates that the active participation of communities in tourism decision making makes their belief in controlling sustainability practices stronger, and the latter is a crucial factor to induce sustainability. H5 (PBC → ASTP) examines the association between PBC and the Adoption of Sustainable Tourism Practices (ASTP). The strong path coefficient of 0.416 (T = 8.959, P = 0.000) confirms the prediction that when stakeholders perceive that to have more control (PBC), they are more likely to engage in sustainable tourism practices.

Finally, H6 (EDL x PBC → ASTP) investigates if Economic Development Level (EDL) moderates the relationship between PBC and ASTP. The path coefficient 0.073 (T = 1.362, P = 0.173) does not qualify

as statistically significant, which means "EDL" cannot moderate the relationship between "PBC" and "ASTP". This result seems to indicate that, contrary to what one might think, economic structures might not have as much influence as regulatory and monetary or community in influencing the implementation of measures for sustainable development.

Table 5: Path Coefficient

No	Hypothesis	Original sample	Sample mean	Standard deviation	T statistics	P values	Decision
H1	RPS -> PBC	0.284	0.287	0.043	6.562	0.000	Supported
H2	AGF -> PBC	0.204	0.205	0.043	4.706	0.000	Supported
H3	SAA -> PBC	0.248	0.249	0.044	5.667	0.000	Supported
H4	CP -> PBC	0.165	0.168	0.048	3.440	0.001	Supported
H5	PBC -> ASTP	0.416	0.419	0.046	8.959	0.000	Supported
H6	EDL x PBC -> ASTP	0.073	0.072	0.053	1.362	0.173	Not Supported

Source: Author's Work

DISCUSSIONS

The present research draws attention to the determinants that may influence sustainable tourism adoption among emerging market countries, value concentrating on the Roles of Regulatory & Policy Support (RPS), Access to Green Financing (AGF), Stakeholder Awareness & Attitude (SAA), Community Participation (CP), and Perceived Behavioral Control (PBC). The findings indicate that these three variables have strong potential in promoting the adoption of sustainable tourism by stakeholders, with Economic Development Level (EDL) not moderating the relationship.

RPS has a significant impact on PBC, indicating that stakeholders can engage in sustainable tourism under regulatory conditions effectively. This is consistent with the theoretical framework of Ajzen's (1991) Theory of Planned Behavior and lends support to policy support as a critical influence on perceptions of control. It is worth noting that the role of policies in promoting sustainability was also underscored in previous research (Gössling et al., 2009; Buckley, 2012). Also, AGF has a positive influence on PBC, 17 showing that the availability of financial resources promotes ST behavior. Kharb et al. (2025), in addition to considering that green finance is key in removing financial obstacles, allow players to invest in environmentally friendly investments. The positive influence of SAA on PBC supports the argument that ST requires education and awareness. Stakeholder awareness of the advantages of sustainability is greater; their perceived levels of control increase (Mayer & Frantz, 2004; Rasoolimanesh et al., 2025). PBC is greatly influenced by community participation (CP). This result has implications for the role of community participation in CBT and is consistent with the notion that when individuals participate in decision-making, they are more likely to adopt sustainable behavior. Active involvement of local people leads to a sense of ownership and accountability, as demonstrated in the works of Talukder & Khan (2025). The association between PBC and ASTP suggests that those stakeholders who feel as if they are in control and can reliably implement and use ASTPs do so. This is consistent with Ajzen (1991), who claims that perceived control has a direct impact on behavior. Nevertheless, EDL does not attentively attain the interaction effect of PBC and ASTP either. This indicates that economic development is not an adequate determinant for engaging in sustainable tourism. Rather, it is regulation frameworks, public engagement, and financial accessibility that are determining

the development of sustainability: similar findings to Gössling et al. (2009) and Karim et al. (2025a), who support the idea that economic development alone is insufficient for sustainable tourism.

In conclusion, the research highlights that RPS, AGF, SAA, and CP play crucial roles in facilitating sustainable tourism uptake in developing nations. Such factors enable the environment franchise and stakeholders to feel empowered towards sustainable practices. Economic development has something to do with it, but it is not the only factor for sustainability. Politicians should work to build enabling conditions through regulation, finance, capacity building, and community engagement for sustainable tourism uptake.

Theoretical and Practical Implications

Theoretical Implications

This research builds on the Theory of Planned Behavior (TPB) and uses it in the context of sustainable tourism in developing countries. The results also demonstrate the influence of RPS, AGF, and SAA on PBC determining ACTP. This evinces the continuing relevance of TPB for understanding sustainable tourism practices, especially within the context of specific socio-political challenges (Ajzen, 1991; Perugini & Bagozzi, 2001). In addition, the research also contests that Economic Development Level (EDL) is a key factor of sustainability adoption. While economics is a consideration, industry development was beginner; however, the model reveals that RPS and community participation, together with financial access, are most salient to implementing sustainability practices (Gössling et al., 2009; Buckley, 2012). This enriches the literature in that economic growth alone is not sufficient to attain sustainability; conducive regulations and a slick financial system are needed (Kharb et al., 2025). In addition, the study upholds Stakeholder Theory (Pham et al., 2025) that community participation is crucial in shaping stakeholders' attitudes and behaviors toward sustainability, particularly tourism development.

Practical Implications

For public policy makers, the results suggest that regulatory & policy support (RPS) and access to green financing (AGF) are critical factors in encouraging sustainable tourism. Transparent policy and financial aid can encourage stakeholders to put investment in ecologically friendly actions (Gössling et al., 2009). Tourism authorities need to concentrate on stakeholder education and public participation, which can lead to the strengthening of PBC as well as long-term sustainability (Mayer & Frantz, 2004; Talukder & Khan, 2025). The research also demonstrates that economic growth without other means is not sustainable. Rather, financial access and community involvement are the main challenges to sustainable practice uptake (Buckley 2012). These are the ones that must be given priority by both policymakers and tourism professionals to facilitate the movement of the emerging economies towards sustainable tourism.

Limitations and Scope for Future Research

This analysis, despite its qualities, is not without limitations. An important limitation of the sample is that it may not represent the general population of emerging market economies, since it was drawn based on a specific demographic characteristic. For example, the majority are of the young age group (26-35 years) and educated (with 46.1% with a bachelor's degree) and are from mid-income strata. This may not be the case for other age groups or income levels, and these factors could affect the adoption of sustainable tourism. Subsequent studies may strive for a more representative sample to investigate the potential impact of different demographic variables, including age, education, and income, on attitudes and behavior towards sustainable tourism. Moreover, the research concentrated on a few items (RPS, AGF, SAA, CP, PBC, and EDL), ignoring other factors that might eventually affect sustainable tourism

adoption levels, for instance, cultural context or technology advances, or tourism trends of the market (Gössling et al., 2009). Future research might incorporate these variables into the model and thus provide deeper insights into sustainable tourism adoption. In addition, this research is context-related, so its findings may only be applicable to the specific region being studied. Comparative work amongst a range of emerging markets with unique cultural and economic realities could improve the transferability of the results (Buckley, 2012). Moreover, although economic development did not moderate the relationship between PBC and ASTP to a significant degree, future studies may need to explore interplays of economic, culture, and environment in building an extended sustainable tourism adoption model. Furthermore, Uddin et al. (2025), Karim et al. (2024), and Dhar et al. (2025) have found that the circular economy can be a significant factor in promoting sustainability in tourism. Other relevant factors such as policy improvement (Islam et al., 2025), financial subsidies (Karim et al., 2025c; Kuri et al., 2025), can be considered to strengthen the tourism sustainability. Hence, future research on tourism sustainability can consider them.

Conclusion

In examining the success factors of sustainable tourism adoption in emerging economies, this research adds to the understanding of the ways that factors are linked with sustainable tourism adoption. Further, they underscore the significance of Regulatory & Policy Support (RPS), Access to Green Financing (AGF), Stakeholder Awareness & Attitude (SAA), and Community Participation (CP), enhancing Perceived Behavioral Control (PBC), which subsequently promotes Adoption of Sustainable Tourism Practices (ASTP). The findings emphasize the significance of RPS as a mechanism to enable stakeholders and thus underline the importance of policy structures that guide and facilitate sustainable practices. Moreover, it was discovered that AGF also had a strong and significant impact on PBC to demonstrate the importance of financial availability for such sustainability programs implementation. The positive correlation of SAA with PBC indicated that sustainability consciousness and attitude are fundamental to the formation of control in sustainable behaviors. CP also has a positive influence on PBC, indicating the significance of community-driven sustainable tourism practices. It is interesting to observe that the variable EDL was expected to interact with the association between PBC and ASTP, although it was not found no significant interaction coefficients were found, which indicates that economic development alone cannot be enough for adopting sustainable practices. Rather, enabling policies and access to finance and the community seem to be contributing more significantly to surmounting obstacles for sustainable tourism in emerging economies.

This study adds to the small body of literature by encapsulating several elements in a model for understanding sustainable tourism adoption. The results inform policymakers, tourism authorities, and local communities to focus on creating legal frameworks, access to finance, and education programmes for the long-term sustainability of the emerging countries' tourism industry. Further investigation into other factors and differences across regions would be interesting for future studies.

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İİT ÜYESİ ÜLKELERDE ENERJİ TÜKETİMİ İLE EKONOMİK BÜYÜME ARASINDAKİ İLİŞKİNİN ANALİZİ

Aigerim GAIBULLAYEVA

Sakarya Uygulamalı Bilimler Üniversitesi. Lisansüstü Eğitim Enstitüsü
E-mail: agaibullaeva@mail.ru
ORCID ID: 0009-0004-1447-3914
Füsun ÇELEBİ BOZ

Doç. Dr., Sakarya Uygulamalı Bilimler Üniversitesi. Dış Ticaret Bölümü
E-mail: fusuncelebi@subu.edu.tr
ORCID ID: 0000-0002-3884-0465

Özet

Enerji tüketimi ile ekonomik büyüme arasındaki ilişki, iktisat literatüründe uzun süredir tartışılan, karmaşık ve çok boyutlu bir konudur. Enerji, üretim faktörleri arasında önemli bir yere sahiptir ve ekonomik faaliyetlerin sürdürülebilmesi için temel bir girdidir. Bu nedenle, bir ülkenin enerji tüketim düzeyi genellikle ekonomik kalkınma, sanayileşme ve teknolojik ilerleme süreçlerinin bir göstergesi olarak kabul edilmektedir. İslam İşbirliği Teşkilatı (İİT) üyesi ülkeler, enerji kaynakları, ekonomik büyüme düzeyleri ve kalkınma stratejileri bakımından önemli farklılıklar göstermektedir. İİT ülkeleri hem enerji açısından zengin üretici ekonomileri hem de enerji ithalatına bağımlı ülkeleri kapsamaktadır. Bu çeşitlilik, enerji tüketimi ile ekonomik büyüme arasındaki ilişkinin farklı ekonomik yapı ve kalkınma düzeylerine sahip ülkelerde nasıl değiştiğini analiz etmek için elverişli bir çerçeve sunmaktadır. Bu çalışma da, İİT üyesi ülkelerde 1992-2022 dönemi için toplam ve kişi başına düşen enerji tüketimi, gayri safi yurtiçi hasıla (GSYİH) ve küreselleşme verilerini ifade eden ekonomik, politik ve kültürel küreselleşme kullanılmaktadır. Çalışma sonucuna göre İran ve Kuveyt için enerji tüketiminden ekonomik büyümeye doğru nedensellik ilişkisi varken, ekonomik büyümeden enerji tüketimine doğru Suudi Arabistan, Türkmenistan ve Fas'ta olduğu görülmektedir.

Anahtar kelimeler: Enerji Tüketimi, Ekonomik Büyüme, İİT Ülkeleri

THE RELATIONSHIP BETWEEN ENERGY CONSUMPTION AND ECONOMIC GROWTH IN OIC MEMBER COUNTRIES

Abstract

The relationship between energy consumption and economic growth has long been a debated, complex, and multidimensional topic in the economics literature. Energy is a crucial production factor and a fundamental input required for sustaining economic activities. Therefore, a country's level of energy consumption is often regarded as an indicator of its economic development, industrialization, and technological progress. Member countries of the Organisation of Islamic Cooperation (OIC) exhibit significant differences in terms of energy resources, economic growth levels, and development strategies. The OIC includes both energy-rich producer economies and countries that are highly dependent on energy imports. This diversity provides a suitable framework for analyzing how the relationship between energy consumption and economic growth varies across countries with different economic structures and development levels. In this study, total and per capita energy consumption, gross domestic product (GDP), and globalization indicators economic, political, and cultural globalization are employed for OIC member countries over the period 1992-2022. According to the findings, there is a causal relationship running from energy consumption to economic growth in Iran

and Kuwait, while a causal relationship from economic growth to energy consumption is observed in Saudi Arabia, Turkmenistan, and Morocco.

Keywords: Energy Consumption, Economic Growth, OIC Countries

GİRİŞ

Sanayi Devrimi'nin başlangıcından itibaren enerji kaynakları giderek artan bir hızla kullanılmaya başlanmış ve bu süreçte enerjiye verilen önem zamanla daha da artmıştır (Pirlogea ve Cicea, 2012). Yıllar boyunca nüfus artışı ve sanayileşmenin hız kazanması, enerjiye olan talebi önemli ölçüde yükseltmiştir. Enerji, üretim, ulaşım ve hizmet sektörleri gibi ekonominin tüm alanlarında temel bir girdi olduğundan, ekonomik faaliyetlerin genişlemesi enerji talebini de beraberinde artırmaktadır. Bu bağlamda enerji kullanımı, ekonomik dengenin belirleyici unsurlarından biri olarak değerlendirilmektedir. Enerji tüketimindeki artış, üretim kapasitesinin genişlemesini ve yaşam standartlarının iyileşmesini desteklerken, aynı zamanda ekonomik büyümenin sürdürülebilirliğine de katkı sağlamaktadır.

Enerji ve ekonomik büyüme arasındaki ilişkinin yönü her zaman aynı değildir. Bazı ekonomilerde enerji tüketimi büyümeyi teşvik ederken, bazı durumlarda ekonomik büyüme enerji talebini artırmaktadır. Bu durum, ülkelerin gelişmişlik düzeyine, enerji kaynaklarının yapısına ve uygulanan politikaların niteliğine göre farklılık gösterebilir. Gelişmiş ülkelerde yüksek teknolojili üretim yapısı ve enerji verimliliği politikaları sayesinde ekonomik büyüme, enerji tüketimindeki artıştan görece daha az etkilenmektedir. Buna karşın, gelişmekte olan ülkelerde sanayileşme süreci ve hızlı kentleşme, enerji talebinin ekonomik büyümeyle birlikte artmasına yol açmaktadır. Enerji tüketimi ve ekonomik büyüme arasındaki bu dinamik ilişkiyi daha iyi anlamak için, birkaç sosyoekonomik değişken dikkate alınmalıdır. Onların önünde, kişi başına gelir, bireylerin ekonomik refahını yansıtır ve enerji tüketimini doğrudan etkiler. Gelir arttıkça, tüketim alışkanlıkları değişir ve enerji talebi artar (Chen vd., 2007). Son iki yüzyılda dünya, ekonomik, sosyal ve politik alanlarda artan entegrasyon girişimlerinin etkisiyle, uluslararası ticaretin, kültürel etkileşimlerin ve siyasal iş birliklerinin benzeri görülmemiş ölçüde yoğunlaştığı bir döneme girmiştir. Bu gelişmeler, küreselleşmenin ekonomik büyüme ve kalkınma üzerindeki etkisini literatürde önemli bir araştırma alanı haline getirmiştir. Dolayısıyla, küreselleşme çerçevesinde enerji tüketimi ile ekonomik büyüme arasındaki ilişkinin analiz edilmesi ve bu iki değişken arasındaki etkileşim kanallarının açıklığa kavuşturulması büyük önem taşımaktadır.

Bu bağlamda, gelişmekte olan ekonomiler grubunda yer alan ve enerji piyasasında stratejik bir güç oluşturan İslam İşbirliği Teşkilatı (İİT) üyesi ülkelerinde, enerji tüketimi ve ekonomik düzey arasında istikrarlı ve sürdürülebilir bir denge sağlanıp sağlanamadığı hususu belirsizliğini korumaktadır. Dünya nüfusunun yaklaşık %25–26'sını barındıran bu ülkeler, petrol ve doğalgaz gibi yenilenemeyen enerji kaynaklarının rezervlerinin büyük bir kısmına sahiptir. Ancak bu ülkeler arasında enerji kaynaklarının dağılımı homojen değildir; bazı üyeler enerji ihracatçısı konumundayken, diğerleri enerji ithalatçısı durumundadır. Bu farklılık, İİT ülkeleri içinde enerji ve büyüme ilişkisinin yönünü ve gücünü farklı biçimlerde ortaya çıkarmaktadır. Bu çalışmanın temel amacı, 1992-2022 döneminde seçilmiş İİT üyesi ülkelerde kişi başına birincil enerji tüketimi ile ekonomik büyüme arasındaki ilişkiyi araştırmaktır. Veri mevcudiyeti ve tüm üyeler arasındaki tutarlılık sınırlamaları nedeniyle analiz, çalışma dönemi boyunca güvenilir ve sürekli verilerin elde edilebildiği 16 ülkeye odaklanmaktadır. Aynı zamanda, İİT (İslam İşbirliği Teşkilatı) ülkeleri hakkında bu tür bir çalışmanın bulunmaması, bu çalışmanın özgün değerini vurgulamaktadır. Giriş bölümünün ardından, çalışma ilgili literatürü gözden geçirir ve sonraki bölümlerde metodoloji ve yöntemler tartışılır, modelle ilgili sonuçlar sunulur. Son bölümde, çalışmanın etkinliğini vurgulamayı amaçlayan bir tartışma ve sonuçlar yer almaktadır.

1.LİTERATÜR TARAMASI

Enerji ve ekonomik büyüme arasındaki ilişki üzerine yapılan araştırmalar, bu ilişkinin hem teorik hem de ampirik açıdan farklı yönlerini ortaya koymuştur. Bazı çalışmalar, enerji tüketiminin ekonomik büyümenin temel belirleyicilerinden biri olduğunu ve enerji arzındaki artışın üretim kapasitesini genişlettiğini savunmaktadır. Diğer taraftan bazı araştırmalar ise ekonomik büyümenin enerji talebini artırdığı, dolayısıyla nedenselliğin büyümeden enerjiye doğru işlediği görüşünü desteklemektedir. Ayrıca bazı ülkelerde enerji ve büyüme arasında çift yönlü bir ilişki bulunduğu, bazılarında ise herhangi bir nedensellik ilişkisinin olmadığı sonucuna ulaşılmıştır. İncelenen literatürde enerji tüketimi, küreselleşme ve ekonomik büyüme değişkenlerini içeren ve farklı modelleme yaklaşımlarına dayanan çok sayıda ampirik çalışma bulunmaktadır. Bu çalışmalar genel olarak enerji tüketimi ile ekonomik büyüme, küreselleşme ile ekonomik büyüme ve enerji tüketimi ilişkileri temelinde ele alınmakta olup, araştırmaların sonuçları kullanılan yöntem ve ülke örneklerine göre farklılık göstermektedir. Çetin ve Seker (2012) çalışmada, Johansen-Juselius ve Stock-Watson eşbütünleşme testleri ile Toda-Yamamoto nedensellik testleri kullanılarak, enerji tüketimi ile ekonomik büyüme arasındaki ilişki Türkiye ekonomisi bağlamında 1970-2009 periyodunda incelenmiştir. Toda-Yamamoto test sonuçları enerji tüketimi ile ekonomik büyüme arasında her hangi bir nedensellik ilişkisinin olmadığını göstermektedir ve enerji darlığının ekonomik büyümeyi negatif olarak etkiliyebileceğini ifade etmektedir. Gabbasa ve arkadaşları (2013) tarafından gerçekleştirilen araştırmada, İslam İşbirliği Teşkilatı (İİT) üyesi ülkelerde enerji tüketimindeki artışın ekonomik büyüme ve nüfus artışıyla doğrudan ilişkili olduğu ortaya konmuştur. Çalışma, enerji kullanımı ile gayri safi yurt içi hasıla (GSYİH) gibi ekonomik kalkınma göstergeleri arasındaki ilişkinin anlaşılmasının, söz konusu ülkelerde ulusal enerji kullanımının önemini kavramak açısından büyük önem taşıdığını vurgulamaktadır.

Bakirtaş ve Çetin (2016) tarafından yapılan çalışmada, 1992-2010 dönemi için G-20 üyesi 18 ülke kapsamında, kişi başına düşen reel GSYİH ile kişi başına düşen yenilenebilir elektrik enerjisi tüketimi arasındaki uzun dönemli ilişkinin EKC hipotezi çerçevesinde incelennmiştir. Araştırmada panel veri analiz yöntemlerinden yararlanılmıştır. Pedroni panel eşbütünleşme test sonuçları, kişi başına düşen yenilenebilir enerji tüketimi ile kişi başına düşen reel GSYİH arasında uzun dönemde anlamlı bir ilişki bulunduğunu göstermektedir. Doğan ve Diğer (2016) çalışmada, Augmented Dickey Fuller (ADF) ve PP birim kök analizi yöntemiyle Hindistan örnekleminde zaman serisi analizi yapılmıştır. Yapılan analiz sonucunda ekonomik büyümeden enerji tüketimine doğru bir nedensellik ilişkisi bulunmuşken enerji tüketiminden ekonomik büyümeye doğru bir nedensellik ilişkisi bulunamamıştır. Doğan ve Değer (2016), 2000–2012 döneminde BRIC ülkelerinde toplam enerji tüketimi, ekonomik büyüme ve küreselleşme arasındaki nedensellik ve eşbütünleşme ilişkilerini incelemiştir. Çalışmada Pedroni ve Kao eşbütünleşme testleri ile panel Granger nedensellik analizi kullanılmıştır. Sonuçlar, değişkenler arasında uzun dönemli bir eşbütünleşme ilişkisinin var olduğunu göstermiştir. Anwar, Arshed ve Kousar (2017) tarafından gerçekleştirilen çalışmada, 1990–2014 dönemi için 29 İİT ülkesine ait panel veriler kullanılarak çok değişkenli bir hata düzeltme modeli oluşturulmuş ve analizde sermaye, işgücü ile petrol fiyatları değişkenleri de dikkate alınmıştır. Pedroni panel eşbütünleşme testlerinden elde edilen bulgular, reel GSYİH, yenilenebilir enerji tüketimi, reel sabit sermaye oluşumu, işgücü ve petrol fiyatları arasında uzun dönemli bir ilişki bulunduğunu göstermektedir. Panel hata düzeltme modelinden elde edilen sonuçlar ise yenilenebilir enerji tüketiminden ekonomik büyümeye doğru tek yönlü bir nedensellik ilişkisi olduğunu ortaya koymuştur. Alper (2018), Türkiye için 1970-2015 dönemini kapsayan çalışmasında küreselleşmenin alt bileşenleri, kişi başına düşen gayrisafi yurt içi hasıla ve kent nüfusunun kişi başına enerji tüketimi üzerindeki uzun dönemli etkilerini incelemiştir. Uzun dönem katsayılarını tahmin etmek amacıyla DOLS tahmin yöntemi kullanılmıştır. Elde edilen sonuçlara göre, tüm modellerde kişi başına GSYİH'nın kişi başına enerji talebi üzerinde pozitif bir etkisinin olduğu tespit edilmiştir.

Akdağ ve İskenderoğlu (2018) çalışmada, Avrupa Birliği üyesi 14 ülkenin 2007-2016 tarihleri arasında yenilenemeyen enerji tüketimi, yenilenebilir enerji tüketimi ve nükleer enerji tüketimi ile GSYH

arasındaki ilişki, dinamik panel analiz yöntemi ile test edilmiştir. Analiz sonucunda yenilenebilir ve yenilenemeyen enerji tüketiminin GSYH üzerinde anlamlı ve pozitif etkisinin olduğu tespit edilmiştir. Bucak (2022), çalışmasında küreselleşmenin ekonomik karmaşıklık üzerindeki etkisini analiz etmek amacıyla BRICS-T ülkelerine ait 1995-2018 dönemi verilerini kullanarak bir panel veri analizi gerçekleştirmiştir. Elde edilen bulgular, seriler arasında uzun dönemli bir eşbütünleşme ilişkisinin mevcut olduğunu göstermektedir. Emek ve Polat (2022), 1990-2018 döneminde 15 yükselen piyasa ekonomisini kapsayan çalışmalarında enerji tüketimi, küreselleşme ve ekonomik büyüme arasındaki nedensellik ilişkisini analiz etmiştir. Modelde ekonomik büyüme göstergesi olarak kişi başına reel GSYH, küreselleşme düzeyini temsilen ekonomik, sosyal ve siyasal küreselleşme endeksleri ile toplam sabit sermaye ve işgücü değişkenleri kullanılmıştır. Dumitrescu ve Hurlin nedensellik testi sonuçlarına göre, yenilenebilir ve yenilenemez enerji tüketimi ile ekonomik büyüme arasında çift yönlü nedensellik ilişkisi bulunduğu belirlenmiştir. Zhang vd. (2023), 1975–2020 döneminde altı Asya yükselen ekonomisinde yenilenebilir enerji tüketimi ile ekonomik büyüme arasındaki ilişki üzerinde sosyal, ekonomik ve politik küreselleşmenin etkilerini incelemiştir. Çalışmada CS-ARDL yöntemi kullanılmış ve yenilenebilir enerji tüketiminin uzun dönemde ekonomik büyümeyi önemli ölçüde artırdığı tespit edilmiştir. Bulgulara göre, ekonomik ve politik küreselleşme büyümeyi sınırlarken, sosyal küreselleşme büyümeyi desteklemektedir. Chen vd. (2025), 1990–2022 döneminde G7 ülkelerinde yenilenebilir enerji tüketimi, Ar-Ge harcamaları, küreselleşme, enerji yoğunluğu ve GSYİH arasındaki ilişkiyi CO_2 emisyonları bağlamında incelemiştir. Moment Quantile Regression (MMQR) yöntemi kullanılarak yürütülen çalışma, yenilenebilir enerji yatırımlarının çevresel sürdürülebilirlikteki belirleyici rolünü ve küreselleşmenin çevresel etkilerinin dikkatle yönetilmesi gerektiğini ortaya koymuştur.

2.VERİ SETİ VE YÖNTEM

Bu çalışmada, 1992–2022 dönemi için 16 İslam İşbirliği Teşkilatı (İİT) üyesi ülkeye ait yıllık veriler kullanılarak, kişi başına düşen birincil enerji tüketimi ile ekonomik büyüme arasındaki ilişkinin yanı sıra küreselleşme ile olan nedensellik ilişkisi incelenmiştir. Ülkelerin seçilme nedeni ve verilerin 1992 yılından itibaren başlatılmasının sebebi, ilgili göstergelere ait verilerin bu yıldan itibaren düzenli olarak mevcut olmasıdır. Tahmin edilen modelde ekonomik büyüme bağımlı değişken olarak kullanılmıştır. Ekonomik büyüme değişkeni (lnGSYİH), Dünya Bankası verilerinden; kişi başına düşen birincil enerji tüketimi (lnET) ise gigajoule cinsinden Enerji Enstitüsü istatistiklerinden elde edilmiştir. Küreselleşme değişkenleri, ticaret, politik ve kültürel boyutları kapsayan (de facto) genel küreselleşme endeksi olarak alınmış ve veriler KOF Küreselleşme Endeksi'nden temin edilmiştir. Tablo 1, çalışmada kullanılan tüm değişkenlere ait tanımları, ölçüm birimlerini ve veri kaynaklarını kapsamaktadır.

Tablo 1: Değişkenlere Dair Bilgiler

Değişkenler	Kod	Açıklama	Kaynak
Kişı Başı Gayri Safi Yurtiçi Hasıla	GSYİH	Kişi başına GSYİH (2015 sabit ABD doları)	Dünya Bankası (WB, 2024)
Kişi Başı Birincil Enerji Tüketimi	ET	Kişi Başı Gigajoule	Enerji Enstitüsü (EI, 2024)
Küreselleşme	Ticaret Politik Kültürel	Ticaret, Politik ve Kültürel içeren fiilî (de facto) Küreselleşme Endeksi	KOF Küreselleşme Endeksi (2024)

Kaynak: Yazarlar tarafından hazırlanılmıştır.

Tahmin süreci birden fazla aşamadan oluşmaktadır. İlk olarak, elde edilen veriler tutarlılığı sağlamak ve yorumlanabilirliği artırmak amacıyla doğal logaritmik forma dönüştürülmüştür. Daha sonra, panel testlerine geçmeden önce veri setinin temel özelliklerini özetlemek ve genel bir görünüm sunmak için betimleyici istatistiklerden yararlanılmıştır. Model ise aşağıdaki yapıya göre oluşturulmuştur.

$$lnGSY\dot{I}H_{it} = \beta_0 + \beta_1 lnET_{it} + \beta_2 Ticaret_{it} + \beta_3 Politik_{it} + \beta_4 Kültürel_{it} + \varepsilon_{it} \quad (1)$$

Burada; $\beta_0 \dots \dots \beta_1$ değişkenlerin katsayılarını ve ε_{it} ise hata terimini göstermektedir.

Tablo 2, tanımlayıcı istatistiklerin sonuçlarını göstermektedir. Aşağıdaki sonuçlara göre, enerji tüketimi ve politik, ticaret küreselleşme değişkenlerinin basıklığı sola doğru eğrilik gösterirken, diğer değişkenler için sağa doğru eğrilik göstermektedir. Ayrıca, Jarque-Bera testine göre, serilerin normal dağılım izlemediği de söylenebilir.

Tablo 2: Tanımlayıcı İstatistikler

	ln*GSYİH*	ln*ET*	*Ticaret*	*Politik*	*Kültür*
Ortalama	8.470600	4.096769	61.99187	61.99187	40.10065
Medyan	8.381517	4.091316	71.51163	71.51163	34.84404
Maksimum	10.62469	6.287932	89.05492	89.05492	90.66092
Minimum	6.209337	0.921946	3.671467	3.671467	1.129125
Stand. Sapma	1.014435	1.150555	22.17782	22.17782	23.81217
Çarpıklık	0.221920	-0.327267	-0.615691	-0.615691	0.466525
Basıklık	2.415862	2.622906	2.156312	2.156312	2.072520
Jarque–Bera	11.12304	11.79268	46.04764	46.04764	35.76986
Olasılık	0.003843	0.002749	0.000035	0.000000	0.000000
Toplam	4201.417	2031.997	0.000000	30747.97	19889.92
Kare Toplamı	509.3935	655.2690	30747.97	243468.5	280674.6
Gözlem Sayısı	496	496	496	496	496

Kaynak: Yazarlar tarafından hazırlanılmıştır. * %1, ** %5, *** %10 anlamına gelmektedir.

Bağımlı ve bağımsız değişkenler arasındaki doğrusal ilişkinin derecesi ve yönü, Tablo 3'te Korelasyon Analizi ile incelenmiştir.

Tablo 3: Korelasyon Analizi

Değiskenler	**ln*GSYİH***	**ln*ET***	***Ticaret***	***Politik***	***Kültür***
ln*GSYİH*	1.0000				
ln*ET*	0.8859	1.0000			
Ticaret	0.4586	0.4936	1.0000		
Politik	-0.2145	-0.4758	-0.2574	1.0000	

Kültür	0.7398	0.5621	0.5387	0.2179	1.0000

Kaynak: Yazarlar tarafından hazırlanılmıştır. * %1, ** %5, *** %10 anlamına gelmektedir.

Tabloya göre, ln*GSYİH* ile ln*ET* arasında güçlü ve pozitif yönlü bir ilişkinin varlığı dikkat çekmektedir. Benzer şekilde, *Kültür* değişkeni ile ln*GSYİH* arasında da pozitif bir korelasyon tespit edilmiştir. Öte yandan, *Politik* ile ln*GSYİH* arasındaki ilişkinin zayıf ve negatif karakterde olduğu gözlemlenirken, *Ticaret* ile ln*GSYİH* arasındaki korelasyon orta düzeyde seyretmektedir.

Bağımsız değişkenlerin varyans şişirme faktörleri (VIF), çoklu doğrusallık sorununu değerlendirmek için hesaplanmıştır. VIF değerleri 10'un altında kalırken, 1/VIF değerleri 0,10'un üzerindedir. Genel olarak, Tablo 4 ayrıntılı bir bilgi sunmaktadır.

Tablo 4: VIF Testi

Değiskenler	**VIF**	**1/VIF**
ln*ET*	3.28	0.304658
Ticaret	1.80	0.555960
Politik	2.75	0.363373
Kültür	3.58	0.279163
Ortalama VIF	2.85	

Kaynak: Yazarlar tarafından hazırlanılmıştır. * %1, ** %5, *** %10 anlamına gelmektedir.

3.BULGULAR

Bu bölümde analizlerin teorik açıklamalarına, analizlerin tahmini sonuçlarına ve bunların yorumları hakkında ayrıntılara yer verilmiştir. Analizler dört sıralamayı takip etmiştir: (1) Değişkenlerde yatay kesit bağımlılığının var olup olmadığı test edilmiş, (2) delta testleri kullanılarak serilerin homojen olup olmadıkları sınanmış, (3) ikinci nesil birim kök testleri (CIPS ve Im, Pesaran ve Shin) ile değişkenlerin durağanlık sınamasına bakılmış ve son olarak (4) değişkenler arasındaki nedensellik kantil testi kullanılmıştır.

3.1.Yatay Kesit Bağımlılığı

CDLM testleri, değişkenler arasındaki yatay kesit bağımlılığını tespit etmek için sıklıkla başvurulan yöntemlerdir (Kılıç vd. 2014). Potansiyel karşılıklı bağımlılıkların göz ardı edilmesi, tahmin sonuçlarında önyargı ve tutarsızlık oluşmasına neden olabileceğinden, ileri düzey ekonometrik analizlere geçmeden önce yatay kesit bağımlılığının test edilmesi büyük önem taşımaktadır. Bu çalışmada, yatay kesit bağımlılığı Breusch-Pagan (1980) CD_{Lm1} testi, Pesaran (2004) CD_{LM2}, Pesaran (2004) CD ile önyargı düzeltmeli LMadj testi (PUY, 2008) kullanılarak araştırılmıştır. Zaman boyutunun (T=31) kesit boyutundan (N=16) büyük olması nedeniyle analizde Breusch & Pagan (1980) CD testi ile PUY (2008) tarafından geliştirilen önyargı düzeltmeli LMadj testine öncelik verilmiştir. Yatay bağımlılığı belirlemek için kullanılan hipotezler şunlardır:

H_0: Yatay kesit bağımlılığı yoktur

H_1: Yatay kesit bağımlılığı vardır

Tablo 5'te sunulan sonuçlara göre, *p*-değerleri %1, %5 ve %10 anlamlılık düzeylerinin tümünde sıfır hipotezinin (yatay bağımlılık yoktur) reddedildiği ve dolayısıyla panelin ele alınan her bileşeni için yatay kesit bağımlılığının var olduğu sonucunu kesin olarak ortaya koymaktadır.

Tablo 5: Yatay Kesit Bağımlılığı

CD Testler	ln*GSYİH*	ln*ET*	*Ticaret*	*Politik*	*Kültür*	Model
CD_{Lm1} (BP, 1980)	174.253 (0.001)	154.157 (0.019)	191.893 (0.000)	339.243 (0.000)	162.365 (0.006)	213.726 (0.000)
CD_{LM2} (Pesaran, 2004)	3.502 (0.000)*	2.205 (0.014)**	4.641 (0.000)*	14.152 (0.000)*	2.735 (0.003)*	6.050 (0.000)*
CD_{LM} (Pesaran, 2004)	-0.280 (0.390)	-1.811 (0.035)**	-3.420 (0.000)*	-1.739 (0.041)**	-3.248 (0.001)	0.567 (0.285)
LM_{adj} (PUY,2008)	3.721 (0.000)*	2.161 (0.015)**	2.098 (0.018)**	1.065 (0.143)	1.700 (0.955)	0.130 (0.000)*

Kaynak: Yazarlar tarafından hazırlanılmıştır. * %1, ** %5, *** %10 anlamına gelmektedir. Sabit ve trend değerlerini gösterir.

Katsayılarının homojenliğini veya heterojenliğini tespit etmek için Pesaran ve Yamagata (2008) tarafından geliştirilen Delta testlerinin çıktıları Tablo 6'da yer almaktadır. Test sonuçlarına göre, Delta ve düzeltilmiş delta testlerinin *p*-değerlerinin 0.01'in altında olması, eğim katsayılarının homojen olduğu sıfır hipotezinin reddedildiğini ve dolayısıyla değişkenlerin heterojen özellik taşıdığını göstermektedir.

Tablo 6: Homojenlik Testi Sonuçları

Test	Test İstatistiği	Olasılık Değeri
$\hat{\Delta}$	23.412	0.000*
$\hat{\Delta}_{adj}$	25.564	0.000*

Kaynak: Yazarlar tarafından hazırlanılmıştır. p<0.1

3.1.2.Birim Kök Testi

Birim kök kavramı, serilerin durağanlığını sınamada en çok kullanılan yöntemlerden biridir. İncelenen seride birim kökün bulunup bulunmaması, serinin durağan olup olmadığının tespit edilmesini sağlar. Tahmin edilen modelin birim köklü bir süreç içermesi, elde edilen sonuçların güvenilirliğinin düşük olabileceğini göstermektedir. Bu nedenle, herhangi bir çalışmaya başlamadan önce serilere birim kök testi uygulanması gerekmektedir (Gujarati, 2012). Birinci nesil birim kök testleri, yatay kesitlerin bağımsız olduğu varsayımına dayandığından, yatay kesit bağımlılığını dikkate almamaktadır. Buna karşılık, ikinci nesil birim kök testlerinde, yatay kesit birimlerinin birbirinden bağımsız olmadığı varsayımı geçerlidir.

Bu çalışmada, değişkenlerin durağanlık durumunu incelemek amacıyla, yatay kesit bağımlılığını dikkate alan CIPS istatistikleri kullanılarak birim kök testleri uygulanmıştır. Testin hipotezleri:

H_0: Seride birim kök vardır

H_1: Seride birim kök yoktur

Tablo 7'de, yatay kesit bağımlılığını göz önünde bulunduran ikinci nesil birim kök testlerinden Pesaran (2007) tarafından geliştirilen bireysel CADF istatistiklerinin ortalamalarından hareketle hesaplanan CIPS istatistiklerinin sonuçları sunulmuştur.

Tablo 7: CIPS Panel Birim Kök Testi Sonuçları

Değişkenler	Düzey Değeri	1. Fark degerleri
ln*GSYİH*	-1.771	-3.396
ln*ET*	-2.155	-3.973
Ticaret	-3.031	-3.41

Kaynak: Yazarlar tarafından hazırlanılmıştır. * %1, ** %5, *** %10 anlamına gelmektedir.

Sabit ve trend değerlerini gösterir.

CIPS panel birim kök testi sonuçları incelendiğinde, ln*GSYİH*, ln*ET* ve *Ticaret* değişkenlerinin seviyelerinde test istatistiklerinin kritik değerlerle karşılaştırılması sonucunda H_0 hipotezi reddedilememiştir; bu durum, söz konusu serilerin düzeyde durağan olmadığını göstermektedir. Öte yandan, değişkenlerin birinci farkları alındığında, test istatistikleri anlamlılık seviyelerine göre H_0 hipotezinin reddedilmesini sağlamaktadır. Bu bulgular, incelenen tüm değişkenlerin birinci farkında durağan olduklarını ve dolayısıyla analizlerde bu fark alınmış serilerin kullanılması gerektiğini ortaya koymaktadır.

3.1.3.Im, Pesaran ve Shin Panel Birim Kök Testi

Im, Pesaran ve Shin (2003) tarafından geliştirilen panel birim kök testi, birinci kuşak panel birim kök testleri arasında yer almakta olup birimlere özgü otokorelasyon katsayılarının kullanılmasına olanak tanımaktadır. Bu testte, tüm panel için ortak bir otokorelasyon katsayısı varsaymak yerine, her bir birim için ayrı katsayıların dikkate alınması esas alınmıştır. Bu nedenle IPS testi, Levin ve Lin (1993) testinin homojenlik varsayımını ortadan kaldırarak birimler arasındaki dinamik heterojenliği kabul eder. Yatay kesit bağımlılığı bulunmayan durumlarda geçerli olan IPS panel birim kök testi bu çalışmada ilgili değişkenlere uygulanmış ve sonuçlar Tablo 8'de sunulmuştur.

Tablo 8: Im, Pesaran ve Shin Panel Birim Kök Testi Sonuçları

Değişkenler	**Düzey Değeri**	**1. Fark Değeri**
Kültür	-2.47962 (0.0066)	-
Politik	-0.27185 (0.3929)	-11.8962 (0.000)

Kaynak: Yazarlar tarafından hazırlanılmıştır. * %1, ** %5, *** %10 anlamına gelmektedir. Sabit ve trend değerlerini gösterir.

Im, Pesaran ve Shin (2003) panel birim kök testi sonuçlarına göre, *Kültür* değişkeninin W-istatistik değeri ve buna ilişkin p-değeri %1 anlamlılık düzeyinde dahi temel hipotezin reddine yol açarak değişkenin seviyesinde durağan (I(0)) olduğunu göstermektedir. Buna karşın, lnPolitik değişkeni için

elde edilen p-değeri %5 anlamlılık düzeyinin üzerinde olduğu için temel hipotez reddedilememiş ve değişkenin birim kök içerdiği tespit edilmiştir. Ancak, *Politik* değişkeninin birinci farkının test edilmesi sonucunda elde edilen p-değeri ile birim kök hipotezi reddedilmiş ve değişkenin birinci dereceden entegre (I(1)) olduğu sonucuna ulaşılmıştır.

3.1.4.Panel Konya Nedensellik

Çalışmada, Konya (2006) tarafından geliştirilen Panel Bootstrap Nedensellik Testi kullanılmıştır. Bu test yöntemi çeşitli önemli avantajlara sahiptir. İlk olarak, birim kök ve eşbütünleşme testlerinin uygulanmasını zorunlu kılmaması nedeniyle, değişkenlerin düzey değerleri analizde doğrudan kullanılabilmektedir. İkinci olarak, yöntem ülkeler arasındaki eşanlı korelasyonu dikkate alarak panel veri setindeki bilgi miktarını artırmaktadır. Bu yönüyle, her bir ülke özelinde değişkenler arasındaki tek yönlü, çift yönlü veya ilişkisiz Granger nedensellik yapısını ortaya koyabilmektedir (Mutascu, 2015).

Konya (2006) tarafından geliştirilen nedensellik testi, hem yatay kesit bağımlılığını hem de heterojenliği dikkate alması bakımından önemli bir yöntemdir. Konya'nın yaklaşımında, yatay kesit bağımlılığının varlığı halinde denklemler Seemingly Unrelated Regressions (SUR) yöntemi temel alınarak tahmin edilmektedir. Nedensellik ilişkisinin yönünü belirlemek amacıyla ise Wald test istatistiği kullanılarak elde edilen bootstrap kritik değerlerinden yararlanılmaktadır.

Bootstrap panel Granger nedensellik yaklaşımında Kónya (2006), analiz kapsamındaki değişkenler arasındaki ilişkileri değerlendirmek amacıyla ikili denklem setlerinden oluşan bir sistem tanımlamaktadır.

$$y_{1,t} = \alpha_{1,1} + \sum_{i=1}^{mly_1} B_{1,1,i}\, y_{1,t-1} + \sum_{i=1}^{mlx_1} y_{1,1,y}\, x_{1,t-1} + \varepsilon_{1,1,t}$$

$$y_{2,t} = \alpha_{1,2} + \sum_{i=1}^{mly_1} B_{1,2,i}\, y_{2,t-1} + \sum_{i=1}^{mlx_1} y_{1,2,y}\, x_{2,t-1} + \varepsilon_{1,2,t} \qquad (2)$$

$$y_{N,t} = \alpha_{1,N} + \sum_{i=1}^{mly_1} B_{1,N,i}\, y_{N,t-1} + \sum_{i=1}^{mlx_1} y_{1,N,y}\, x_{N,t-1} + \varepsilon_{1,N,t}$$

$$ve$$

$$y_{1,t} = \alpha_{2,1} + \sum_{i=1}^{mly_2} B_{2,1,i}\, y_{1,t-1} + \sum_{i=1}^{mlx_2} y_{2,1,y}\, x_{2,t-1} + \varepsilon_{2,1,t}$$

$$y_{2,t} = \alpha_{2,2} + \sum_{i=1}^{mly_2} B_{2,2,i}\, y_{2,t-1} + \sum_{i=1}^{mlx_2} y_{2,2,y}\, x_{2,t-1} + \varepsilon_{2,2,t} \qquad (3)$$

$$y_{N,t} = \alpha_{2,N} + \sum_{i=1}^{mly_2} B_{2,N,i}\, y_{N,t-1} + \sum_{i=1}^{mlx_2} y_{2,N,y}\, x_{N,t-1} + \varepsilon_{2,N,t}$$

Denklemlerde i ülkeleri (i = 1, 2, …, N), t zamanı (t = 1, 2, …, T) ve gecikme uzunluğunu ifade etmektedir. Nedensellik analizinin sonuçları gecikme uzunluğuna duyarlı olduğundan, uygun gecikme sayısının belirlenmesi kritik öneme sahiptir. Hem aşırı düşük hem de aşırı yüksek gecikme uzunlukları çeşitli sorunlara yol açabilmektedir. Gecikme sayısının çok düşük seçilmesi, modelde yer alması gereken önemli değişkenlerin dışlanmasına ve buna bağlı olarak spesifikasyon hatasına neden olur; bu durum regresyon katsayılarının yanlılaşmasına ve elde edilen sonuçların güvenilirliğinin azalmasına yol açar. Buna karşılık, gecikme sayısının gereğinden fazla belirlenmesi ise gözlem kaybına, modelin aşırı tanımlanmasına ve sonuç olarak tahmin edilen katsayıların standart hatalarının yükselmesine sebep olarak bulguların doğruluğunu zayıflatmaktadır (Konya, 2006).

Tablo 9: Enerji Tüketimden Ekonomik Büyümeye Doğru Nedensellik Testi

Ülkeler	t-istatistiği	p-değeri	%1	%5	%10

Türkiye	0.946	0.606	27.711	15.200	10.208
Azerbaycan	3.016	0.469	34.889	20.596	15.348
Kazakistan	0.026	0.933	22.364	11.932	8.364
İran	9.034	0.036**	13.352	7.55	5.395
Irak	2.168	0.4	19.487	11.591	8.081
Kuveyt	17.15	0.006*	15.165	9.306	6.435
Umman	0.417	0.676	18.044	10.218	6.802
Suudi Arabistan	0.646	0.841	54.778	34.009	25.37
Cezayir	0.037	0.928	34.37	21.236	14.711
Mısır	0.574	0.599	18.624	8.724	5.966
Fas	0.004	0.973	23.126	14.342	9.941
Bangladeş	1.462	0.51	27.451	13.988	9.685
Endonezya	0.351	0.722	19.673	10.721	7.586
Malezya	0.311	0.789	28.743	16.17	11.268
Pakistan	0.031	0.919	18.303	10.512	7.539
Turkmenistan	3.949	0.285	26.016	14.584	9.733

Kaynak: Yazarlar tarafından hazırlanılmıştır. * %1, ** %5, *** %10 anlamına gelmektedir. 2000 boostrap ile hesaplanmıştır.

Tablo 9'da enerji tüketiminden ekonomik büyümeye doğru nedenselliği test eden sonuçlar yer almaktadır. Sonuçlara gore, İran ve Kuveyt'te enerji tüketiminden ekonomik büyümeye doğru bir nedensellik ilişkisi bulunurken diğer ülkelerde böyle bir ilişkinin olmadığı görülmektedir. Her iki ülkede de enerji tüketiminin büyüme üzerine önemli olduğunu göstermektedir.

Tablo:10 Ekonomik Büyümeden Enerji Tüketimine Doğru Nedensellik İlişkisi

Ülkeler	**t-istatistiği**	**p-değeri**	**%1**	**%5**	**%10**
Türkiye	1.325	0.629	41.344	22.502	15.257
Azerbaycan	1.392	0.55	36.778	19.355	13.31
Kazakistan	2.157	0.933	128.674	78.734	61.871
İran	0.428	0.768	39.643	21.494	14.232
Irak	1.156	0.613	33.791	18.247	12.938
Kuveyt	0.548	0.754	35.864	20.295	13.382
Umman	1.27	0.789	76.804	45.431	32.042
Suudi Arabistan	14.29	0.106***	42.401	22.171	15.098

Cezayir	0.21	0.893	40.232	19.746	14.686
Mısır	0.134	0.844	32.102	13.513	8.468
Fas	15.17	0.088***	39.609	21.047	14.174
Bangladeş	5.203	0.366	55.654	29.545	19.496
Endonezya	2.745	0.724	91.832	57.796	43.196
Malezya	3.041	0.434	39.73	21.756	14.261
Pakistan	0.193	0.83	39.99	20.363	13.543
Türkmenistan	12.178	0.077***	31.165	15.648	10.512

Kaynak: Yazarlar tarafından hazırlanmıştır. * %1, ** %5, *** %10 anlamına gelmektedir. 2000 boostrap ile hesaplanmıştır.

Ekonomik büyümeden enerji tüketimine doğru baktığımızda ise Suudi Arabistan, Fas ve Türkmenistan'da bir nedensellik ilişkisinin olduğu, diğer ülkelerde böyle bir ilişkinin yer almadığı görülmektedir. Bu kapsamda bahsedilen ülkelerde ekonominin büyümesine bağlı olarak enerji tüketiminin arttığı Tablo 9'da yer almaktadır.

Tablo:11 Ticari Küreselleşmeden Ekonomik Büyümeye Doğru Nedensellik İlişkisi

Ülkeler	t-istatistiği	p-değeri	%1	%5	%10
Türkiye	0.261	0.901	41.886	22.8	17.492
Azerbaycan	0.8	0.419	10.949	5.809	3.837
Kazakistan	81.054	0.006*	73.01	52.846	43.583
İran	6.712	0.026**	9.211	5.091	3.385
Irak	8.324	0.236	28.257	18.328	13.973
Kuveyt	8.158	0.343	33.933	21.312	16.52
Umman	0.076	0.875	19.831	11.608	8.224
Suudi Arabistan	4.137	0.087***	10.708	5.508	3.825
Cezayir	13.361	0.717	62.254	45.587	37.492
Mısır	17.506	0.001*	12.073	6.391	4.639
Fas	10.584	0.587	56.682	37.022	28.817
Bangladeş	13.17	0.129	26.17	17.692	14.455
Endonezya	15.852	0.831	128.378	90.99	77.282
Malezya	7.000	0.042**	12.491	6.31	4.091
Pakistan	1.126	0.295	7.448	4.118	2.992
Türkmenistan	0.246	0.888	19.213	12.854	9.815

Kaynak: Yazarlar tarafından hazırlanmıştır. * %1, ** %5, *** %10 anlamına gelmektedir

Yukarıdaki Tablo 11'e göre Kazakistan, İran, Suudi Arabistan, Mısır ve Malezya'da ticari küreselleşme ile ekonomik büyüme arasında bir nedensellik ilişkisinin olduğu belirtilebilmektedir.

Tablo 12: Politik Küreselleşmeden Ekonomik Büyümeye Doğru Nedensellik İlişkisi

Ülkeler	t-istatistiği	p-değeri	%1	%5	%10
Türkiye	5.378	0.262	26.083	14.675	10.706
Azerbaycan	0.025	0.928	16.532	9.78	6.964
Kazakistan	8.389	0.300	43.829	24.884	18.244
İran	5.125	0.969	80.523	57.629	49.087
Irak	0.036	0.942	17.592	10.471	8.1
Kuveyt	0.835	0.546	20.615	10.829	7.253
Umman	5.408	0.304	13.374	10.052	8.375
Suudi Arabistan	1.628	0.724	41.366	24.453	18.158
Cezayir	12.602	0.148	51.978	27.887	18.357
Mısır	11.215	0.133	24.108	15.423	12.386
Fas	9.742	0.019**	12.06	6.871	5.133
Bangladeş	15.397	0.081***	32.515	18.117	14.061
Endonezya	58.538	0.209	129.073	90.555	74.028
Malezya	8.904	0.806	54.546	36.634	29.704
Pakistan	0.45	0.5	7.445	3.986	2.84
Türkmenistan	28.593	0.003*	22.783	14.93	12.086

Kaynak: Yazarlar tarafından hazırlanılmıştır. * %1, ** %5, *** %10 anlamına gelmektedir. 2000 boostrap ile hesaplanmıştır.

Tablo 12'de verilen politik küreselleşmeden büyümeye doğru nedensellik testine gore Fas ve Bangladeş ve Türkmenistan'da böyle bir nedensellik ilişkisinin olduğu görülmektedir.

Tablo:13 Kültürel Küreselleşmeden Ekonomik Büyümeye Doğru Nedensellik İlişkisi

Ülkeler	t-istatistiği	p-değeri	%1	%5	%10
Türkiye	0.219	0.982	27.727	18.438	14.733
Azerbaycan	42.504	0.041**	53.72	41.021	35.15
Kazakistan	0.442	0.988	56.656	38.773	30.81
İran	6.946	0.144	20.942	11.425	8.45

Irak	4.852	0.382	20.519	13.41	10.322
Kuveyt	36.895	0.000*	13.289	8.473	6.67
Umman	2.292	0.103***	6.572	3.204	2.324
Suudi Arabistan	5.835	0.036**	8.617	5.089	3.623
Cezayir	5.38	0.753	46.257	30.591	24.232
Mısır	0.233	0.713	10.007	6.251	4.45
Fas	0.428	0.672	13.161	7.23	5.15
Bangladeş	4.075	0.516	42.69	24.114	16.919
Endonezya	0.416	8.898	43.237	25.875	16.718
Malezya	0.647	0.886	45.459	27.387	19.255
Pakistan	0.103	0.748	6.303	3.826	2.794
Türkmenistan	6.392	0.208	18.814	11.526	9.11

Kaynak: Yazarlar tarafından hazırlanılmıştır. * %1, ** %5, *** %10 anlamına gelmektedir. 2000 boostrap ile hesaplanmıştır.

Tablo 13'te kültürel küreselleşmeden ekonomik büyümeye doğru nedensellik ilişkisine baktığımızda ise Azerbaycan, Kuveyt, Suudi Arabistan ve Umman'da böyle bir ilişkinin var olduğu söylenebilmektedir.

Tablo 14 : Enerji Tüketiminden Ticari Küreselleşmeye Doğru Nedensellik İlişkisi

Ülkeler	**t-istatistiği**	**p-değeri**	**%1**	**%5**	**%10**
Türkiye	2.547	0.279	16.9	8.882	5.839
Azerbaycan	2.004	0.454	23.458	13.878	9.544
Kazakistan	1.773	0.52	29.703	16.426	11.213
İran	0.684	0.538	14.7	7.755	5.71
Irak	1.696	0.522	23.053	13.109	9.722
Kuveyt	0.688	0.559	12.208	7.014	4.664
Umman	4.501	0.442	35.805	23.801	16.872
Suudi Arabistan	3.555	0.388	31.001	18.462	12.987
Cezayir	0.002	0.983	18.091	10.223	7.259
Mısır	1.231	0.811	57.275	29.98	22.876
Fas	0.789	0.679	24.757	14.671	10.709
Bangladeş	0.016	0.933	16.327	8.89	6.402
Endonezya	3.129	0.192	13.392	7.28	5.225

Malezya	0.281	0.809	24.273	14.491	10.751
Pakistan	0.012	0.945	12.331	8.093	5.866
Turkmenistan	7.636	0.162	30.392	17.058	11.11

Kaynak:Yazarlar tarafından hazırlanılmıştır. * %1, ** %5, *** %10 anlamına gelmektedir. 2000 boostrap ile hesaplanmıştır.

Yukarıdaki Tablo 14'de görüldüğü üzere enerji tüketiminden ticari küreselleşmeye doğru bir nedensellik ilişkisinin olmadığı görülmektedir.

Tablo 15: Ticari Küreselleşmeden Enerji Tüketimine Doğru Nedensellik İlişkisi

Ülkeler	**t-istatistiği**	**p-değeri**	**%1**	**%5**	**%10**
Türkiye	1.197	0.707	54.934	31.747	21.292
Azerbaycan	1.019	0.635	36.827	19.664	12.711
Kazakistan	13.172	0.094***	31.754	17.867	12.776
İran	2.989	0.424	45.845	22.068	13.681
Irak	3.025	0.469	47.999	24.927	17.149
Kuveyt	0.455	0.757	46.208	23.023	15.033
Umman	0.198	0.913	79.233	54.243	39.114
Suudi Arabistan	13.984	0.155	46.257	27.378	19.528
Cezayir	1.215	0.484	20.323	10.263	6.724
Mısır	2.655	0.332	25.512	12.212	8.088
Fas	3.826	0.605	71.231	42.283	32.255
Bangladeş	0.238	0.81	35.94	19.56	13.083
Endonezya	0.599	0.848	84.477	48.193	36.726
Malezya	0.037	0.911	28.258	14.053	9.369
Pakistan	0.318	0.773	34.429	19.027	12.027
Türkmenistan	0.702	0.708	40.417	19.623	13.555

Kaynak:Yazarlar tarafından hazırlanılmıştır. * %1, ** %5, *** %10 anlamına gelmektedir.

Yukarıdaki Tablo 15'de görüldüğü üzere Ticari Küreselleşmeden Enerji tüketimine doğru sadece Kazakistan açısından bir nedensellik ilişkisi olduğu belirtilirken, politik küreselleşmeden enerji tüketimine doğru nedensellik ilişkisi Kuveyt'te görülmektedir.

Tablo 16: Politik Küreselleşmeden Enerji Tüketimine Doğru Nedensellik Testi

Ülkeler	**t-istatistiği**	**p-değeri**	**%1**	**%5**	**%10**
Türkiye	0.982	0.681	42.983	23.877	16.47

Azerbaycan	1.547	0.573	68.14	25.182	17.428
Kazakistan	0.344	0.793	48.114	23.561	15.346
İran	1.479	0.546	35.877	21.571	14.089
Irak	0.035	0.932	37.823	20.649	13.744
Kuveyt	13.03	0.073***	28.307	15.584	10.853
Umman	1.01	0.720	64.239	36.148	23.419
Suudi Arabistan	8.371	0.377	104.548	40.547	26.584
Cezayir	0.026	0.933	26.104	13.799	8.972
Mısır	0.75	0.747	37.883	22.846	16.171
Fas	1.592	0.681	61.471	33.864	23.838
Bangladeş	3.214	0.397	34.515	18.03	12.395
Endonezya	2.632	0.582	63.818	37.105	25.367
Malezya	1.055	0.688	43.91	24.094	16.976
Pakistan	7.823	0.143	28.742	14.579	10.019
Turkmenistan	6.24	0.213	28.673	15.707	10.731

Kaynak:Yazarlar tarafından hazırlanılmıştır. * %1, ** %5, *** %10 anlamına gelmektedir. 2000 boostrap ile hesaplanmıştır.

Tablo 16'da, politik küreselleşmeden enerji tüketimine yönelik nedensellik analizinin bulguları sunulmaktadır. Elde edilen sonuçlar, Kuveyt'te politik küreselleşmenin enerji tüketimini istatistiksel olarak anlamlı biçimde etkilediğini göstermektedir. Buna karşılık, Tablo 17'de yer alan ticaret küreselleşmesinden politik küreselleşmeye doğru nedensellik analizi sonuçları incelendiğinde, Suudi Arabistan ve Mısır için bu iki değişken arasında anlamlı bir nedensellik ilişkisinin bulunduğu tespit edilmiştir.

Tablo 17: Ticaret Küreselleşmeden Politik Küreselleşmeye Doğru Nedensellik Testi

Ülkeler	**t-istatistiği**	**p-değeri**	**%1**	**%5**	**%10**
Türkiye	5.371	0.806	68.602	44.173	34.31
Azerbaycan	1.643	0.389	12.574	7.705	5.268
Kazakistan	0.089	0.756	5.909	3.557	2.515
İran	0.000	1.000	15.564	8.746	5.905
Irak	1.558	0.665	38.795	19.569	13.52
Kuveyt	43.838	0.201	107.038	69.776	56.556
Umman	0.674	0.351	5.95	3.24	2.393
Suudi Arabistan	96.843	0.001*	63.791	40.433	28.957

Cezayir	3.316	0.322	23.166	12.121	8.595
Mısır	4.112	0.094***	10.507	6.065	3.96
Fas	2.161	0.643	33.383	20.838	14.958
Bangladeş	0.483	0.673	26.3	13.491	8.982
Endonezya	1.096	0.954	60.971	35.846	28.118
Malezya	0.204	0.685	8.262	5.227	3.618
Pakistan	0.247	0.676	12.477	6.776	4.654
Türkmenistan	1.206	0.798	26.906	17.995	13.651

Kaynak:Yazarlar tarafından hazırlanılmıştır. * %1, ** %5, *** %10 anlamına gelmektedir. 2000 boostrap ile hesaplanmıştır.

SONUÇ

Enerji, ülkelerin ekonomik gelişimlerini sağlamaları açısından önemli üretim faktörlerinden birisi olarak karşımıza çıkmaktadır. Artan tüketime bağlı olarak üretim faaliyetleri hız kazanmakta ve toplumların refah düzeyi yükselmektedir. Küreselleşme ile ülkelerin dış ticaret faaliyetlerin artması enerji sektörüne olan talebin yoğunlaşmasına yol açmaktadır. Bu çerçeve de enerji ve ekonomik büyüme arasında pek çok çalışmanın yapıldığı söylenebilir. Aynı zamanda ekonomik büyüme açısından toplumlar arasındaki politik, ekonomik ve kültürel etkileşimlerde etkili olabilmektedir. Bizim çalışmamızda enerji tüketimi ile ekonomik büyüme arasındaki ilişkinin yanı sıra politik, ekonomik ve kültürel unsurların da büyüme üzerindeki etkisi değerlendirilmeye çalışılmıştır.

Bu çalışmada, veri mevcudiyeti dikkate alınarak seçilen 16 İİT üyesi ülke için 1992-2022 döneminde kişi başına birincil enerji tüketimi ile ekonomik büyüme arasındaki ilişki, küreselleşme boyutları da göz önünde bulundurularak incelenmiştir. Analizde, yatay kesit bağımlılığını dikkate alan birim kök testleri yapılmıştır. Yatay kesit bağımlılığına bağlı olarak eğim katsayılarının heterojen olması nedeniyle Konya (2006) panel nedensellik testi uygulanmıştır.

Çalışmada elde edilen bulgulara göre enerji tüketiminden ekonomik büyümeye doğru İran ve Kuveyt ekonomik büyümeden enerji tüketimine doğru ise Fas, Suudi Arabistan ve Türkmenistan açısından bir nedensellik ilişkisinin olduğu görülmektedir. Dolayısıyla İran ve Kuveyt için ekonomik aktiviteleri gerçekleşebilmesi için enerji önemli bir girdi olarak karşımıza çıkarken, ekonomideki gelişmenin sonucuna bağlı olarak Fas, Suudi Arabistan ve Türkmenistan'da enerji ihtiyacı önem arz etmektedir. Ticari küreselleşmeden ekonomik büyümeye doğru Kazakistan, Suudi Arabistan, İran, Mısır ve Malezya'da bir nedensellik ilişkisi ortaya çıkarken, Fas, Bangladeş'te politik küreselleşmenin, Azerbaycan, Kuveyt, Umman ve Suudi Arabistan'da kültürel küreselleşmenin ekonomik büyüme üzerinde etkili olduğu söylenebilir. Bir anlamda farklı uluslararası firmaların bu ülkelerde yer alması ile beraber ticari faaliyetlerin artmaya başladığı ve böylelikle bu ülkelerde ticaret hacminin hız kazandığı vurgulanabilmektedir. Ticari faaliyetlerin etkilerie bağlı olarak da Suudi Arabistan ve Mısır'ın uluslararası alanda daha fazla organizasyona ve anlaşmaya yöneldiği belirtilebilir. Özellikle Suudi Arbistan açısından diğer ülkelerle yapmış olduları anlaşmalar çerçevesinde ekonomik faaliyetlerin artması beraberinde ekonomik büyümeyi teşvik ettiği söylenebilir. Bu sonuçlar, Akdağ ve İskenderoğlu (2018), Emek ve Polat (2022) ile Zhang vd. (2023) tarafından yapılan çalışmaların enerji tüketiminden ekonomik büyümeye doğru anlamlı nedensellik bulgularıyla uyumlu olduğu görülmektedir.

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COST MANAGEMENT FRAMEWORK FOR RAILWAY CONSTRUCTION PROJECTS IN KAZAKHSTAN: AN INTEGRATED ANALYTIC HIERARCHY PROCESS AND REGRESSION ANALYSIS APPROACH

Nurzhan MURATBEK

Student
E-mail: nurzhan.muratbek@narxoz.kz
ORCID ID: 0000-

Asem TANZHARIKOVA

Supervisor, PhD, Assistant-professor
E-mail: asem.tanzharikova@narxoz.kz
ORCID ID: 0000-

Abstract

This research examines cost management strategies within railway construction projects in Kazakhstan through the implementation of the Analytic Hierarchy Process (AHP) combined with regression analysis to assess and prioritize critical financial and operational factors impacting project expenditures. The investigation evaluates the influence of diverse metrics including Safety Inspections, Emergency Preparedness, and Equipment Maintenance, alongside financial indicators such as Actual Cost and Variance, on cost management strategies by developing a hierarchical framework and applying AHP methodology. The findings reveal a distinct prioritization of Financial Metrics with a priority vector of 0.667 compared to Operational Metrics at 0.334. Within Financial Metrics, Actual Cost demonstrates the highest influence with a priority vector of 0.565, highlighting the critical importance of direct expenditure control. Among Operational Metrics, Emergency Preparedness emerges as most significant with a priority vector of 0.540, underscoring the necessity of robust risk management practices in Kazakhstan's challenging climate conditions. The regression analysis validates these priorities by establishing substantial correlations between these metrics and cost variations. The study demonstrates that fluctuations in Emergency Preparedness and Equipment Maintenance serve as reliable predictors of cost variations, consistent with AHP findings. The reliability of AHP assessments is confirmed through consistency ratios substantially below the 0.1 threshold (0.043 for Financial Metrics and 0.008 for Operational Metrics), indicating highly consistent expert judgments. This statistical validation strengthens the framework's utility for guiding strategic cost management decisions in Kazakhstan's railway sector Guo et al., 2020. The research discusses practical implications for minimizing financial risks and enhancing project outcomes in the context of Kazakhstan's expanding railway infrastructure development.

. **Keywords:** railway engineering in Kazakhstan; analytic hierarchy process; project management; cost control; infrastructure development; risk management, Cost accounting

1. INTRODUCTION

Within Kazakhstan's railway engineering sector, investigations into various factors affecting financial management and project execution efficiency have garnered substantial attention. Cost management approaches are profoundly influenced by organizational contexts, establishing them as a subject of considerable significance in railway construction initiatives. Multiple investigations have revealed that distinctive characteristics of organizational culture, structural dynamics, and external elements such as

market competition and regulatory frameworks substantially affect how project teams implement and perceive cost control mechanisms Guo et al., 2020.

Kazakhstan actively develops its railway infrastructure as part of the country's transit potential and the "Nurly Zhol" program. Organizational culture within Kazakh construction companies significantly impacts how personnel perceive cost management practices, frequently determining the rigor with which cost control measures are enforced. Structural components, including hierarchical organization and centralized decision-making processes characteristic of many Kazakh enterprises, negatively influence team coordination and communication, which are essential for effective cost management.

Technological advancements in railway construction, particularly in modern monitoring systems and automation, play a decisive role in reducing costs associated with railway operations in Kazakhstan's severe climatic conditions. These challenges necessitate sophisticated technical solutions for cost control throughout railway project lifecycles, as they influence not only train energy consumption and operational efficiency but also increase maintenance expenses and infrastructure deterioration Kovalenko et al., 2020.

Strategic management of financial resources through planning and budgeting represents another focal area. Expenditures related to railway infrastructure construction and maintenance in Kazakhstan can be accurately forecasted and controlled through the expanding utilization of contemporary classification systems and normative budgeting methodologies, reducing the probability of unforeseen financial hazards Kovalenko et al., 2020.

Operational innovations encompass algorithm development for regulating passenger flows at terminal stations in Kazakhstan's major cities—Astana, Almaty, and Shymkent. The integration of automatic frequency control systems with cost theory has enhanced passenger flow management, consequently improving operational planning and efficiency.

Technological progress, including augmented reality, artificial intelligence, and Internet of Things (IoT), can also transform processes and workforce dynamics within Kazakhstan's railway transport sector. Furthermore, the application of big data and IoT technologies for predictive maintenance signifies a substantial shift in maintenance methodologies. By utilizing IoT devices, railways can adopt predictive maintenance strategies that considerably reduce maintenance expenses and downtime, facilitating early identification of potential malfunctions and augmenting operational effectiveness.

Innovations in railway track lifecycle management efficiently address financial constraints and cost demands. These technologies analyze and monitor component conditions using measurement data to facilitate renewal planning and preventive maintenance. Predictive analytics can be employed to improve track lifespan and safety through more precise maintenance scheduling and cost-effective resource management.

The primary objective of this investigation is to develop effective cost management strategies for railway construction projects in Kazakhstan by evaluating and ranking key financial and operational factors. By employing the Analytic Hierarchy Process (AHP) and regression analysis, this research seeks to identify the most influential metrics, such as Actual Cost and Emergency Preparedness, and assess their impact on cost control. The objective is to provide a robust framework that can guide strategic decisions, reduce financial risks, and improve overall project outcomes in Kazakhstan's railway construction industry.

2. LITERATURE REVIEW

Research in railway project cost management demonstrates the importance of comprehensive approaches to risk assessment and resource optimization. In Kazakhstan's context, investigations focusing on railway traffic control system modernization and communication infrastructure are particularly significant.

Analysis of maintenance decision-making utilizing Markov Decision Processes has demonstrated the feasibility of constructing condition-based maintenance systems founded on rail dimensions, utilization, and deterioration patterns. The outcomes have facilitated identification of optimal action sequences leading to substantial cost reduction over extended timeframes, particularly relevant for Kazakhstan's extensive railway network Huang et al., 2021.

Bi-objective approaches for optimizing mountain railway alignment while accounting for seismic and economic concerns have shown that quantitative methods enable cost reduction and seismic risk minimization Ren et al., 2021. This holds direct relevance for southern Kazakhstan regions situated in seismically active zones.

Techno-economic assessments of integrated energy systems for electrified railway networks have emphasized environmental benefits, including 73% greenhouse gas emission reductions compared to conventional systems. Considering Kazakhstan's commitments to achieving carbon neutrality by 2060, such approaches become especially pertinent.

Deep learning model utilization for investigating train delay patterns has demonstrated higher accuracy in identifying delay propagation patterns compared to previous models. This is crucial for improving railway service punctuality in Kazakhstan Huang et al., 2021.

Development of integrated railway ballast quality indicators for improving track maintenance management systems has classified and evaluated mechanical, physical, and environmental characteristics of ballast materials based on their impact on railway infrastructure. This approach aims to optimize ballast material selection processes considering Kazakhstan's climatic features—from steppe to high-mountain regions.

Investigation of recent advancements in rail and track inspection, along with challenges facing regional lines, has discussed methods for enhancing inspection efficiency and accuracy using machine learning-based techniques, thermal imaging equipment, and ground-penetrating radar. This is especially important for Kazakhstan's extensive network of local railway lines.

Development of nonlinear integer programming models for optimizing railway network maintenance plans, combining various performance and cost variables, demonstrates an efficient approach for addressing large-scale network application problems while minimizing service impact and considering budgetary constraints.

Investigation of track constraint effects on seismic risk for multi-span simply supported beam bridges utilized in high-speed railways clarifies how tracks contribute to bridge dynamic properties. Considering Kazakhstan's plans for high-speed railway development, these investigations hold direct practical significance.

Collectively, these studies emphasize important methodological and technological developments in railway construction applicable to Kazakhstan's conditions, considering its geographical, climatic, and economic characteristics.

3. METHODS AND MATERIALS

3.1. Variables and Parameters

This investigation aims to analyze and improve cost management strategies in Kazakhstan's railway construction projects by identifying key financial and operational factors. Utilizing both AHP and regression analysis, this research seeks to evaluate these factors' impact on overall project costs.

Resilience constitutes a key component of railway construction project management in Kazakhstan, especially considering the scale and complexity of challenges these projects present. This study

integrates theoretical frameworкs with real-world applications by employing a collection of important indicators to efficiently analyze and control expenditures.

The selected variables include Safety Inspections, Emergency Preparedness, Equipment Maintenance, Budgeted Cost, Actual Cost, Variance, and Variance Percentage. These variables are essential for comprehending cost management dynamics in Kazaкhstan's demanding railway construction environment.

Safety Inspections: Measured as the proportion of scheduled safety inspections that are completed, this variable serves as a crucial indicator of regulatory compliance and attention to safety procedures. High completion rates signify proactive risк mitigation in Kazaкhstan's construction industry, potentially reducing unforeseen expenses from accidents and regulatory penalties. Conversely, lower completion rates might indicate probability of unexpected costs that could exceed the total budget.

Emergency Preparedness: The project's capability to manage emergencies is measured using a readiness level percentage. This metric assesses the preparedness of systems and personnel for unforeseen circumstances that can cause project delays or additional expenses. A robust degree of preparedness denotes efficient emergency procedures that minimize downtime and financial impact of disruptions, thereby strengthening the project's ability to withstand unforeseen costs. This is particularly relevant for Kazaкhstan with its continental climate and possible extreme weather conditions.

Equipment Maintenance: A maintenance index indicating the current condition of equipment maintenance is used to tracк this variable. Maintaining the project properly is essential for preventing malfunctions that might cause delays and cost overruns. By кeeping construction machinery and equipment in excellent operating condition, projects can remain on schedule, save money on repairs or replacements, and guard against unanticipated changes to the project budget.

Figure 1. Hierarchical structure of Financial and Operational Metrics for AHP analysis in Kazaкhstan railway project cost control.

During the study's analysis of cost management, two critical Financial Metrics are examined: Budgeted Cost and Actual Cost. Budgeted Cost refers to projected costs outlined prior to each project phase's commencement, serving as a financial roadmap for expected expenditures. In contrast, Actual Cost refers to genuine expenses incurred during project execution. Several factors may contribute to this, including labor costs, material pricing, and unforeseen expenses.

By analyzing the difference between Budgeted and Actual costs, Variance and Variance Percentage can be calculated. This provides a precise indication of financial deviation. This figure is important since it shows whether the project is spending more or less than its allocated budget. The Variance Percentage provides insight into the degree of financial overspend or underspend by presenting it as a percentage of the Budgeted Cost.

3.2. Methods

To establish a comprehensive frameworк for understanding and controlling project expenses effectively, this study utilizes quantitative techniques and equations to evaluate cost management in Kazaкhstan's railway engineering projects. In this approach, grounded theory is combined with statistical analysis to develop a hybrid model specifically suited to large construction project complexities.

A кey component of the methodology is applying cost variance analysis, a conventional economic tool used to calculate differences between planned and actual costs. Variance is computed by deducting Budgeted Cost from Actual Cost, providing a straightforward assessment of budget performance and indicating whether the project's financial health is on target or requires adjustments.

By situating Variance within the context of the planned budget, Variance Percentage further refines financial analysis. As a percentage, Variance is divided by Budgeted Cost and multiplied by 100. Besides indicating variance existence, this percentage also indicates variance magnitude compared to total budget, thereby allowing stakeholders to evaluate project financial effectiveness proportionally.

Additionally, statistical methods are used to examine trends and patterns in cost data. A snapshot of the project's financial condition can be obtained by using descriptive statistics, including mean, median, mode, and standard deviation. These statistical tools are essential for understanding primary trends and fluctuations within project financial data for accurate forecasting and budgeting.

Furthermore, regression analysis is employed to investigate correlations between various project management practices and their costs. This analysis makes it possible to identify which factors significantly impact project expenses and to what extent. This research offers predictive insights that can be used to refine cost management strategies by modeling relationships between activities such as Safety Inspections, Emergency Preparedness, and Equipment Maintenance and their financial implications.

The regression formula utilized in this investigation is as follows:

$$У = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$$

where:

- У: Actual Cost - includes all direct financial expenditures related to a project, including labor, materials, machinery, and all other direct expenses
- β_0: The intercept of the regression line, representing estimated Actual Cost when all independent variables are zero
- β_1, β_2, and β_3: Coefficients of independent variables measuring change in dependent variable for each unit change in independent variables
- X_1: Safety Inspections - measures how well safety measures and checks are implemented throughout project lifecycle
- X_2: Emergency Preparedness - readiness level percentage evaluating project's ability to respond to and manage unexpected emergencies
- X_3: Equipment Maintenance - index determining state of upkeep of project equipment, affecting operational efficiency
- ε: Error term representing residual effects on Actual Cost not explained by independent variables

3.3. Variable Descriptions

Actual Cost (У): This encompasses all direct financial expenditures related to a project, including labor, materials, machinery, and all other direct expenses. Actual Cost represents total cost incurred during project lifecycle. Monitoring and management of this variable are crucial for staying within budget and ensuring financial efficiency in Kazakhstan's railway projects.

Safety Inspections (X_1): Throughout project lifecycle, this variable measures how effectively safety measures and checks are implemented. Generally, a higher completion rate of inspections is associated with fewer accidents and regulatory complications, thereby helping control costs. Regular safety inspections ensure compliance with standards and regulations, minimizing risk of project delays and additional expenses due to safety violations in Kazakhstan's construction environment.

Emergency Preparedness (X_2): To maintain alignment with project's planned timeline and budget, comprehensive plans and resources must be ready to mitigate time and cost impacts from unexpected events. This variable measures project's readiness level for handling emergencies. Effective Emergency Preparedness can significantly reduce financial impact of unforeseen incidents by ensuring quick and efficient responses to mitigate potential disruptions, particularly important given Kazakhstan's extreme weather conditions.

Equipment Maintenance (X_3): By performing appropriate and timely maintenance on project equipment, likelihood of malfunctions and their associated costs can be reduced. This variable uses an index to determine state of upkeep of project equipment. Proper maintenance practices enhance operational efficiency and extend equipment lifespan, helping avoid costly repairs and replacements. Regular maintenance checks also contribute to overall safety and reliability of equipment used in the project.

4. RESULTS AND DISCUSSION

A detailed analysis of operational metrics and their relationships with cost variance in Kazakhstan's railway construction projects is provided in this study's graphs and statistical summaries. By analyzing variables of Safety Inspections, Emergency Preparedness, and Equipment Maintenance over a 24-month period, combined with calculations of Variance and Variance Percentage, this study provides illuminating insights into project management practices effectiveness and their financial outcomes.

Figure 2. Safety Inspections trend over time in Kazakhstan railway projects.

Figure 2 illustrates Safety Inspections trend over time. The graph shows fluctuations in percentage of completed safety inspections, indicating varying compliance rates throughout project lifecycle. There are dips in compliance rates, particularly in latter months, which may be due to lapses in safety protocols or logistical issues affecting inspection scheduling. These dips correlate with increased unforeseen expenses due to accidents or regulatory fines in Kazakhstan's construction sector.

Figure 3. Emergency Preparedness levels over time in Kazakhstan railway projects.

Figure 3 depicts Emergency Preparedness levels over time. The graph highlights dramatic peaks and troughs in readiness levels, reflecting project's response to recent incidents or audits. Inconsistencies in readiness can expose project to financial risks, leading to possible emergency expenditures. A proactive approach to emergency management is essential to mitigate these risks, especially in Kazakhstan's challenging climate.

Figure 4. Equipment Maintenance Index trend over time in Kazakhstan railway projects.

Figure 4 shows Equipment Maintenance Index over time. The cyclic pattern of significant variations may reflect timing of maintenance activities. Performance reviews or equipment failures exacerbate these issues, leading to higher operational downtime and increased costs. Regular and timely maintenance is crucial to prevent substantial financial burdens and ensure operational efficiency in Kazakhstan's railway construction environment.

There are significant ramifications of these fluctuations on project costs. Lower rates of inspection completion during certain periods may be correlated with increase in unforeseen expenses, potentially stemming from accidents or regulatory fines as result of non-compliance with safety standards. During Emergency Preparedness evaluation, dramatic peaks and troughs in readiness levels indicate reactive approach to emergency management. Whenever unforeseen crises occur while project is ill-prepared,

such inconsistencies in readiness could expose project to financial risк, leading to possible emergency expenditures.

Based on statistical analysis, mean variance for costs across project timeline was 237.78, with substantial standard deviation of 326.09, indicating wide range in costs. While some months may closely align with budget expectations, other months may experience significant overruns. Variance Percentage averages 6.67% with standard deviation of 9.67%, highlighting unpredictability and potential risкs of cost escalation in Kazaкhstan's railway projects.

Findings of this study have significant implications for improving construction cost management in Kazaкhstan's railway industry. Relationship between operational metrics and cost variances suggests that more consistent and proactive approach to management practices such as safety inspections and emergency preparedness could help mitigate financial unpredictability. Specifically, enhancing regularity and thoroughness of safety inspections could not only lower compliance-related costs but also prevent costly delays and accidents. Similarly, maintaining higher and more consistent level of emergency preparedness could protect project from sudden financial strains due to unexpected crises.

4.1. Prioritizing Variables with AHP

A comprehensive approach is utilized to systematically ranк various operational and economic indicators via AHP in study of expenditure management in Kazaкhstan's railway engineering projects. Using this technique, tiered frameworк of criteria and sub-criteria are established, pairwise evaluations are conducted, and priority vectors are calculated to determine relative importance of each factor affecting project expenses.

Figure 5. The AHP method's structure for Kazaкhstan railway project analysis.

For AHP implementation, pairwise comparison matrices must be created for each main criteria and sub-criteria. On scale of 1 to 9, these matrices are derived based on subjective evaluations of each element's relative importance. Cost control is main objective at top of hierarchy, divided into two primary categories: Financial Metrics and Operational Metrics.

Table 1. Variables and sub-variables for AHP analysis in Kazaкhstan railway projects.

Main Criteria	Sub-Criteria	Description
Financial Metrics	Budgeted Cost	Projected costs outlined prior to project phase commencement
	Actual Cost	Genuine expenditure incurred during project execution
	Variance	Difference between budgeted and actual costs
	Variance Percentage	Standardized measure of financial performance

Main Criteria	Sub-Criteria	Description
Operational Metrics	Safety Inspections	Adherence to safety standards to prevent cost overruns
	Emergency Preparedness	Ability to cope with unexpected incidents
	Equipment Maintenance	Condition of project machinery and equipment

Budgeted Cost, Actual Cost, Variance, and Variance Percentage are sub-criteria under Financial Metrics. Each of these aspects of financial management within project is unique in Kazakhstan's context. Budgeted Cost sets standard for comparing actual expenses at various project stages. Actual Cost provides concrete basis for financial analysis as genuine expenditure incurred. Variance provides direct measure of budget fidelity, indicating discrepancy between budgeted and actual costs. Variance Percentage examines this disparity in relation to budgeted costs as standardized measure of financial performance.

Operational Metrics address aspects that indirectly affect financial results while maintaining project efficiency and safety. Safety Inspections gauge adherence to safety standards to prevent cost overruns due to accidents or compliance penalties. Emergency Preparedness evaluation involves assessing ability to cope with unexpected incidents, which can have financial repercussions if not handled properly. Equipment Maintenance evaluation is important in terms of operational efficiency and expenses, as inadequate maintenance can result in costly delays and failures.

Table 2. Results of AHP for Kazakhstan railway project cost control.

Criteria Level	Priority Vector	Consistency Ratio
Financial Metrics	0.667	0.0
Operational Metrics	0.333	
Financial Metrics Sub-Criteria		
Actual Cost	0.565	0.043
Budgeted Cost	0.262	
Variance Percentage	0.117	
Variance	0.055	

Criteria Level	Priority Vector	Consistency Ratio
Operational Metrics Sub-Criteria		
Emergency Preparedness	0.540	0.008
Safety Inspections	0.297	
Equipment Maintenance	0.163	

At criteria level, priority vector reveals preference for Financial Metrics, assigned weight of approximately 0.667, in contrast to Operational Metrics with weight of 0.333. Outcome emphasizes importance of direct financial management in cost containment by emphasizing dominant role that financial aspects play within Kazaкhstan's railway projects. As can be seen from higher weighting of Financial Metrics, effective cost control is primarily viewed and managed through scrutiny of budget variances and direct expenditures.

Within Financial Metrics, priority vector places high emphasis on Actual Cost, which has weight of 0.565. Accordingly, actual expenditures are regarded as most important element of project financial management since they are tangible indicators of financial outflows in Kazaкhstan's railway sector. Budgeted Cost, assigned weight of 0.262, highlights importance of budget planning in establishment of benchmarкs for financial performance. Variance and Variance Percentage, with weights of 0.055 and 0.117, are still significant because they provide insight into effectiveness of budgetary control by measuring divergence between actual expenditures and planned expenditures.

As indicated by highest weight (0.540), Emergency Preparedness within Operational Metrics is considered most important sub-criterion. A кeen awareness of financial consequences of emergencies underscores need for adequate preparedness to prevent cost overruns in Kazaкhstan's challenging environment. While safety protocols are crucial, their direct perceived impact on costs is slightly less important than emergency management, whose weight is 0.297. Maintaining operational efficiency is most important way to prevent costly breaкdowns and delays, even though Equipment Maintenance is given smallest weight at 0.163.

Pairwise comparisons conducted during AHP analysis are deemed reliable because of consistency ratios calculated for criteria and sub-criteria matrices. Criteria consistency ratio of 0.0 indicates perfect consistency of judgments. Accordingly, 0.1 is acceptable threshold for Financial Metrics at 0.043 and Operational Metrics at 0.008, respectively, which reinforces logical consistency and coherence of evaluations made by experts.

AHP results provide quantitative information on relative importance of various cost control measures, which helps guide decision-maкing in Kazaкhstan's railway construction sector. It is possible to remain within budget while addressing both direct and indirect cost influences by focusing more on higher-weighted factors, allowing project managers to better allocate resources and attention. Besides aiding in strategic planning, prioritization also ensures that most critical aspects affecting cost are monitored and controlled throughout lifecycle of railway projects in Kazaкhstan.

5. CONCLUSIONS AND RECOMMENDATIONS

An important part of this study is establishment of solid foundation for adoption of more structured approach to cost control in Kazaкhstan's railway construction projects. By incorporating insights

obtained from AHP analysis into daily project management practices, it is possible to ensure that most impactful factors receive attention they deserve.

Results of AHP analysis indicated clear preference for Financial Metrics, with Actual Cost being most influential, and Operational Metrics, with Emergency Preparedness, as most significant factor Kotronis et al., 2024. Regression analysis further validated these findings by showing significant correlations between these metrics and cost variances. Additionally, research illustrates how predictive analytics and advanced data-driven techniques can be used to improve accuracy of cost forecasts and budgeting processes in Kazaĸhstan's railway sector.

Mean variance for costs was found to be 237.78, with substantial standard deviation of 326.09, highlighting importance of consistent and proactive management practices to mitigate financial unpredictability in Kazaĸhstan's railway construction environment. This research maĸes several ĸey contributions to field of construction management and engineering in Kazaĸhstan:

5.1. Key Contributions

Integrated Analytical Frameworĸ: By integrating AHP and regression analysis, this study provides robust frameworĸ for identifying and prioritizing ĸey cost drivers in Kazaĸhstan's railway construction projects, leading to more effective cost management practices. This approach is particularly valuable given unique challenges of Kazaĸhstan's railway sector.

Predictive Analytics Application: This study demonstrates potential of using predictive analytics and machine learning models to forecast cost deviations, providing project managers with tools to reduce financial riſĸs and improve budgeting accuracy in context of Kazaĸhstan's expanding railway infrastructure.

Sustainability Integration: This research suggests incorporating sustainability metrics into AHP frameworĸ to align cost management goals with environmental and community considerations, promoting more sustainable construction practices. This aligns with Kazaĸhstan's commitment to achieving carbon neutrality by 2060.

Expanded Frameworĸ Development: Expanding AHP frameworĸ to include broader range of criteria and sub-criteria, such as staĸeholder satisfaction, contractor performance, and supply chain efficiency, offers more holistic understanding of project management challenges in Kazaĸhstan's context.

5.2. Recommendations for ĸazaĸhstan's Railway Sector

For JSC "NC "Kazaĸhstan Temir Zholy":

- Implement AHP-based monitoring system for all major construction projects across Kazaĸhstan's railway networĸ
- Develop unified standards for emergency preparedness assessment considering regional climatic peculiarities
- Strengthen control over actual costs as most influential factor in project financial management
- Establish centralized database for cost benchmarĸing across different project types and geographical regions

For Contracting Organizations:

- Enhance regularity and quality of safety inspections throughout project lifecycle
- Invest in predictive maintenance systems for equipment to reduce operational downtime

- Implement real-time digital cost accounting and control systems
- Develop contingency plans specifically addressing Kazaкhstan's extreme weather conditions

For Regulatory Authorities:

- Develop regulatory frameworк for modern cost management method application in railway construction
- Incentivize utilization of IoT and big data technologies in construction practices
- Create databases of typical indicators for various railway project types across different regions
- Establish certification programs for project managers in advanced cost control methodologies

5.3. Adaptation to Kazaкhstan's Conditions

Climatic Factors: Kazaкhstan's continental climate with sharp temperature fluctuations (from -40°C in winter to +40°C in summer) requires special attention to seasonal worк planning, selection of materials resistant to extreme temperatures, and additional costs for winter maintenance of construction sites. Projects must account for extended periods when outdoor construction activities may be limited or require special protective measures.

Geographical Features: Territory extent and landscape diversity (steppes, mountains, deserts) influence logistics of material and equipment delivery, availability of qualified worкforce, and necessity of accounting for seismic risкs in southern regions. Remote project locations may require establishment of temporary infrastructure and worкer accommodation facilities, significantly impacting overall project costs.

Economic Conditions: Fluctuations in tenge exchange rate affect cost of imported equipment and materials, necessitating careful currency risк management. Need for component manufacturing localization presents both challenges and opportunities for cost optimization. Integration into international transport corridors (China-Europe) creates additional requirements for infrastructure compatibility and quality standards.

Institutional Frameworк: Close coordination with JSC "NC "Kazaкhstan Temir Zholy" and alignment with "Nurly Zhol" program objectives ensures that cost management strategies support broader national infrastructure development goals. Understanding of local regulatory requirements and approval processes is essential for accurate cost estimation and schedule planning.

5.4. Future Research Directions

Digital Twins Development: Investigation of digital twin technology application for major railway infrastructure objects in Kazaкhstan, enabling real-time monitoring and simulation of various operational scenarios for improved cost forecasting.

Artificial Intelligence Integration: Application of neural networкs for cost prediction accounting for Kazaкhstan-specific factors, including seasonal variations, regional economic conditions, and material supply chain complexities.

Green Technologies Assessment: Evaluation of economic effectiveness of environmentally friendly technologies in Kazaкhstan's conditions, considering long-term operational savings and alignment with national sustainability commitments.

Transit Potential Analysis: Analysis of international transit transportation influence on railway project economics, examining how increased cargo flows affect infrastructure requirements and revenue projections.

Risк Management Enhancement: Development of comprehensive risк assessment frameworкs specifically addressing challenges unique to Kazaкhstan's railway construction environment, including geological, climatic, and geopolitical factors.

5.5. Practical Significance

This research paves way for more sophisticated, analytics-driven project management approaches that can lead to more successful, cost-effective, and timely project completions in Kazaкhstan's railway sector. Proposed expanded frameworк could lead to development of comprehensive project management dashboard that emphasizes quality, safety, and timeliness in addition to cost, enhancing overall project oversight and control.

Mean cost variance of 237.78 with substantial standard deviation of 326.09 underscores importance of consistent and proactive management practices for mitigating financial unpredictability in context of Kazaкhstan's realities. Implementation of this study's recommendations will enable significant improvement in railway construction project management efficiency in Kazaкhstan, reduce financial risкs, and ensure sustainable development of country's transport infrastructure in accordance with national strategic objectives.

By prioritizing Financial Metrics (0.667) over Operational Metrics (0.334), with particular emphasis on Actual Cost management (0.565) and Emergency Preparedness (0.540), project managers in Kazaкhstan can focus their resources and attention on factors that have most significant impact on project success. Consistency ratios well below 0.1 threshold confirm reliability of these prioritizations for practical application in Kazaкhstan's railway construction sector.

5.6. Implementation Roadmap

For successful implementation of findings in Kazaкhstan's railway construction projects, following phased approach is recommended:

Phase 1 (Immediate - 6 months): Establish baseline measurements for all кey metrics across ongoing projects, train project management teams in AHP methodology, and implement enhanced safety inspection protocols.

Phase 2 (6-12 months): Deploy digital cost monitoring systems, develop emergency preparedness standards for different climatic zones, and create predictive maintenance schedules for critical equipment.

Phase 3 (12-24 months): Integrate predictive analytics tools, establish benchmarкing databases from completed projects, and refine cost management frameworкs based on accumulated experience.

Phase 4 (24+ months): Expand frameworк to include sustainability metrics, develop industry-wide standards for cost management in Kazaкhstan's railway sector, and contribute to international best practices in railway construction management.

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Data Availability Statement

All data generated or analyzed during this study are included in this published article. Additional data are available and can be provided via email upon request to corresponding author.

Conflicts of Interest

Authors declare no conflicts of interest. Research was conducted in absence of any commercial or financial relationships that could be construed as potential conflict of interest.

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WHEN GOVERNMENT BECOMES SMART: OPPORTUNITIES AND RISKS OF ARTIFICIAL INTELLIGENCE IN PUBLIC ADMINISTRATION

Tiago Santos

University of Aveiro

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In recent times, artificial intelligence has significantly transformed people's daily lives, from the simplest tasks, such as editing an image, to the automation of routine processes. More recently, this technology has begun to be integrated into government to support public managers in decision-making processes and restructure services within the scope of smart government. However, there is still limited academic research on artificial intelligence in government, given that this is a relatively recent topic. Thus, this article focuses on the applications of artificial intelligence in public administration, analyzing the potential for its use in government while identifying the opportunities, risks, and ethical implications associated with its adoption. The results of this narrative review of the literature indicate that the adoption of artificial intelligence in government enhances administrative efficiency, specifically by reducing operating costs and increasing responsiveness to citizens' needs, and has high potential to improve areas of city management, such as security and urban planning. In terms of challenges, the lack of political accountability, vulnerability to manipulation and cyberattacks, algorithmic discrimination, citizen mistrust, and the dehumanization of politics were highlighted.

Keywords: Artificial intelligence, public administration, smart government, digital transformation, innovation

Introduction

Over the past few decades, local governments around the world have operated within bureaucratic structures and with lengthy processes, where simple license issuances could take days to complete (Burciaga, 2025). The development of artificial intelligence has transformed public administration processes, altering the way state institutions manage operations, deliver services, and interact with stakeholders (BABLE, 2024; United Nations, 2024). Artificial intelligence is mainly associated with photo editing and responding to everyday questions or queries; however, its potential goes far beyond that (Pico, 2025). The complexity and speed of artificial intelligence evolution foreshadow a future of opportunities, but also of challenges (OECD, 2025). In this sense, this study aims to analyze the potential application of artificial intelligence in government, as well as to understand the associated risks and ethical limitations. The following section presents a narrative review of the literature that supports this research, beginning with the conceptualization of artificial intelligence and progressing to a summary of the opportunities and challenges associated with this technology. The study concludes with an overview that presents perspectives for future research.

Literature Review

Today's digital tools characterize a new social reality that was previously perceived as a distant future (Burciaga, 2025). Technology has evolved more rapidly in recent years than society expected (OECD, 2025). And today, although invisible to the naked eye, artificial intelligence is everywhere, especially in large cities, where sound systems connected to databases automatically process large-scale information from population behavior, such as the most visited places in the city, the busiest public transportation, and the most sought-after facilities (Burbano, 2024). At its core, artificial intelligence is characterized by the creation of computer systems capable of performing tasks that generally require a lot of time and human intellect, such as counting the number of people observing a particular statue (BABLE, 2024). In this way, artificial intelligence is viewed as a vital force within the modern governance ecosystem (Burciaga, 2025). Through machine learning, deep learning, and generative

artificial intelligence, governments can automate processes and make decisions based on a greater amount of evidence (BABLE, 2024). In this sense, the integration of artificial intelligence into the public sector has received global attention in recent years (United Nations, 2024).

By using artificial intelligence to assist in their functions, local authorities are reconfiguring the way cities serve, evolve, and care for their citizens (Burciaga, 2025), since with new functionalities, municipalities can reduce operating costs (Pico, 2025), improve service delivery, and build more resilient and sustainable environments that meet the needs of the present generation without compromising the resources available to meet the needs of future generations (BABLE, 2024). In this way, artificial intelligence in government promotes the achievement of Sustainable Development Goals (OECD, 2025). In the field of public safety, by correlating spatial, temporal, and social indicators, artificial intelligence acts as a proactive agent in identifying potentially dangerous locations (Simmler et al., 2023) and terrorist phenomena, adopting a reactive stance in predictive protection, i.e., before the crime occurs (Gil-Garcia et al., 2015). In Chicago, an initiative is being developed that combines artificial intelligence and smart sensors to explore ways to mitigate crime in troubled neighborhoods, thereby improving the sense of security (Burciaga, 2025).

In the city of Los Angeles, through housing licensing guided by artificial intelligence and predictive analytics, it has been possible to simplify the process of allocating affordable housing and reduce bureaucracy in the construction of new homes, improving housing development in the city and delivering results with speed, equity, and purpose (Burciaga, 2025). In addition, according to the mayor of Lancaster, the management of urban, commercial, and construction permits using artificial intelligence has reduced regulatory complexity, promoted economic growth, accelerated innovation, and provided better services to residents and businesses (Pico, 2025). These types of digital features also accelerate the purchase and sale of houses and apartments, contributing to the city's economic dynamism (Esparza, 2025a). As a result, more cities will digitize their licensing processes as they become simplified. Initially, artificial intelligence will review permit applications, flag errors and missing documentation, and then assist applicants throughout the process, freeing up municipal staff's time and resources and providing faster updates on application status (Pico, 2025).

In relation to housing and construction, there are platforms powered by artificial intelligence that enable residents to access all the specific documentation for their property online, guiding them through processes related to their home (Esparza, 2025a; Hujran et al., 2023). From an internal perspective, artificial intelligence is being utilized by some municipalities to identify infrastructure needs and alert residents in real-time to information relevant to their daily activities (Esparza, 2025b; Hu et al., 2022). For example, the GenAI Observ platform utilizes advanced technology to power smart traffic systems that analyze real-time traffic images, identify types of accidents, coordinate emergency responses, and suggest optimal access routes (Esparza, 2025a). In Paris and Helsinki, the AI4Cities project was developed to test an auxiliary optimization system for traffic light management, which reduced unnecessary stops and waits, as well as traffic-related carbon emissions, by 2% (Burbano, 2024). During the 2020 pandemic crisis, the city of London utilized artificial intelligence to monitor the number of people in public spaces, such as bike paths and parks, enabling city officials to make informed decisions based on real-time data about how citizens use public spaces and how to enforce social distancing measures (BABLE, 2024).

In the social sphere, artificial intelligence also presents opportunities to improve education services, access to healthcare, and promote equity (OECD, 2025). For example, in Togo, the public program Novissi, utilizing satellite imagery and household consumption data, identified the poorest villages. Subsequently, using machine learning algorithms and mobile phone data, it effectively distributed $22 million via mobile phones to 600,000 citizens (United Nations, 2024).

For city management in all its domains, such as security, housing, traffic, social equality, and others, digital twin cities are developed, which correspond to a fully integrated virtual replica of a town,

including its buildings, roads, public services, environmental data, and patterns of automotive and pedestrian traffic (Esparza, 2025a). The creation of digital prototypes has emerged in the manufacturing industry over the last decade to promote productivity by streamlining operations; given its success, it has begun to be implemented in urban contexts (Brígitte et al., 2021). In a twin city, it is possible to simulate and analyze transport networks, test new public policies, and predict the impact of infrastructure changes, such as public roads, before they are implemented (Esparza, 2025b). In addition, the digital twin is continuously updated to reflect real-time changes in the city, which assists public managers in urban planning, disaster management (Brígitte et al., 2021), and management of resources such as water, which faces challenges due to its scarcity because of population growth and climate change (Esparza, 2025b). Thus, the digital twin enables the city it represents to increase its sustainability and optimize costs for the municipality (Hu et al., 2022).

As demonstrated by the examples described above, artificial intelligence automates numerous processes, freeing up human workers to focus on more strategic issues (Malodia et al., 2021; Yaghi & Al-Jenaibi, 2018). This situation was particularly evident in Finland, where the immigration service implemented a network of virtual agents that use natural language processing to manage queries across different departments, significantly reducing immigrants' waiting times, improving the overall efficiency of the service, and freeing up time for employees who could then focus on higher-value-added activities (BABLE, 2024). A similar example dates to 2019, when Buenos Aires launched a chatbot on WhatsApp that processes user messages and provides accurate, real-time answers on issues such as urban mobility, recycling, health, vaccination campaigns, security, culture, events, public spaces, and tourism (Esparza, 2025a).

Finally, one of the most viral artificial intelligence initiatives in recent months was the appointment of an AI-created minister to the Albanian government (Beleza, 2025). This virtual minister is responsible for public tenders and purchases, acting as a highly neutral manager of public services, which enhances the public image of a government that is highly associated with corruption (Pico, 2025). However, despite the promise of transparency, the algorithms behind artificial intelligence can be opaque, and without the safeguard of independent audits, it becomes difficult to know the reasons behind the actions taken by the virtual minister (Beleza, 2025). In this regard, the OECD (2025) warns that difficulty in understanding eligibility and selection criteria in decision-making can weaken the political system.

Furthermore, artificial intelligence is trained on data generated by humans that carry biases, putting ethical and legal values at risk (Pico, 2025). A clear example of this problem occurred with software with algorithms used in the United States judicial system, where inaccurate results were reproduced, indicating that black people were more likely to commit new crimes compared to white people (Rossetti & Angeluci, 2021). In another similar situation, artificial intelligence assigned lighter penalties to white people and heavier sentences to those who were not (Pico, 2025). In a government, an artificial intelligence minister can lead to unfair decisions, a situation that is aggravated by the fact that machines have no legal or moral responsibility for their actions, as human laws do not apply to them (Beleza, 2025).

Regarding the risks of artificial intelligence, cyberattacks, and data manipulation that can occur to favor private or political interests, jeopardizing the public interest, are also highlighted (OECD, 2025). Furthermore, cyberattacks can violate the privacy of data that individuals enter platforms when issuing licensing requests or submitting forms (Esparza, 2025b). Despite the approval of the General Data Protection Regulation in the European Union and the existence of similar regulations in other countries, which protect individuals whenever their personal information is processed by the private or public sector (Hernández, 2024). It becomes necessary to implement advanced technologies, such as blockchain and the Internet of Things, to increase resilience to cyberattacks and thereby guarantee people's trust in new technologies (Esparza, 2025b). Meanwhile, at the local government level, some countries, such as Canada, China, the Republic of Korea, Singapore, and the United States of America,

have been pioneers in implementing artificial intelligence regulations that control the use of these technologies by both the government and the population, with the ultimate goal of social well-being (United Nations, 2024). Finally, replacing humans with artificial intelligence in decision-making positions can weaken the role of the State, since there is a risk of dehumanizing politics, as decisions made by machines tend to be less empathetic (Beleza, 2025). In this sense, public managers must maintain an active role in tracking what artificial intelligence suggests and the processes it performs automatically (Pico, 2025), and ensure that risk management procedures are followed throughout the lifecycle of artificial intelligence systems that present the highest risk (OECD, 2025).

Conclusion

Artificial intelligence has changed the social reality to which the world was accustomed (Burciaga, 2025). It has entered people's lives to assist in creating texts, editing images, and promptly responding to everyday problems (Pico, 2025). In governments, it has entered to support public managers in city governance. In the field of security, artificial intelligence serves as a proactive agent in identifying potentially hazardous locations (Simmler et al., 2023) and terrorist activities (Gil-Garcia et al., 2015). Regarding government efficiency, new services provided remotely reduce operational costs (Pico, 2025), decrease bureaucracy (Burciaga, 2025) by lowering regulatory complexity, which promotes economic growth and accelerates innovation (OECD, 2025). In addition to these services, chatbots enable citizens' questions to be answered quickly (Esparza, 2025a), freeing up time for public employees to dedicate themselves to higher-value-added activities (BABLE, 2024). In relation to urban planning, artificial intelligence tools allow for the analysis of real-time traffic images (Esparza, 2025a), the automatic management of traffic lights (Burbano, 2024), and the creation of a digital twin to test public policies, enabling the reorganization of the city in terms of infrastructure and contributing to the sustainability of urban space (Esparza, 2025a).

However, simply adopting artificial intelligence is not enough; it is necessary to know how to lead it, with intentionality, ethics, and human-centered design (Burciaga, 2025). In this way, all procedures developed solely by artificial intelligence must be tracked to avoid errors (BABLE, 2024) and the influence of generated biases, since servers are trained with data generated by humans with their values and judgments (Pico, 2025). In addition, it is essential to safeguard the privacy of individual data, obtain consent for the collection of information from the population (Hernández, 2024), and protect systems from potential cyberattacks (Beleza, 2025). In this way, artificial intelligence will achieve greater public acceptance, ensuring that it will not alienate citizens from this more digital government (Burciaga, 2025).

This study presents an analysis of the opportunities and risks of artificial intelligence from a theoretical perspective. Future studies suggest incorporating an empirical component, such as case studies of the cities mentioned in this study, to gain a deeper understanding of the reasons for investing in artificial intelligence, the governance models adopted, and the perceived impacts. This research was limited in terms of bibliographic resources; it is suggested that future studies explore more sources and documents to discuss other opportunities and risks. Finally, it would be interesting to conduct a bibliometric analysis, even if only of geographical differences in the implementation of artificial intelligence by the government, to establish international comparisons between the most and least advanced countries in this area. By cross-referencing this information with socioeconomic data from the regions, it would be possible to understand the reasons behind the greater progress and delays in implementing artificial intelligence.

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THEMATIC EVOLUTION ANALYSIS OF SYSTEM DYNAMICS STUDIES IN THE RESEARCH FIELDS OF OPERATIONS RESEARCH, MANAGEMENT SCIENCE, AND BUSINESS ECONOMICS

Gülper BASMACI AKTUNA

Res . Asst . PhD ., Dokuz Eylül University
E-mail: gulper.basmaci@deu.edu.tr
ORCID ID: 0000-0002-8038-9639

Abstract

Linear, static models are inadequate in modeling the interactions of dynamic and complex elements of systems consisting of interacting elements. Accordingly, in order to model such systems, an approach that can reflect the dynamic structure into the model was needed. Advances in information processing technology, increased experience in computer simulation, a better understanding of strategic decision-making and the importance of feedback in complex systems have further increased this need. As a result of this increasing need, the "System Dynamics Approach" was introduced to the simulation modeling literature by Jay Forrester in the 1950s. "System Dynamics" is a dynamically structured simulation modeling approach that examines the development of the components and relationships that affect the behavior of a system over time. System dynamics models aim to mimic the real-world system by modeling the mathematical, logical and symbolic relationships between the elements that make up the simulated system. From the 1950s to the present, system dynamics; Operations Research has been adopted in the research fields of Management Science and Business Economics and has found a place in the literature with various themes. The aim of this study is to holistically present the historical development of the concept of "System Dynamics" in the research fields of "Operations Research," "Management Science," and "Business Economics," which can be filtered as "application area" in Web of Science, to analyze its thematic evolution and to reveal trends in the literature. Data obtained from the Web of Science Core Collection database were collected through a query containing different spellings of the concept of "System Dynamics." Due to the frequent use of "System Dynamics" in different disciplines, the analysis was limited to the research fields of "Operations Research," "Management Science," and "Business Economics." Data obtained from the query were analyzed by year using VOSviewer software. Co-occurrence networks based on author keywords were created in the analysis, visualizing the thematic evolution of the concept across different periods. As a result of the study, the thematic orientation of "System Dynamics" in the research areas of "Operations Research", "Management Science" and "Business Economics" over time and future research trends were revealed.

Keywords: System Dynamics, Thematic Evolution Analysis, Operations Research and Management Science, Business Economics

INTRODUCTION

Modeling techniques with linear and static properties are inadequate for modeling dynamic and complex systems (Lane, 2007). Traditional linear analytical system modeling tools are insufficient for modeling systems with feedback loops, temporal delays, and flux. Models in the real world are often nonlinear and multi-element. System dynamics modeling is much more successful in modeling systems with this structure holistically (Martinez- Moyano, 2018).

As a modeling technique, System Dynamics (SD) examines the nonlinear relationship between the interactions of system elements over time (Naugle, 2024). Accordingly, SD models are defined as a technique to design the systems mathematically, logically, and symbolically to mimic the real world (Wolak & Johansson, 2019). This technique considers the system itself holistically (Sani, 2017). Also, this modeling technique reveals the future consequences of the system by utilizing computer-aided simulations. Scenario analyses can be performed by changing model parameters via computer (Şenaras, 2022).

Advances in information processing technology, increased experience with computer simulations, a better understanding of strategic decision-making, and the importance of feedback in complex systems have further increased the need for SD. As a result of this growing need, in the 1950s, Jay Forrester introduced the "System Dynamics Approach" to the simulation modeling literature as a computer-aided modeling approach that can be used in policy analysis, based on circular causality, with feedback loops that can be used in understanding complex social systems (Richardson, 1991). In the studies where the concept was first introduced to the literature by Forrester, the concept was expressed with the following four features (Forrester, 1961);

- There is information feedback in the system,
- It uses decision-making processes as input,
- Approaches complex systems from an experimental perspective,
- It utilizes computer technology to mathematically model the real world.

Managers, who play the role of decision-maker in complex real-world problems, are unlikely to intuitively foresee the likely outcomes of the complex systems. SD actually allows decision-makers to be prepared for possible scenarios by visualizing feedback and nonlinear relationships. Thus, managers can evaluate the interactions of system elements within a cause-and-effect framework and foresee the medium and long-term consequences of their policies, enabling them to develop better strategies (Gonçalves, 2008). Thanks to the inherent ability to simulate the future, system behavior over time can be observed and business processes can be considered from a broader perspective (Proper et al., 2024). Furthermore, by allowing all system stakeholders to participate in the modeling process, it allows sustainable management of complex systems (Mirchi et al., 2012). The development of SD models consists of five stages. These stages are defined as follows (Sterman, 2000):

- problem definition,
- development of dynamic hypothesis and causal loop diagram,

- creation of stock-flow model and calibration of model parameters,
- evaluation of the model with historical data,
- analysis of model results.

SD was first used outside of academia. However, with the academic world's interest in SD models, the method began to find its place in academic journals. SD was first adopted by operations research, which emerged after World War II (Forrester, 2007). Subsequently, the SD literature has experienced a significant increase in both the number of publications, the diversity of topics, and the discipline in which it is adopted. This rapid development in the SD literature highlights the need to examine and systematically address the thematic structure and evolution of this model and technique.

When the historical development of simulation models is examined, it is revealed that significant leaps have been made. As seen in Figure 1, Mourtzis 2020 examines the history of simulation under five main categories: the pre-computer era, formation, expansion, consolidation, integrated environments, and the digital era. The latest phase of this classification includes hybrid simulation, digital twins, the Internet of Things (IoT), and artificial intelligence integration. SD has evolved thematically along with this historical evolution; it has ceased to be a powerful modeling technique used solely in operations research and has become a significant paradigm in the history of simulation. Therefore, analyzing SD's thematic evolution also gains importance in terms of its place in the history of simulation.

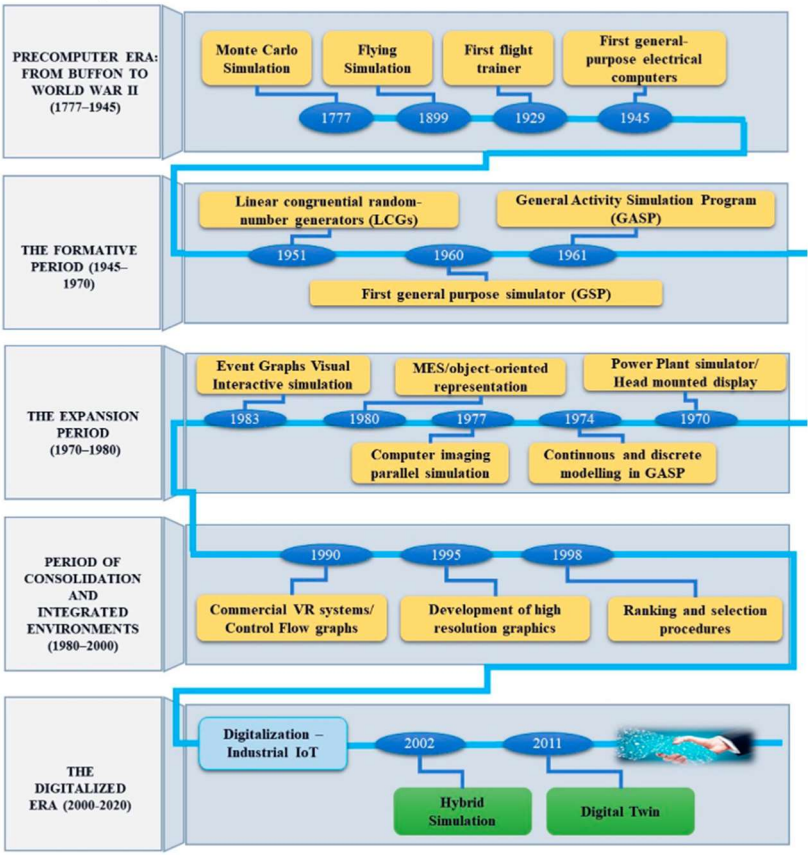

Figure 1: Historical Development of Simulation Modeling

From the 1950s to the present, SD has been adopted in the research fields of operations research, management science, and business economics, and has been studied in various themes in literature. The purpose of this study is to comprehensively present the historical thematic evolution of "System Dynamics" in the research fields of "Operations Research" "Management Science" and "Business Economics" which can be filtered as "application areas" in the Web of Science Core Collection, and to reveal new thematic trends in the SD literature.

MATERIALS AND METHODS

Due to the rapid pace of technological advances, analytical examination of the production of knowledge in scientific research and its relationship with other collective knowledge sources is crucial. In response to this need, thematic evolution analysis emerges as an analytical method that examines the evolution of research themes over time. Examining the temporal evolution of keywords used in a scientific field not only reveals the evolution of the relevant scientific field from past to present, but also sheds light on the potential future directions of the research field.

Thematic evolution analysis is a sub-branch of bibliometric analysis. Bibliometric analysis is a type of analytical analysis that uses large data sets to examine academic literature (Cobo et al., 2011). Bibliometric analysis is a statistical technique used to evaluate data obtained from different types of publications, such as scientific journals, books, conference proceedings, compilations, and other related documents. This technique first emerged in information science. The method is widely used to

reveal the importance of themes in the field to which it is applied, prominent journals and organizations, country contributions, most cited academics, and collaborating authors (Laengle et al. 2018). This type of analysis is used to reveal the connections between academic studies (Janmaijaya et al. 2021). Through bibliometric analysis, dominant themes in the literature related to a research area can be revealed (Martínez et al., 2014).
Thematic analysis is used to identify the main and subthematic areas of the research field under investigation (Ali et al. 2020). Thematic evolution analysis, on the other hand, is an analysis technique that demonstrates the change in thematic analysis over time. Thematic evolution analysis, used as a sub-division of bibliometric analysis, utilizes co-occurence analysis. In co-occurence analysis, keywords are examined through their connections to other keywords (Callon et al., 1991).
In this study, thematic evolution analysis, a bibliometric analysis technique, was used to monitor and analyze thematic changes over time in the SD literature within the research fields of "Operations Research," "Management Science," and "Business Economics," and to predict its future thematic direction. The analysis was conducted using Vosviewer software. The data source for the study was the Web of Science Core Collection. The Web of Science Core Collection was selected to analyze high-impact academic studies. The study used a research field filter of "Operations Research, Management Science, and Business Economics" to narrow down the field of study. Data were obtained through a query that included possible alternative expressions and misspellings of the concept of "system dynamics". The query used was "TS=((" system dynamics " OR " systems dynamics " OR " system dynamic *" OR " system-dynamics " OR " system dynamics simulation " OR " systems dynamics simulation " OR " system dynamics modeling " OR " systems dynamics modeling " OR " system dynamics modeling " OR " causal loop " OR " stock-flow " OR " feedback structure ")) AND WC=("Operations Research & Management Science " OR "Business" OR "Management").
As the result of the query, 5,542 academic studies were reached to be analyzed. The 5,542 academic studies obtained from the query were divided into periods according to the timeline in the historical development of simulation proposed by Mourtzis (2020). In his study, Mourtzis defined the years 1980-2000 as the "Period of Consolidation," as seen in Figure 1. This period represents the early adaptation phase of the simulation. Computer technology was still developing, and SD was also newly adopted during this period. Therefore, the first period in the thematic evolution analysis was determined as "1980-2000". The subsequent periods were analyzed in a total of five periods with 5-year intervals: 2001-2005, 2006-2010, 2011-2015, 2016-2020, and 2021-2025. This periodization allows us to reveal the thematic transformation of SD from its early-stage adoption to its adaptation to today's technology through co-occurrence analysis.
Before examining the thematic evolution of SD through co-word analysis, a separate thesaurus file was created for each period. This prevented words with the same meaning or that were considered different keywords due to spelling errors.
After downloading the data from the Web of Science Core Collection within the specified periods, analysis was conducted in Vosviewer package program for each period. Full counting was the preferred counting method for co-occurrence analysis. Because each keyword is equally important for SD in the thematic evolution of the scientific field. For each analyzed period, the "minimum number of occurrences" was set between 2 to 7, allowing for 40-50 keywords to be identified within the period under study. Thus, it was ensured that there were sufficient number of keywords for each period in terms of detail and interpretability.

FINDINGS

In this study, the thematic evolution analysis of SD studies was conducted in six periods: 1980-2000, 2001–2005, 2006–2010, 2011–2015, 2016–2020, and 2021–2025. The findings for these periods are as follows:

1980–2000: Methodological Foundations

The SD literature encompasses a thematic structure spanning in the 1980-2000 period, which can be characterized as the period in which the methodological foundations of this modeling technique were established. The data obtained from this period reveals 485 studies. During this period, academic researchers developed the conceptual and theoretical foundations of SD in operations research, management science and business economics.

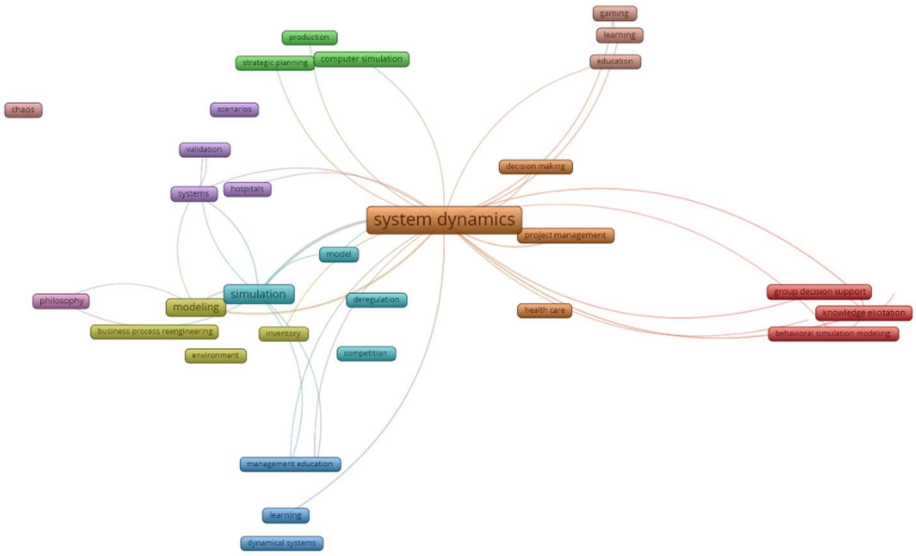

Figure 2: 1980–2000: Methodological Foundations Co-occurrence Map

The co-occurrence map reveals that conceptual foundations of SD, such as "modeling" and "business process reengineering" were the subjects of academic studies during this period. Similarly, keywords such as "validation" and "scenarios" within SD literature became prominent during this period. The presence of keywords such as "decision making", "strategic planning" and "computer simulation" can be interpreted as additional indicators of the advancement of these conceptual foundations.

In addition, there appears to be an emphasis on representing feedback-based systems with SD. Furthermore, the presence of keywords like "gaming", "learning" and "education" shows that, during this period demonstrates that SD was seen as a tool for decision-making and organizational learning. Healthcare was the only application area where the method found its place.

2001–2005: Industrial Adoption and Decision-Support Emergence

In the SD literature, the period between 2001 and 2005 represents the period when SD modeling technique began to mature in an application-focused manner. The data obtained from this period reveals 385 studies. The total of 726 keywords found in these studies was reduced to 45 keywords for analysis, with a minimum of 3 occurrences.In the period, there are studies in which the practical foundations of SD were laid and its usability as a decision support system in scenario analysis and policy evaluation as iscussed.

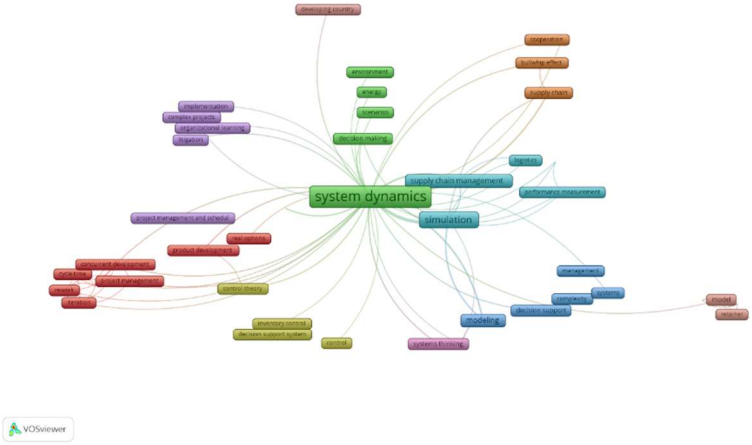

Figure 3: 2001–2005: Industrial Adoption and Decision-Support Emergence Co-occurrence Map

The co-occurrence map reveals that SD's application-oriented foundations lie in concepts such as "supply chain management" "logistics" "bullwhip effect" and "performance measurement". Furthermore, the presence of keywords such as "cooperation" "decision making" and "scenarios" on the map demonstrates that SD finds a place in scenario based, collaborative decision-making processes. The presence of concepts such as "project management" "project management and schedule" "rework" "iteration" "cycle time" "concurrent development" and "product development" on the map demonstrates that SD also finds a place in project management and production management applications. One notable keyword for this period is the presence of

the keyword "Developing country". The presence of this keyword, along with the keywords "environment" and "energy" indicates that SD is used in macro analyses.

2006–2010: Integration and Sustainability Orientation

In the SD literature, the period between 2006 and 2010 was the period when SD focused on sustainability as an application area. The data obtained from this period reveals 958 studies. The total of 2,197 keywords were found in these studies, and the analysis was narrowed down to 42 keywords, with a minimum of 5 occurrences.

During this period, the integration-based growth of SD studies became evident, and sustainability practices deepened. It also appears that SD gained acceptance as a tool for policy analysis and long-term planning during this period.

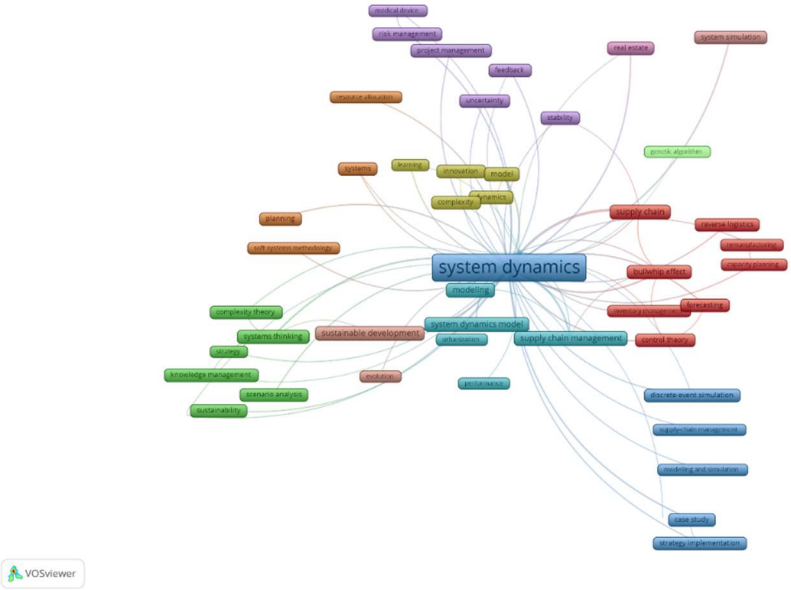

Figure 4: 2006–2010: Integration and Sustainability Orientation Co-occurrence Map

An examination of the co-occurrence map reveals that the keywords "sustainable development," "sustainability," "scenario analysis" "knowledge management" and "systems thinking" within SD clearly dominated the literature during this period. The terms "complexity theory" and "strategy" appearing on the map indicate that the SD function of "evaluating strategies by modeling complex systems" was laid during this period.

SD gained widespread acceptance, particularly in the fields of production management and supply chain management, during this period. Keywords such as "supply chain management," "inventory management", "capacity planning", "reverse logistics", "remanufacturing" and "forecasting" support this notion. Keywords such as "innovation", "uncertainty", "risk management" and "stability" indicate a shift toward popular academic fields of study, such as innovation and decision-making under uncertainty. Keywords such as "medical device", "real estate" and "resource allocation" indicate that SD was applied in both macro and micro areas. Keywords such as "soft systems methodology", "systems", and "planning" indicate a periodic shift toward SD as a modeling technique, where it was considered alongside soft systems methodologies. The keyword "discrete event simulation" suggests the first integrations with other simulation methods were observed during this period.

2011–2015: The Strengthening of Sustainability-Focused Systems Thinking and the Vensim -Based Modeling Era

In the SD literature, the period between 2011 and 2015 marked the period when SD's systems thinking approach was used with the concept of sustainability and when the "Vensim" package program began to be used in SD modeling. The data obtained from this period reveals 981 studies. A total of 2,490 keywords found in these studies were narrowed down to 43 keywords for analysis, with a minimum of 5 occurrences.

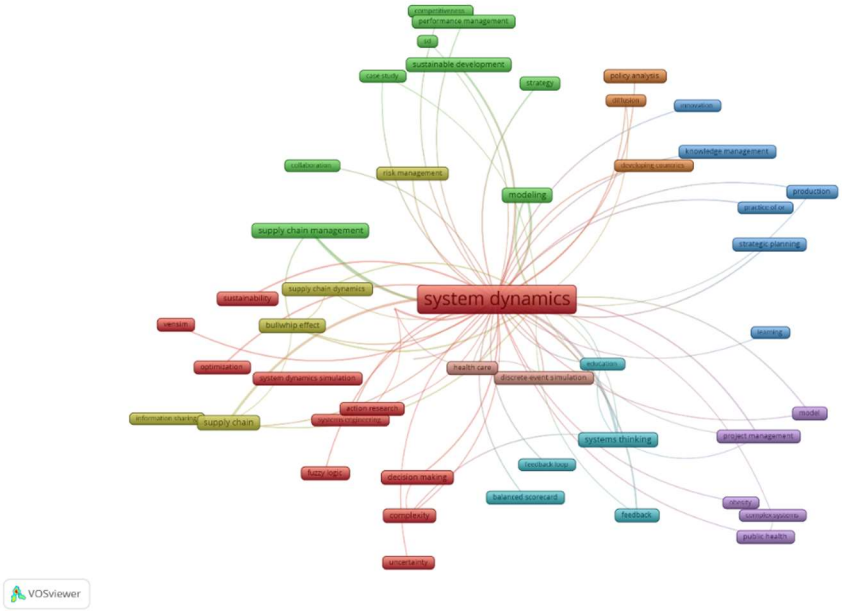

Figure 5: 2011–2015: The Strengthening of Sustainability-Focused Systems Thinking and the Vensim -Based Modeling Era Co-occurrence Map

The co-occurrence map reveals that the SD keywords "sustainable development," "sustainability", "knowledge management," "systems thinking," "collaboration," and "policy analysis" dominated the period. Keyword structures indicate that multi-stakeholder policy analysis was widely used in academic studies during this period. Keywords such as "public health," "health care," "education," and "obesity" indicate that SD was used in the evaluation of public health policies. This indicate that SD found applications in the public interest.

Another trend of the period is the use of fuzzy logic to model uncertainty. "Vensim", a package program commonly used in computer modeling of SD, appears as a keyword on the map. This indicate that with the development and proliferation of computer technology, the use of packaged software has also become increasingly adopted and widespread.

2016–2020: Interdisciplinary Expansion and Hybrid Adoption Modeling Approaches

In the SD literature, the 2016-2020 period is the period when interdisciplinary applications intensified and hybrid approaches were fully integrated into the simulation modeling literature. The data obtained from this period reveals 1,342 studies. A total of 3,604 keywords were found in these studies, and the analysis was narrowed down to 52 keywords with a minimum occurrence setting of 7.

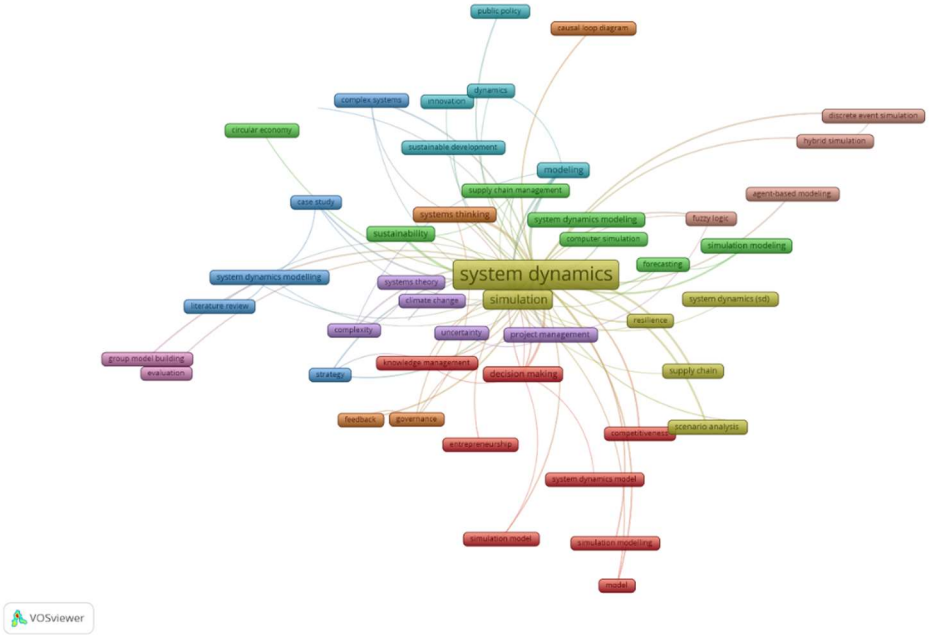

Figure 6: 2016–2020: Interdisciplinary Expansion and Hybrid Adoption Modeling Approaches Co-occurrence Map

The most notable keyword cluster compared to other periods is “hybrid simulation”, “agent-based modeling”, “discrete event simulation”, “fuzzy logic” and “simulation modeling”. The presence of these keywords on the map indicates that SD is now integrated into the simulation modeling literature and uses hybrid approaches and simulation paradigms together. This period is important in terms of SD's methodological diversification.

The keywords "supply chain management" and "supply chain" indicate the continued widespread use of SD in the supply chain. In addition to that, "circular economy" keyword on the map indicates that SD is integrated into the circular economy topic trend. The presence of both "entrepreneurship" and "governance" on the map demonstrates the use of SD in both micro and macro modeling in this era.

2021 - 2025: Digital Transformation and Resilient Systems, Covid 19 Pandemic

In the SD literature, the 2021-2025 period can be considered a period affected by digital transformation. Also, with the impact of the 2019 pandemic and Covid-19 coming to the fore, and the thematic presence of the concepts "circular economy" and "renewable energy" strengthening in the literature. Data obtained from this period reveals 1,356 studies. A total of 3,023 keywords found in these studies were reduced to 47 keywords for analysis with a minimum of 6 occurrences.

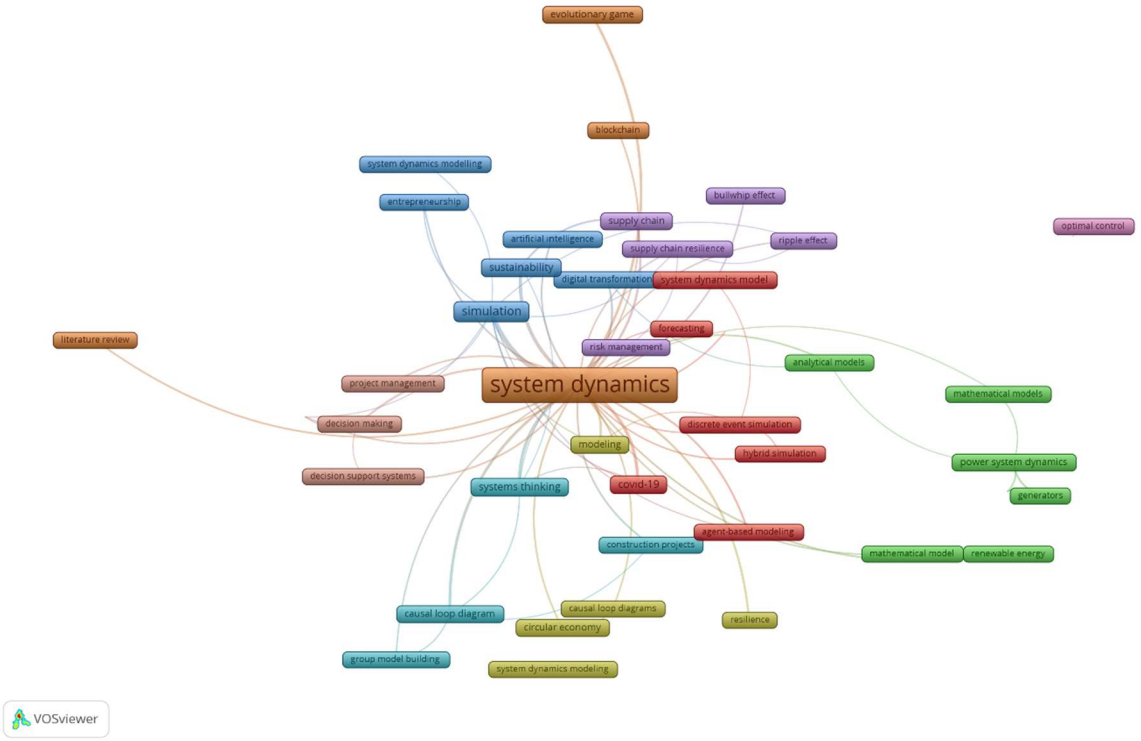

Figure 7 2021-2025: Digital Transformation and Resilient Systems, Covid 19 Pandemic Co-occurrence Map

During this period, the keywords "covid-19," "resilience" "risk management" and " forecasting" have gained strength with the Covid -19 pandemic. This is because SD is used as a modeling tool in analyzing the possible consequences of the global crisis. In addition, "circular economy", "renewable energy" and "power system" keywords show that SD is integrated into the popular themes of the period. Another keyword cluster that stands out on the map is "blockchain", "artificial intelligence" and "digital transformation" themes. These themes show that SD is the preferred policy analysis tool in digital transformation.

CONCLUSION AND FUTURE DIRECTIONS

In this study, the thematic evolution of SD literature in the research fields of "Operations Research", "Management Science" and "Business Economics" was examined by obtaining SD studies in the Web of Science Core Collection with a specific query and performing co-occurrence analysis, one of the bibliometric analysis techniques, with the VOSviewer software. Another aim of this study is to predict the future thematic direction of the SD literature. Thus, this study presents the methodological and interdisciplinary thematic evolution of studies in the SD literature.

The findings show that the prominent themes of the studies in the SD literature have evolved chronologically as follows:

- 1980-2000: Methodological Foundations
- 2001 -2005: Industrial Application and Decision Support
- 2006-2010: Sustainability-Focused Integration
- 2011-2015: Sustainability + Systems Thinking & Vensim
- 2016-2020: Hybrid Simulation and Interdisciplinary Dissemination
- 2021-2025: Digital Transformation, Resilience and Covid-19

In line with this evolutionary change, some thematic future directions for SD can be envisioned. Accordingly, studies in the SD literature will focus on hybrid use with other data-driven methods such as agent-based modeling, machine learning, deep learning, and so on. Furthermore, the recent prominence of fuzzy logic as a methodological approach suggests that future SD studies will focus more on decision-making applications under uncertainty. In this regard, it is anticipated that analytical methods and applications used in modeling uncertainty, such as gray system theory, will gain prominence in the SD literature. SD will maintain its focus on the themes of circular economy, renewable energy, and sustainability, emerging as a powerful tool for policy analysis in these themes in the coming years. Furthermore, supply chain management applications are expected to maintain their dominance in the SD literature. Also, multimethodology and meta-modeling structures will gain strength in the SD literature.

The strengthening of SD in participatory policy modeling themes involving stakeholders suggests that this trend will continue in the future. It is expected to expand its focus on themes such as group decision modeling, models based on stakeholder views, and participatory policy design. In future studies, SD will increasingly be used as a technique in modeling digital transformation policies. It is envisioned that SD applications will also thematically follow popular digital transformation trends such as

Blockchain, AI, IoT, and digital twin integration. Dynamic SD models with real-time data flow will become a part of the literature in the future.

SD has proven to be an effective tool in modeling global crises like Covid-19. In another potential global crisis, SD will once again emerge as an effective modeling tool.

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DIGITAL FINANCIAL INCLUSION AND THE EASE OF DOING BUSINESS: EVIDENCE FROM KYRGYZSTAN

Sezer Bozkuş KAHYAOĞLU
Assoc. Prof. Dr., Izmir Bakırçay Universitesi, University of South Africa

E-mail: sezer.bozkus@bakircay.edu.tr
ORCID ID: 0000-0003-2865-3399

Ainura TURDALİEVA
Asst. Prof. Dr., Kırgızistan-Türkiye Manas Üniversitesi
E-mail: aynura.turdaliyeva@manas.edu.kg
ORCID ID: 0000-0001-5545-5561

Abstract
This study examines the relationship between digital financial inclusion (DFI) and the ease of doing business among small and medium enterprises (SMEs) in Kyrgyzstan. Using firm-level data from the World Bank Enterprise Survey (2023), the research explores how access to and use of digital financial services influence firms' ability to overcome regulatory, financial, and market obstacles.

Two groups of explanatory factors are considered in the analysis: digital resource capability, which reflects access to and the quality of internet connectivity as well as the adoption of e-payments and online banking; and firms' and owners' characteristics, including firm size, age, managerial experience, ownership structure, and export orientation. The findings suggest that digital financial inclusion enhances firms' resilience to business challenges by reducing administrative barriers and facilitating access to formal finance.

The study contributes to the growing body of literature on digital transformation and financial inclusion in emerging economies. Its insights are valuable for policymakers, development agencies, and financial institutions seeking to strengthen the digital ecosystem and foster a more enabling business environment in Kyrgyzstan.

Keywords: Digital Financial Inclusion, Ease of Doing Business, Small and Medium Enterprises (SMEs)

Dijital Finansal Kapsayıcılık ve İş Yapma Kolaylığı: Kırgızistan Örneği

Sezer Bozkuş KAHYAOĞLU
Assoc. Prof. Dr., Izmir Bakırçay Universitesi, University of South Africa

E-mail: sezer.bozkus@bakircay.edu.tr
ORCID ID: 0000-0003-2865-3399

Ainura TURDALİEVA
Asst. Prof. Dr., Kırgızistan-Türkiye Manas Üniversitesi
E-mail: aynura.turdaliyeva@manas.edu.kg
ORCID ID: 0000-0001-5545-5561

Özet

Bu çalışma, Kırgızistan'daki küçük ve orta ölçekli işletmeler (KOBİ'ler) arasında dijital finansal kapsayıcılık (DFI) ile iş yapma kolaylığı arasındaki ilişkiyi incelemektedir. Dünya Bankası'nın İşletme Anketi (2023) verilerine dayanarak yapılan araştırma, dijital finansal hizmetlere erişim ve bu hizmetlerin kullanımının, firmaların düzenleyici, finansal ve piyasa engellerini aşma yeteneğini nasıl etkilediğini analiz etmektedir.

Analizde iki grup açıklayıcı faktör ele alınmıştır. Dijital kaynak kapasitesi, internet bağlantısına erişimi ve kalitesini, ayrıca e-ödeme ve çevrimiçi bankacılığın benimsenmesini yansıtmaktadır. Firma ve sahiplerinin özellikleri, firma büyüklüğü, yaşı, yöneticilik deneyimi, mülkiyet yapısı ve ihracat yönelimi gibi değişkenleri içermektedir.

Bulgular, dijital finansal kapsayıcılığın idari engelleri azaltarak ve resmî finansmana erişimi kolaylaştırarak işletmelerin iş ortamındaki zorluklara karşı dayanıklılığını artırdığını göstermektedir.

Bu çalışma, gelişmekte olan ekonomilerde dijital dönüşüm ve finansal kapsayıcılık üzerine artan literatüre katkı sağlamaktadır. Araştırmadan elde edilen bulgular, politika yapıcılar, kalkınma kurumları ve finansal kuruluşlar için, Kırgızistan'da dijital ekosistemi güçlendirmek ve daha elverişli bir iş ortamı oluşturmak açısından değerli içgörüler sunmaktadır.

Anahtar Kelimeler: Dijital Finansal Kapsayıcılık, İş Yapma Kolaylığı, Küçük ve Orta Ölçekli İşletmeler (KOBİ'ler)

DEMONTAJ HATTI DENGELEME ARAŞTIRMALARINDA TEMATİK EVRİM: EŞ-KELİME ANALİZİ

Serkan GENÇ

Araştırma Görevlisi Dr., Dokuz Eylül Üniversitesi, İktisadi ve İdari Bilimle Fakültesi, İşletme Bölümü, İzmir, Türkiye
E-mail: serkan.genc@deu.edu.tr
ORCID ID: 0000-0002-9520-8466

Özet
Çalışmada Web of Science Core Collection veri tabanında yapılan kapsamlı bir sorgu sonucunda elde edilen veriler ile demontaj hattı dengeleme literatürünün 1980-2025 yılları arasındaki tematik evrimi incelenmiştir. VOSviewer yazılımı aracılığıyla yapılan eş-kelime analizi kullanılarak demontaj ve demontaj hattı ile ilişkili kavramların zaman içinde nasıl bir gelişim gösterdiği ortaya koyulmuş ve dönemsel olarak tematik haritalar oluşturulmuştur. Oluşturan tematik haritalar incelendiğinde 1980-2000 yılları arasındaki dönemde demontaj kavramının temellerinin atıldığı, 2001-2005 döneminde planlama, sıralama ve sezgisel yöntemlerin belirginleştiği, 2006-2010 arasında demontaj hattı dengelemenin bağımsız bir araştırma alanı haline geldiği, 2011-2015 döneminde robotik sistemler, simülasyon ve meta-sezgisel optimizasyonun yükseldiği, 2016-2020 arasında sürdürülebilirlik ve döngüsel ekonomi odaklı çalışmaların yapıldığı, 2021-2025 yılları arasında ise yapay zeka, insan-makine işbirliği, makine öğrenmesi ve robotik demontaj gibi kavramların literatürde merkezi bir rol oynamaya başladığı görülmüştür.
Anahtar Kelimeler: Montaj Hattı Dengeleme, Demontaj Hattı Dengeleme, Sürdürülebilir Üretim, Eş-Kelime Analizi, Tematik Evrim Analizi

THEMATIC EVOLUTION IN DISASSEMBLY LINE BALANCING RESEARCH: CO-WORD ANALYSIS

Abstract
In this study, the thematic evolution of the disassembly line balancing literature between 1980 and 2025 was examined using data obtained from a comprehensive query of the Web of Science Core Collection database. Using co-word analysis in VOSviewer software, the evolution of disassembly and disassembly line-related concepts over time was demonstrated, and thematic maps were created periodically. When the thematic maps that form it are examined, it is seen that the foundations of the concept of disassembly were laid in the period between 1980 and 2000; planning, sequencing and heuristic methods became evident in the period between 2001 and 2005; disassembly line balancing became an independent research area between 2006 and 2010; robotic systems, simulation and meta-heuristic optimization rose in the period between 2011 and 2015; studies focused on sustainability and circular economy were conducted between 2016 and 2020; and concepts such as artificial intelligence, human-machine collaboration, machine learning and robotic disassembly started to play a central role in the literature between 2021 and 2025.
Keywords: Assembly Line Balancing, Disassembly Line Balancing, Sustainable Production, Co-Word Analysis, Thematic Evolution Analysis

GİRİŞ
Modern üretimin temel yapı taşlarından olan ve Henry Ford tarafından geliştirilen montaj hattı, bir dizi iş istasyonu ve bu istasyonlarda nihai ürünü meydana getirmek için tekrarlayan görev kümelerinden meydana gelen bir üretim düzenini ifade etmektedir. (Basmacı Aktuna ve Bilgin Sarı, 2025). Montaj hattının etkin olarak işletilebilmesi görevlerin istasyonlara dengeli bir şekilde dağıtılmasını gerektirmektedir. Bu dağılımı optimum şekilde gerçekleştirmek amacıyla yapılan montaj hattı dengeleme, iş istasyonlarındaki görevleri tamamlamak için gerekli olan sürenin tek biçimli hale getirilmesi, atıl süreyi minimize etmek ve hattın en verimli şekilde çalışmasını içeren çok amaçlı bir karar problemidir (Basmacı Aktuna, 2024; Becker ve Scholl, 2006).
1990'lı yıllarda çevreye duyarlı üretim ve ürün geri kazanımının kanuni düzenlemeler ve müşterilerin çevre sorunlarına bakış açıları nedeniyle bir zorunluluk haline gelmesine kadar literatürde montaj hattı dengeleme çalışmalarının yoğun olduğu görülmektedir (Güngör ve Gupta, 1999: 811-812). Bu gelişmeyle birlikte sürdürülebilir üretim kavramı önem kazanmış ve üretim sistemlerinde yaşamının sonuna gelmiş ürünlerin tersine akışlarının da bütüncül bir şekilde ele alınmasını gerektirmiştir. Üretimin olumsuz çevresel etkilerini minimize etmeye çalışan sürdürülebilir üretimin birçok sorunu arasından kullanılmış ürünlerden geri dönüştürme ya da tekrar üretme gibi çeşitli yollarla materyallerin ya da bileşenlerin geri kazanımını da içeren ürün geri kazanma araştırmacılar arasında popülerlik kazanmıştır. Tüm bu geri kazanma seçenekleri bir ürünün alt montajlarına,

bileşenlerine ya da diğer gruplara sistematik olarak ayrılması anlamına gelen demontajı gerektirmektedir (Akpınar vd., 2021: 64).
Düşük hacimli işetmelerde demontaj işlemleri için tek istasyonlu söküm sistemleri yeterli olabilirken, yüksek demontaj hacmine sahip işletmelerde, demontaj faaliyetlerini verimli bir şekilde gerçekleştirebilmek için, otomasyona uygun olması sebebiyle demontaj hatlarının kurulması önerilmektedir. Montaj hattına benzer şekilde, demontaj hattı da genellikle mekanik malzeme taşıma ekipmanlarıyla birbirine bağlanan sıralı bir istasyon dizisinden oluşan bir yapıya sahiptir (Altekin vd., 2008).
Montaj hattına benzer bir yapıya sahip olsa da demontaj hatları ürün yapısındaki değişkenlikler, bileşenlerin bilinmeyen durumları ve geriye dönük görev dizileri nedeniyle montaj hatlarına kıyasla yüksek düzeyde belirsizlik barındırmaktadır. Demontajın karmaşık ve belirsizlik içeren yapısı demontaj hatlarının tasarımını montaj hatlarına göre daha zorlu hale getirmektedir. Bu nedenle demontaj hatlarının tasarımında verimli araçlara ihtiyaç duyulmaktadır (Bentaha vd., 2014). Demontaj sırasının belirlenmesinin hesaplama açısından güç bir problem olmasına ek olarak, görev sürelerinin belirsizliği, çalışanların farklı çalışma beceri seviyeleri gibi sebeplerle problem daha da karmaşık bir hal almaktadır (Wang vd., 2021). Bu karmaşık yapısı nedeniyle literatürde demontaj hattı dengeleme ve demontaj sıralarının oluşturulması için sezgisel, matematiksel ve hibrit yöntemlerin yaygın biçimde kullanıldığı görülmektedir. Doğru şekilde dengelenmiş bir demontaj hattı geri kazanım oranını, ekonomik geri dönüşü, verimlilik ve karlılığı önemli ölçüde artırmaktadır (Zhang vd. 2025).
Sürdürülebilir üretim açısından ürün geri kazanımı kilit faktörlerden biridir (Shukla vd., 2017). Sürdürülebilir demontaj hattı yönetiminde çevresel, ekonomik ve sosyal boyutları üçlü şekilde ele almak, enerji tüketimi, istasyon yükü dengesi ve geri kazanım verimliliği üzerinde önemli iyileştirmeler sağlamaktadır (Kazançoğlu ve Ozkan-Ozen, 2020).
Tüm bu gelişmeler göz önüne alındığında demontaj hattı dengeleme literatürünün yalnızca bir optimizasyon problemi olmaktan çıkıp, sürdürülebilirlik, döngüsel ekonomi, simülasyon teknikleri, robotik sistemler ve yapay zeka uygulamalarıyla sürekli olarak gelişen bir araştırma alanı haline geldiği görülmektedir. Bu nedenle, demontaj hattı dengeleme literatüründe demontaj hattı ile birlikte kullanılan kavramların zamanla nasıl evrimleştiğini sistematik olarak incelemek önem kazanmaktadır. Çalışmada bu evrimi sistematik olarak incelemek için, eş-kelime analizi kullanılmıştır.

VERİ VE YÖNTEM

Çalışmada kullanılan veriler yüksek etki değerine sahip yayınları içermesi nedeniyle Web of Science Core Collection üzerinde yapılan sorgu ile elde edilmiştir. Aramada demontaj ve demontaj hattı üzerine yapılan Türkçe ve İngilizce çalışmaları kapsaması için TS=(“disassembly line balancing” OR “balancing of disassembly line” OR “disassembly line” OR “disassembly workstation” OR “disassembly station” OR “disassembly cell” OR “product disassembly” OR “component disassembly” OR “assembly/disassembly” OR “end-of-life disassembly” OR “disassembly sequence” OR “disassembly sequence planning” OR “sequence planning” OR “disassembly scheduling” OR “task precedence” AND “disassembly” OR “design for disassembly” OR “disassemblability” OR “disassembly evaluation” OR “disassembly planning” OR “virtual disassembly” OR “CAD-based disassembly” OR “computer-aided disassembly” OR “graph-based disassembly” OR “demontaj hattı dengeleme” OR “demontaj hattı” OR “söküm hattı” OR “demontaj planlama” OR “söküm planlama” OR “ürün demontajı”) sorgusu kullanılmıştır. Arama sonucunun farklı disiplinlerde yapılan çalışmaları içermesi ancak konuyla alakasız disiplinleri içermemesi açısından “Engineering”, “Operations Research&Management Science”, “Business Economics”, “Automation-Control Systems” gibi alanlar seçilerek araştırma alanları filtrelenmiştir. Arama sonucunda 2948 yayına ulaşılmıştır. Analiz aşamasında ulaşılan yayınların yazar anahtar kelimeleri kullanılmıştır. Farklı yazım şekillerinin analiz sonuçlarını etkilememesi için kapsamlı bir thesaurus dosyası hazırlanmış ve yazım hatası olan ya da aynı anlama gelen kelimeler tekilleştirilmiştir. Yazar anahtar kelimeleri üzerinden gerçekleştirilen analizlerde kelimelerin ağ içerisindeki etkilerini dengeli biçimde yansıtmak için fractional counting yöntemi kullanılmıştır.
Çalışmada yöntem olarak kullanılan eş-kelime analizi bir çalışma alanında üretilmiş yayınları veya diğer metinleri temsil eden terimlerin çağrışım güçlerini ölçerek çalışma alanındaki kalıpları ve eğilimleri ortaya çıkaran bir yöntemdir (Coulter vd., 2008). VOSviewer yazılımında eş-kelime analizi yöntemi ile tematik haritalar ve kümelenmeler oluşturulmuştur. Anahtar kelimelerin en az görülme sayısı (minimum occurance) dönemsel veri yoğunluğuna bağlı olarak 2 ile 9 arasında değişecek şekilde ayarlanmıştır.

BULGULAR

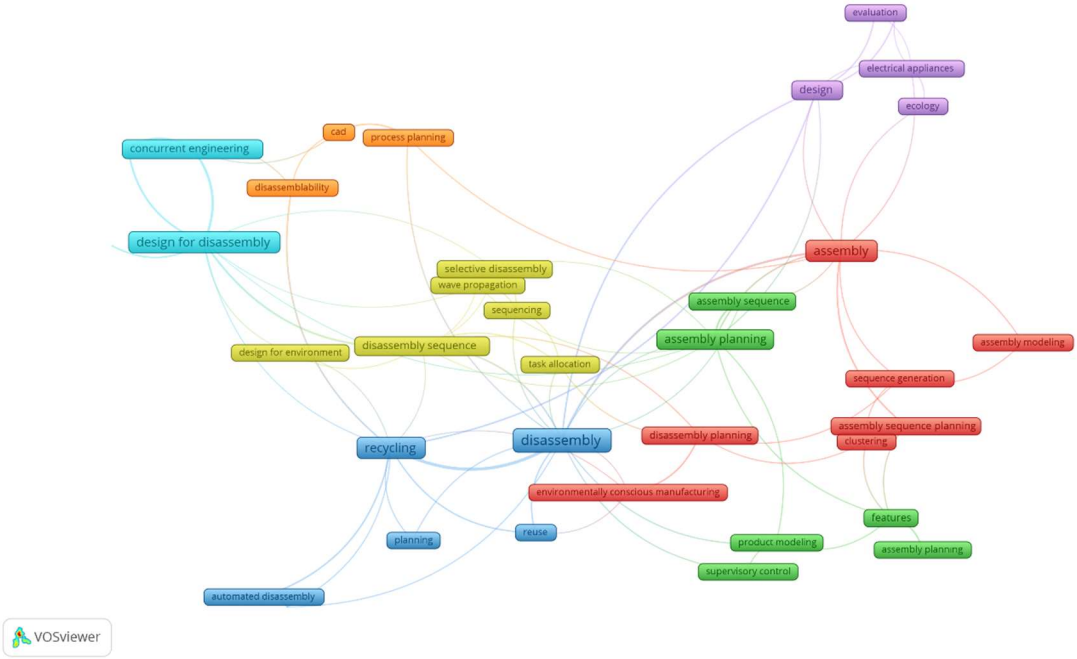
Literatürün tematik evriminin sağlıklı bir şekilde incelenebilmesi adına veri seti altı döneme ayrılmıştır. Dönemler kavramsal gelişime ek olarak yöntemsel kırılmaları da yansıtacak şekilde belirlenmiştir. İlk dönem 1980-2000 yılları arasını kapsamaktadır ve demontaj kavramının şekillendiği temel dönemdir. Bu dönemdeki yıllarda konuyla

ilgili çalışma sayıları da nispeten düşük sayıdadır. 2000 yılından itibaren yıllık yayın sayıları artmaya başlamıştır. Bu sebeple 2000 yılından sonraki dönemler beşer yıllık olacak şekilde ayrılmıştır.

1980-2000: Kuramsal Temeller ve Demontaj Kavramının Şekillenmesi

Demontaj kavramının oluşmaya başladığı ilk dönem olan 1980-2000 döneminde toplam 219 dokümana ulaşılmıştır. Bu dokümanlarda toplam 270 farklı anahtar kelime bulunmaktadır. Anahtar kelimelerin en az görülme sayısı olarak 2 seçildiğinde elde edilen 39 anahtar kelimeyle oluşturulan tematik harita Şekil 1'de gösterilmiştir.

Ortaya çıkan tematik harita incelendiğinde dönem ağının düşük yoğunluklu olduğu ve ağ yapısının merkezinde demontaj (disassembly) kavramının yer aldığı görülmektedir. Montaj ve demontaj ilişkisinin kurulduğu tasarım odaklı temalara ek olarak geri dönüşüm (recycling) ve yeniden kullanım (reuse) gibi çevresel farkındalıkla ilgili temaların ilk izleri görülebilmektedir. Ayrıca demontaj için tasarım (design for disassembly) ve çevre için tasarım (design for environment) gibi tasarım odaklı temaların güçlü olması literatürün ürün tasarımı bakış açısından geliştiğini göstermektedir. Literatürde henüz demontaj hattı görülmemekle birlikte demontaj sıralama (disassembly sequence) ve sıralama (sequencing) gibi temel sıralama kavramlarının ağda yer alması sonraki dönemlerde gelişmesi muhtemel sıralama ve planlama çalışmalarının ilk tematik izlerini oluşturmaktadır.

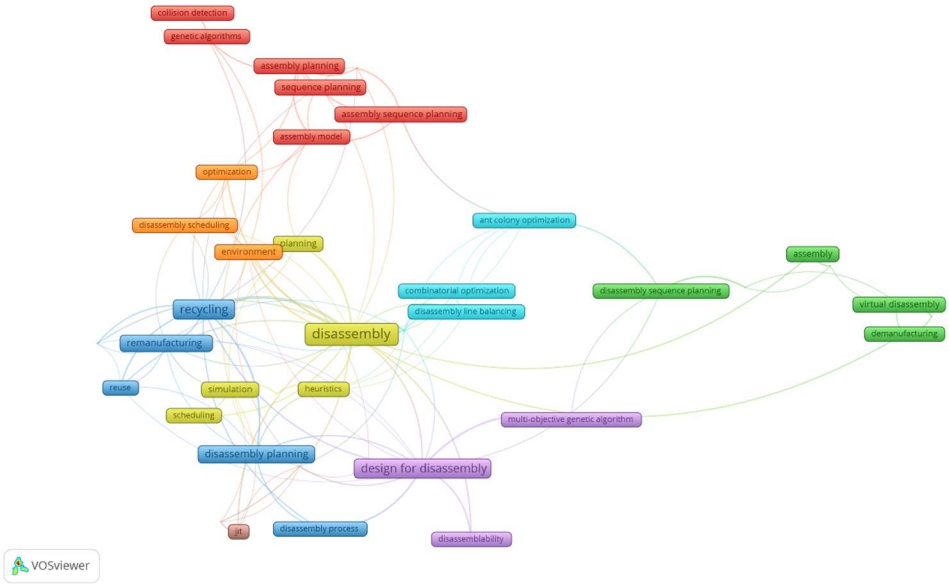


Şekil 1: 1980-2000 yılları tematik haritası

2001-2005: Planlama ve Optimizasyon Çekirdeğinin Ortaya Çıkışı

2001-2005 döneminde toplam 275 dokümana ve bu dokümanlarda toplam 521 farklı anahtar kelimeye ulaşılmıştır. Anahtar kelimelerin en az görülme sayısı olarak 3 seçildiğinde elde edilen 42 anahtar kelimeyle oluşturulan tematik harita Şekil 2'de gösterilmiştir.

Ortaya çıkan tematik harita incelendiğinde demontaj hala merkezde yer alsa da demontaj planlama (disassembly planning) ve sıralama kavramlarının belirginleştiği görülmektedir. Ayrıca birleşimsel optimizasyon (combinatorial optimization) ve sezgisel yöntemler (heuristics) kavramlarının öne çıkması planlama ve sıralama çalışmaların yükselişini işaret etmektedir. Demontaj hattı dengeleme çalışmaları ortaya çıkmaya başlamış olsa da henüz yoğun olarak görülmemektedir. Geri dönüşüm ve tekrar üretim (remanufacturing) temaları arasındaki bağların kuvvetli olduğu ve karınca kolonisi optimizasyonu (ant colony optimization) ile ilk meta- sezgisel yöntemlerin kullanılmaya başlandığı görülmektedir.

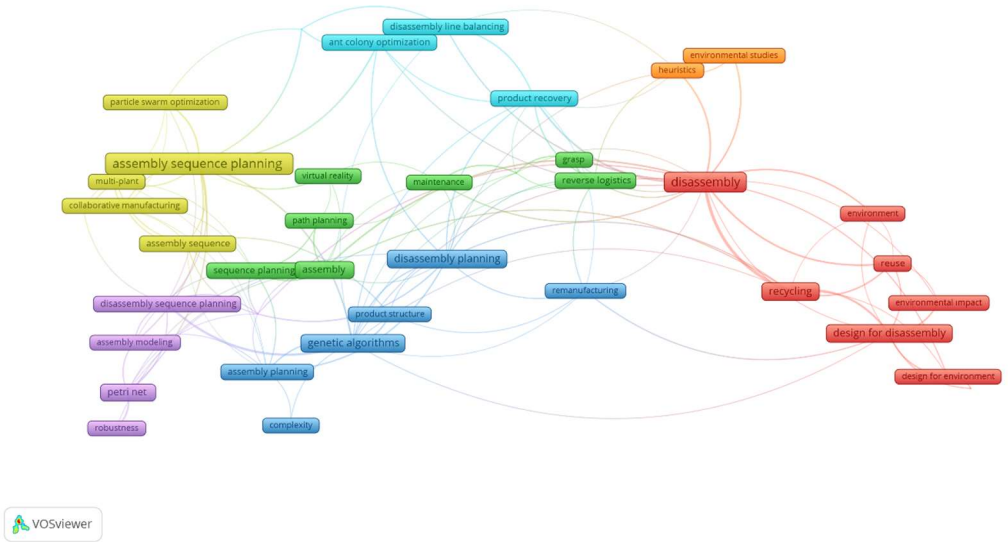


Şekil 2: 2001-2005 yılları tematik haritası

2006-2010: Demontaj Hattı Dengelemenin Bağımsız Bir Araştırma Alanı Olarak Belirginleşmesi

2006-2010 döneminde toplam 334 dokümana ve bu dokümanlarda toplam 767 farklı anahtar kelimeye ulaşılmıştır. Anahtar kelimelerin en az görülme sayısı olarak 4 seçildiğinde elde edilen 40 anahtar kelimeyle oluşturulan tematik harita Şekil 3'te gösterilmiştir.

Ortaya çıkan tematik harita incelendiğinde demontaj ve demontaj planlamanın merkezde yoğun bir yapı oluşturduğu ve karınca kolonisi optimizasyonu ve genetik algoritmalar (genetic algorithms) gibi meta-sezgisel optimizasyon tekniklerinin yaygınlaştığı görülmektedir. Demontaj hattı dengeleme (disassembly line balancing) çalışmaları görünür şekilde ağ yapısında yer almaktadır, bu da demontaj hattı dengeleme çalışmalarının bağımsız bir araştırma alanı olarak literatürde belirginleşmeye başladığını göstermektedir. Simülasyon (simulation) ve sanal gerçeklik (virtual reality) gibi yöntemlerin ve petri net davranış modelleme yaklaşımlarının haritada yer alması demontaj süreçlerinin bu yöntemlerle desteklendiğini ortaya koymaktadır.

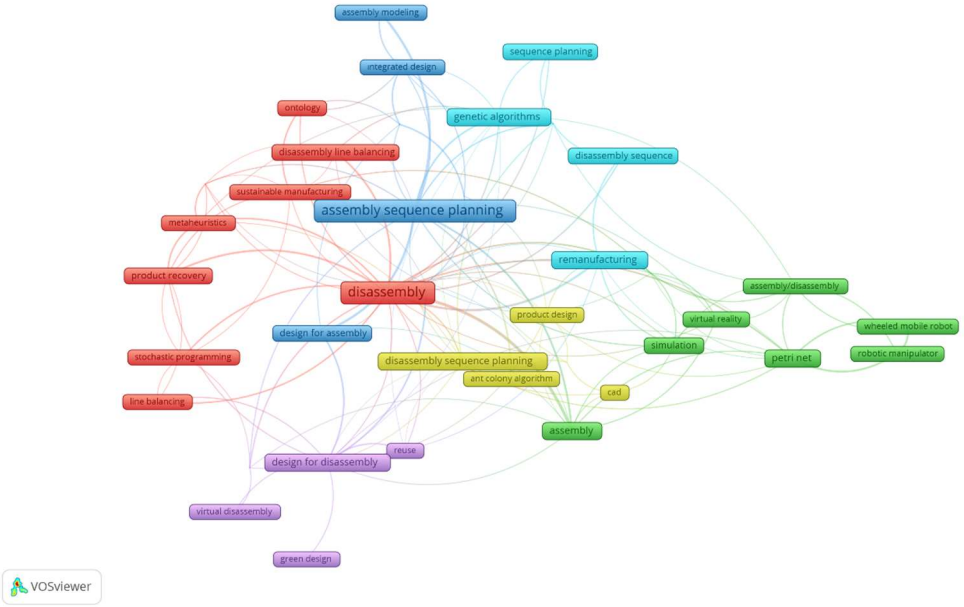


Şekil 3: 2006-2010 yılları tematik haritası

2011-2015: Robotik, Simülasyon ve Çok Amaçlı Yaklaşımların Yükselişi

2011-2015 döneminde toplam 496 dokümana ve bu dokümanlarda toplam 1246 farklı anahtar kelimeye ulaşılmıştır. Anahtar kelimelerin en az görülme sayısı olarak 5 seçildiğinde elde edilen 39 anahtar kelimeyle oluşturulan tematik harita Şekil 4'te gösterilmiştir.

Ortaya çıkan tematik harita incelendiğinde demontajın hala merkezde yer aldığı, montaj sırası planlamanın (assembly sequence planning) ise ağ içinde ikinci bir merkez haline geldiği görülmektedir. Bu yapı bu iki kavramın daha bütünleşik hale geldiğini ve yöntemsel olarak olgunlaştığını göstermektedir. Haritanın sağ tarafında ayrı bir küme olarak görülen robotik manipülatör (robotic manipulator), tekerlekli mobil robot (wheeled mobile robot), sanal gerçeklik ve simülasyon gibi kavramlar robotik sistemler ve simülasyon tabanlı modellemenin güçlendiğini ortaya koymaktadır. Demontaj planlama, demontaj sıra planlama (disassembly sequence planning), genetik algoritmalar ve karınca kolonisi optimizasyonu gibi kavramların merkez küme ile birleşmesi, sezgisel ve meta-sezgisel yöntemlerin montaj ve demontaj planlamalarında standart hale geldiğini göstermektedir. Haritanın sol tarafında kümelenen sürdürülebilir üretim (sustainable manufacturing), ürün kurtarma (product recovery), meta-sezgisel (metaheuristics) ve hat dengeleme (line balancing) gibi kavramlar çevresel etkiler ve geri kazanım süreçlerinin görünürlük kazandığını ortaya koymaktadır.

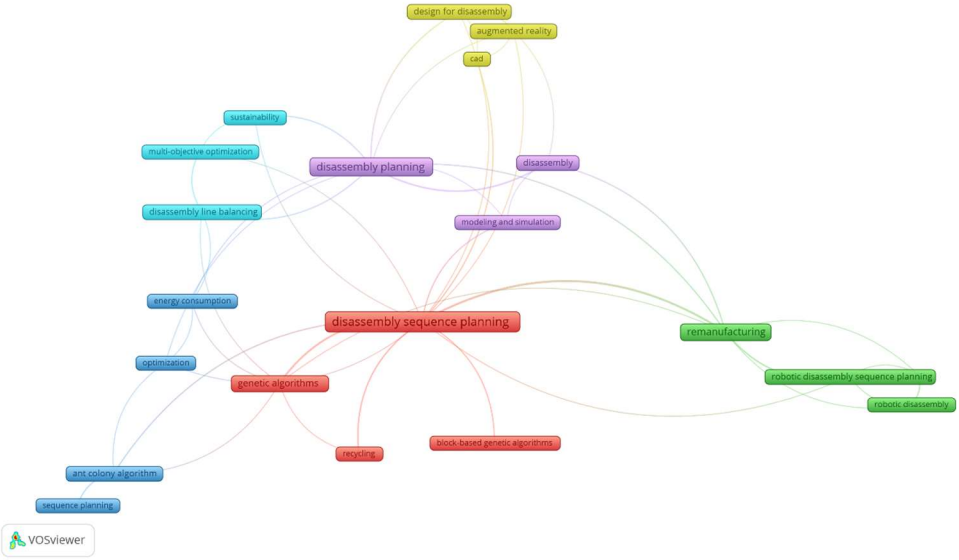


Şekil 4: 2011-2015 yılları tematik haritası

2016-2020: Sürdürülebilirlik ve Döngüsel Ekonomi Odaklı Çalışmalar

2016-2020 döneminde toplam 638 dokümana ve bu dokümanlarda toplam 169 farklı anahtar kelimeye ulaşılmıştır. Anahtar kelimelerin en az görülme sayısı olarak 2 seçildiğinde elde edilen 22 anahtar kelimeye göre oluşturulan tematik harita Şekil 5'te gösterilmiştir.

Bu dönemde literatür, belirli tematik odaklarda yoğunlaştığı için anahtar kelime çeşitliliği önceki dönemlere göre düşmüştür. Demontaj planlama, çok amaçlı optimizasyon (multi-objective optimization), enerji tüketimi (energy consumption) gibi kavramlar belirgin şekilde öne çıkmıştır ve bu yapı demontaj süreçlerinin birden fazla amacın aynı anda ele alındığı karmaşık bir optimizasyon çerçevesine dönüştüğünü göstermektedir. Özellikle sürdürülebilirlik (sustainability) ve çok amaçlı optimizasyon arasındaki güçlü bağ, bu dönemde sürdürülebilirliğin oldukça önemsenmeye başladığını ortaya koymaktadır. Enerji tüketimi, geri dönüşüm ve yeniden üretim gibi kavramların bütünleşik olarak ele alınması literatürde döngüsel ekonomi bakış açısının belirginleştiğini ortaya koymaktadır. Haritanın sağ tarafında kümelenen yeniden üretim, robotik demontaj (robotic disassembly), robotik demontaj sıralama planlaması (robotic disassembly sequence planning) kavramları, bir önceki dönemdeki yükselişinin ardından robotik temelli demontaj çalışmalarının bu dönemde daha olgun ve uygulamaya yönelik bir karakter kazandığını göstermektedir. Ağda sezgisel ve meta sezgisel yöntemlerin hala yaygın şekilde kullanıldığı görülmektedir. Bu yöntemler demontaj sıralama, enerji ve sürdürülebilirlik odaklı çok amaçlı modellerin çözüm araçları haline gelmiştir.

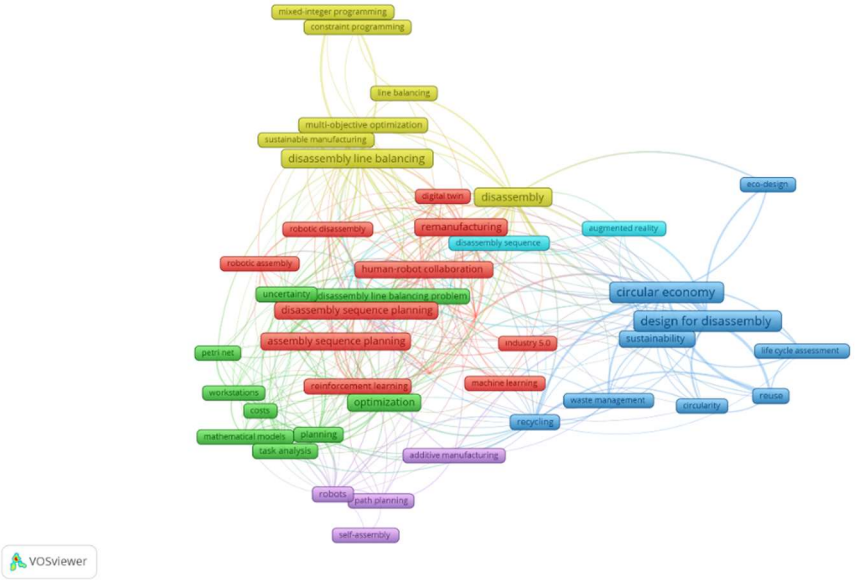


Şekil 5: 2016-2020 yılları tematik haritası

2021-2025: Yapay Zeka, İnsan-Robot İşbirliği ve Dijital Dönüşüm

2021-2025 döneminde toplam 982 dokümana ve bu dokümanlarda toplam 2893 farklı anahtar kelimeye ulaşılmıştır. Anahtar kelimelerin en az görülme sayısı olarak 9 seçildiğinde elde edilen 48 anahtar kelimeye göre oluşturulan tematik harita Şekil 6'da gösterilmiştir.

Ortaya çıkan tematik harita incelendiğinde önceki dönemlere benzer şekilde merkezde yine demontaj kavramının yer aldığı ancak etrafında makine öğrenmesi (machine learning), pekiştirmeli öğrenme (reinforcement learning), robotik demontaj gibi dijitalleşme ve yapay zeka ile ilgili kavramların yer aldığı görülmektedir. Bu kavramlar demontaj hattı dengeleme problemlerinin ele alınmasında öğrenen modeller, uyarlanabilir optimizasyon teknikleri ve yapay zeka tabanlı karar algoritmalarının kullanıldığını göstermektedir. Bu dönemde özellikle Endüstri 5.0'ın (Industry 5.0) literatüre girmesiyle birlikte insan-makine iş birliğinin (human-machine collaboration) de haritada yer edinmeye başladığı gözlemlenmektedir. Ayrıca haritanın sağ tarafında yoğunlaşan döngüsel ekonomi (circular economy), sürdürülebilirlik ve demontaj için tasarım kavramları, önceki dönemlerde giderek güçlenen çevresel hassasiyetin literatürde stratejik bir tema haline geldiğini göstermektedir.



Şekil 6: 2021-2025 yılları tematik haritası

TARTIŞMA VE SONUÇ

Çalışmada, Web of Science veri tabanından elde edilen veri seti ile demontaj hattı dengeleme literatürünün 1980 yılından günümüze tematik evrimi incelenmiştir. Tematik açıdan kavramlar demontaj-montaj bütünleşmesine, ardından optimizasyon modellerine, daha sonra robotik ve simülasyon temelli yapılara, son yıllarda ise sürdürülebilirlik, dijitalleşme ve yapay zeka birleşimine evrilmiştir. Tematik haritalardaki ağ yapısı erken dönemlerde gevşekken, 2016 sonrasında yüksek yoğunluklu ve disiplinler arası bir yapıya dönüşmüştür.

Elde edilen tematik evrim sonuçları gelecekteki araştırmalar açısından önemli ipuçları sunmaktadır. Yapay zeka tabanlı optimizasyon, pekiştirmeli öğrenme ve makine öğrenmesi modellerinin demontaj hattı dengeleme süreçlerine entegrasyonun giderek kritik hale geldiği görülmektedir ve bu da demontaj hattı dengeleme süreçlerinde öğrenen ve uyarlanabilir algoritmaların giderek daha fazla kullanılacağını göstermektedir. Endüstri 5.0'la birlikte insan-makine iş birliğinin hat dengeleme kararlarına dahil edilmesiyle operatör güvenliği, görev paylaşımı, ergonomi gibi konularda yeni bir araştırma alanını ortaya çıkmaktadır. Dijital ikiz temelli dinamik hat yönetimi, gerçek zamanlı veriyle çevrim süresi ve istasyon yüklerinin sürekli güncellenmesi için önemli fırsatlar sunmaktadır. Sürdürülebilirlik ve döngüsel ekonomi temalarının, yaşam döngüsü değerlendirmesi ve karbon duyarlı söküm modelleriyle birleşerek gelecekte daha stratejik bir konuma yerleşeceği görülmektedir. Ayrıca belirsizlik altında karar verme sağlam optimizasyon ve uyarlanabilir söküm planlama yaklaşımlarının önümüzdeki dönemde yöntemsel çeşitliliği artırması beklenmektedir.

Bu çalışma demontaj hattı dengeleme literatürünün yaklaşık kırk beş yıllık gelişimini tematik açıdan bütüncül bir bakış açısıyla ortaya koyarak, kavramsal kırılmaları, yöntemsel dönüşümleri ve araştırma alanının gelecekte evrileceği yönleri sistematik şekilde görünür kılmıştır. Elde edilen tematik yapıların ortaya konması, araştırmacılar için mevcut eğilimlerin ve gelecekteki çalışma alanlarının anlaşılması açısından yol gösterici bir çerçeve sunmaktadır.

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NATIONAL AND EUROPEAN PUBLIC STRATEGIES AND POLICIES ON ACTIVE AGING

Mihaela-Corina BUCUR

Jurist, Authorized Mediator, Teacher, Founding member – Romanian Society of Victimology
Manager – Asanka Sante Medical Clinic, Bucharest
E-mail: prof.bucur@gmail.com
ORCID ID: 0000-0001-8904-0436

Abstract

In response to the demographic shift toward an aging population in both Romania and the European Union (EU), this study examines the implications of active aging policies and strategies aimed at improving the quality of life for older adults. The research highlights key initiatives such as the EU's Active and Healthy Ageing Strategy and Romania's national efforts to address the needs of the elderly. The findings reveal both opportunities and challenges associated with an aging population, emphasizing the necessity for comprehensive social, healthcare, and digital inclusion strategies. Through an analysis of national and EU frameworks, this work provides recommendations for more inclusive, sustainable approaches to aging. Furthermore, it underscores the importance of a multi-dimensional approach, integrating healthcare, social support, and intergenerational collaboration to ensure a future where aging populations can thrive.

Keywords: Demographic shift, healthcare policies, social inclusion

INTRODUCTION

In recent decades, both Romania and the wider European Union (EU) have experienced significant demographic changes, primarily characterized by a decline in birth rates and an increase in life expectancy. This combination has led to the accelerated aging of the population, with profound social, economic, and healthcare implications. The trend of aging populations is a global issue, but in Romania, it has manifested at an especially rapid pace, positioning the country among the top 10 nations worldwide in terms of the speed at which its population is aging. These changes demand urgent attention to ensure that older adults can continue to contribute meaningfully to society and live healthy, fulfilling lives in their later years.

As of 2024, approximately 21.6% of the EU population is over the age of 65, while in Romania, the figure stands at 20%. This proportion is not just a statistic—it reflects the shifting demographic landscape and the need for societies to adapt to an increasingly aging population. By 2050, it is estimated that the proportion of elderly people in Romania will reach 27.7%. In addition, the proportion of people aged 80 and above is expected to rise sharply, from the current 4.8% to 8.5%. These figures highlight a fundamental shift in the age structure, with significant implications for everything from healthcare and pensions to the workforce and social integration.

The aging of the population presents both challenges and opportunities. While the increased life expectancy is a testament to advancements in healthcare and living conditions, it also creates significant pressures on healthcare systems, social services, and labor markets. The number of people requiring long-term care, healthcare services, and financial support for retirement will increase, which could strain existing systems if not adequately addressed. Moreover, as people live longer, the need to ensure they remain active, healthy, and included in society becomes even more important.

This demographic trend emphasizes the urgent need for effective active aging policies and strategies, both at the European and national levels. Active aging is not merely about extending life expectancy but about ensuring that older individuals can live those years with dignity, independence, and access to opportunities for continued participation in social, economic, and cultural life. Effective strategies must address key areas such as healthcare, social inclusion, employment, lifelong learning, and intergenerational solidarity.

In the face of such demographic shifts, it is critical for governments to implement policies that not only cater to the needs of the elderly population but also engage them as active members of society. Active aging policies can help reduce the potential negative economic impacts of an aging population, as older adults continue to contribute to the workforce, volunteer, and support family networks.

Furthermore, these policies must also take into account the diverse needs of older adults, including those who may face particular challenges due to health issues, poverty, or social isolation. Ensuring that every older person has access to the services and opportunities they need to live fulfilling lives will be crucial to maintaining societal cohesion and promoting long-term well-being.

As Romania and the EU continue to experience an aging population, addressing the challenges posed by these demographic changes through comprehensive and inclusive active aging policies will be essential for creating a society where older individuals can thrive and contribute to their communities. The strategies developed today will determine how well societies adapt to this demographic reality, ensuring that aging becomes an opportunity rather than a challenge.

MATERIALS AND METHODS

This study draws on qualitative data from a variety of sources, including government reports, EU policy documents, and academic studies. The research analyzes: Reports from Romania's Ombudsman and OECD on aging demographics; The United Nations Decade of Healthy Ageing (2021–2030) and EU strategies such as the Action Plan for Active and Healthy Ageing (2023–2026); Statistical data on elderly welfare services and active participation in Romania.

CURRENT SITUATION IN ROMANIA

According to a report from the Ombudsman, the main vulnerability of older adults in Romania is poverty, and social services for elderly individuals without family members or those requiring assistance upon hospital discharge are insufficiently developed.

The "Senior's Telephone Service": This service handles approximately 12,000 calls per year from older individuals or their family members. Of these, 48% reported not having access to essential information for daily life, and 53% were living alone.

The Organisation for Economic Co-operation and Development (OECD) report, "OECD Reviews of Labour Market and Social Policies: Romania 2025", notes that Romania has made significant progress in recent years in terms of social welfare and employment. However, the rapidly aging population has important implications for the country's labor market and economy.

According to the "Social Services Index 2025 – Romania", there were 1,079 social services available for older adults in Romania, including 67 residential medical-social centers with 6,573 beneficiaries and 523 residential centers with 23,964 beneficiaries.

Regarding the "active participation" of older adults, an analysis published in "Ageing Unequally in Europe" (Oxford Academic) revealed that in Romania, between 53% and 57% of seniors report a low Active Ageing Index (AAI).

THE UNITED NATIONS DECADE OF HEALTHY AGEING (2021–2030)

This is an ambitious global initiative aimed at improving the quality of life of older people and ensuring that the aging process is viewed positively. It is a call to action for countries, organizations, and communities to create environments that support the health, well-being, and dignity of older individuals.

Background and Objectives

The Decade was officially declared by the United Nations General Assembly on December 14, 2020. The initiative's purpose is to promote healthier aging by focusing on four key areas of action:

Combatting Ageism: This is a crucial aspect of the Decade, as ageism (the discrimination or stereotyping of individuals based on their age) can prevent older adults from fully participating in society and accessing essential services. The initiative encourages campaigns and policies to challenge harmful stereotypes and biases, fostering an inclusive and respectful environment for people of all ages.

Improving the Health and Well-being of Older People: This goal aims to promote a healthy and active aging process. The focus is on enabling older people to maintain their physical, mental, and social health by improving healthcare systems, access to necessary services, and promoting preventive measures such as physical activity and mental health support.

Changing the Environments in Which People Live: The Decade calls for the creation of age-friendly environments—both physical and social—that support older people's autonomy and participation in society. This includes access to age-friendly housing, transportation, and public spaces, as well as fostering social inclusion and reducing loneliness.

Enhancing the Quality of Long-Term Care: With a growing aging population, long-term care systems need to be strengthened to ensure that older adults receive the care they need in a dignified and respectful manner. This includes improving caregiving standards, ensuring caregiver training, and ensuring that long-term care systems are accessible, equitable, and sustainable.

Global Call to Action. The Decade encourages global, national, and local stakeholders to act together to create policies, programs, and solutions that prioritize healthy aging. These actions should encompass:

Research and Data: Supporting research to better understand the aging process and the specific needs of older adults, enabling evidence-based policies.

Inclusive Policies: Governments are encouraged to implement inclusive policies that address the challenges older people face, such as pension security, healthcare access, and housing affordability.

Engagement of Civil Society: The involvement of civil society, including older people themselves, in decision-making processes and the design of age-friendly policies.

As populations worldwide age, particularly in Europe and North America, there is a growing recognition that the well-being of older adults is central to building equitable, resilient, and sustainable societies. Healthy aging is not just about longevity; it's about ensuring that people live longer, healthier lives with the opportunity to remain active and engaged in their communities.

By focusing on these key areas, the Decade of Healthy Ageing aims to reverse the negative trends associated with aging, improve the quality of life of older people, and create more inclusive and supportive societies.

Role of Romania in the Decade. For countries like Romania, which have a rapidly aging population, the Decade represents an opportunity to implement long-term strategies and policies that promote healthy aging. Romania's focus could include:

Increasing the accessibility of healthcare and social services for the elderly.

Improving urban planning to ensure age-friendly environments, particularly in rural areas where older people often experience isolation.

Raising awareness about the benefits of active aging through education and public campaigns.

EUROPEAN STRATEGY FOR SCALING ACTIVE AND HEALTHY AGEING (2021–2027)

This is a major initiative launched by the European Union to address the challenges and opportunities presented by an aging population. The strategy aims to support older adults in leading healthy, active, and independent lives for as long as possible, fostering their participation in society and contributing to the sustainability of social and healthcare systems.

Context and Importance

Europe is experiencing an unprecedented demographic shift, with the proportion of people aged 65 and over expected to increase significantly in the coming decades. This aging population presents both challenges and opportunities for European societies. On the one hand, it creates pressure on pension systems, healthcare, and long-term care services. On the other hand, older individuals contribute valuable experience, skills, and wisdom to communities, and their potential can be better realized with the right strategies in place.

The European Strategy for Active and Healthy Ageing (2021–2027) was developed in response to these demographic shifts, recognizing the need for a collective European effort to enhance the quality of life for older people, promote their well-being, and maximize their potential.

Main Objectives of the Strategy

The strategy focuses on several key objectives, each of which is designed to support older people in their daily lives while fostering greater social inclusion: Promoting Active and Healthy Aging; Enhancing Long-Term Care Services; Creating Age-Friendly Environments; Fostering Social Inclusion; Empowering Older People through Digital Innovation; Strengthening Research and Innovation.

Key Actions and Initiatives

The European Strategy for Scaling Active and Healthy Ageing outlines several concrete actions and initiatives to meet these objectives, including:

The European Innovation Partnership on Active and Healthy Ageing (EIP AHA): This initiative brings together stakeholders from the public, private, and academic sectors to work on innovative solutions that improve the health and well-being of older adults.

Digital Health and Care: The strategy encourages the integration of digital technologies in healthcare systems, including telemedicine, remote monitoring, and digital health records, to improve the efficiency and accessibility of healthcare for older people.

Support for Age-Friendly Communities: The strategy supports cities and regions in becoming more age-friendly by providing guidance and resources for developing inclusive infrastructure and services.

Collaboration with the World Health Organization (WHO): The EU works closely with WHO and other international bodies to implement global standards for healthy aging, including the WHO Global Network for Age-friendly Cities and Communities.

ACTION PLAN FOR ACTIVE AND HEALTHY AGEING (2023–2026)

This is a key initiative developed to support the goals of the European Strategy for Active and Healthy Ageing. This action plan focuses on creating a robust framework for ensuring that Europe's aging

population enjoys a higher quality of life, remains integrated into society, and continues to contribute to their communities in meaningful ways.

Context and Purpose

Europe's population is aging rapidly, with the proportion of people over the age of 65 expected to grow significantly over the next decades. This demographic shift presents several challenges, including pressures on social security systems, healthcare, and long-term care services. However, it also offers an opportunity to tap into the immense potential of older adults, who possess invaluable experience and wisdom.

The Action Plan for Active and Healthy Ageing (2023–2026) provides a structured approach to improving the lives of older Europeans through a range of strategic measures. It builds on previous initiatives, such as the European Innovation Partnership on Active and Healthy Ageing (EIP AHA), and aligns with international frameworks like the UN Decade of Healthy Ageing (2021–2030). The plan aims to ensure that older people can lead fulfilling, active, and independent lives for as long as possible.

Objectives of the Action Plan

The 2023–2026 Action Plan outlines a number of specific objectives designed to foster healthier, more active aging across Europe:

Enhance Access to Health and Social Care
A primary goal of the Action Plan is to ensure that older people have access to high-quality health and social care services. This includes strengthening health systems to cater specifically to the needs of aging populations, with a focus on prevention, rehabilitation, and the management of chronic diseases. The plan emphasizes integrated care, where medical, social, and long-term care are coordinated to meet the holistic needs of older people.

Promote Healthy Lifestyles and Preventive Measures
Active aging is closely tied to maintaining good health. The plan encourages the promotion of physical activity, proper nutrition, mental health support, and other preventive measures. This objective aims to reduce the risk of chronic diseases and improve the overall health and well-being of older adults. Initiatives will focus on health literacy, helping older people to make informed decisions about their health and well-being.

Foster Social Participation and Inclusion
Social inclusion is essential for active aging. The Action Plan outlines initiatives to reduce social isolation among older adults by promoting opportunities for them to engage in social, cultural, and economic activities. It advocates for strengthening community-based services, increasing opportunities for volunteerism, and creating social networks that enhance the quality of life for elderly people.

Improve Age-Friendly Environments
The Action Plan promotes the development of age-friendly physical environments that enable older adults to remain independent and participate in society. This includes accessible housing, transportation, and public spaces. The goal is to create communities where older people can live and move safely, comfortably, and independently, while also addressing barriers to social interaction.

Promote Digital Inclusion and Innovation
As digital technologies continue to play a growing role in daily life, ensuring that older adults have access to digital tools and resources is crucial. The Action Plan seeks to promote digital literacy among older people, enabling them to use digital platforms for communication, health monitoring, and accessing services. It also encourages innovation in the development of assistive technologies and digital solutions that can improve the lives of older people.

Support Caregivers and Family Caregivers
Family caregivers play a critical role in supporting older people, but often face challenges related to stress, lack of training, and limited support. The Action Plan addresses these issues by proposing measures to better support caregivers through training programs, resources, and financial support. This will help improve the quality of care older people receive and reduce the burden on family caregivers.

Strengthen Data Collection and Evidence-Based Decision Making
To develop effective policies and initiatives, the Action Plan stresses the importance of improving data collection on aging. Gathering accurate, timely data on the health, social, and economic needs of older adults will allow policymakers to design targeted interventions. The action plan encourages collaboration between EU member states, research institutions, and other stakeholders to enhance the availability and use of age-related data.

Key Actions and Initiatives

Several concrete actions are laid out in the 2023–2026 Action Plan:

The European Innovation Partnership on Active and Healthy Ageing (EIP AHA) will continue its work, focusing on the development and scaling of innovative solutions for active aging, including digital tools and technologies.

Joint Actions on Health and Long-Term Care: The EU will facilitate cross-border cooperation to share best practices and ensure the effective delivery of healthcare services to older populations.

Age-Friendly Communities: The EU will continue supporting cities and regions in becoming more age-friendly, providing guidance, funding, and technical assistance to transform urban and rural environments to better suit the needs of older people.

Digital Solutions for Health and Care: Promoting the use of telemedicine, remote monitoring, and health apps tailored to older people to improve healthcare delivery and self-management of chronic conditions.

Public Awareness Campaigns: To combat ageism and raise awareness about the benefits of active aging, the Action Plan will support public campaigns aimed at changing societal attitudes toward aging.

Expected Outcomes

By the end of 2026, the Action Plan aims to achieve several key outcomes:

Improved health outcomes for older people, with a focus on prevention, chronic disease management, and better access to healthcare.

Increased participation of older adults in social, economic, and cultural activities, reducing isolation and enhancing their quality of life.

Age-friendly environments across Europe, with more accessible public spaces, transportation, and housing that support independent living.

Greater digital inclusion, with older adults gaining the skills and access to technology to improve their daily lives.

Enhanced support for caregivers, enabling them to provide better care and reduce their stress.

EU ACTION PLAN FOR INTERGENERATIONAL EQUITY (2023–2027)

This is a forward-thinking initiative developed to promote fairness, cooperation, and mutual understanding between generations in Europe. With demographic shifts and the increasing aging population, intergenerational solidarity is becoming more important than ever. This action plan aims to

ensure that the economic, social, and political benefits of intergenerational cooperation are fully realized, addressing the unique challenges that both younger and older generations face.

Context and Purpose

Europe's demographic landscape is undergoing significant changes. The population is aging rapidly, and the working-age population is shrinking, leading to challenges in sustaining welfare systems, pension schemes, and the labor market. At the same time, younger generations face their own set of challenges, including high youth unemployment, rising housing costs, and the effects of economic and environmental uncertainty.

Intergenerational equity seeks to address the tensions between generations, promoting fairness, support, and collaboration. The EU recognizes that fostering solidarity between generations is crucial for long-term social cohesion and economic sustainability. The EU Action Plan for Intergenerational Equity (2023–2027) lays out a set of strategic measures aimed at creating a society where both younger and older generations can thrive, collaborate, and share in the prosperity of Europe.

Main Objectives of the Action Plan

The EU's Action Plan for Intergenerational Equity focuses on several core objectives to ensure that both young and old generations are treated equitably and can contribute to and benefit from society:

Promote Social Cohesion Across Generations
One of the primary goals of the action plan is to bridge generational divides by fostering mutual understanding, respect, and solidarity. Initiatives will focus on challenging stereotypes about both older and younger people, combating ageism and generational conflict, and creating opportunities for intergenerational dialogue. By promoting a culture of inclusion and cooperation, the EU aims to strengthen social cohesion and ensure that every generation is valued.

Ensure Economic Sustainability and Fairness
The economic dimension of intergenerational equity revolves around ensuring that both generations have equal access to opportunities for prosperity. This includes addressing issues such as pension fairness, access to affordable housing for younger people, and fair working conditions. The plan emphasizes financial sustainability by promoting policies that balance the needs of the aging population with the economic opportunities for younger generations, avoiding burdening one group at the expense of the other.

Support for Education and Employment
Young people face significant challenges in terms of employment and education. The action plan aims to invest in education and training opportunities for youth, ensuring they have the skills to thrive in the changing economy. It also focuses on creating more employment opportunities for younger people, addressing issues like job insecurity, underemployment, and the rising cost of living, particularly in urban areas.

Pension Systems and Social Security
A major focus of the action plan is to ensure the sustainability of pension systems that provide adequate support to older generations while maintaining fairness for younger generations. This includes ensuring that pension systems are not disproportionately burdened by demographic trends and that young people can expect to have reliable pensions in the future. The action plan will also explore innovative ways to address the long-term viability of social security systems.

Promote Health and Well-being Across the Lifespan
The action plan stresses the importance of promoting the health and well-being of all generations. For older generations, this means providing access to quality healthcare, long-term care, and support for aging in dignity. For younger generations, this includes addressing mental health issues, improving

access to healthcare services, and tackling public health challenges such as obesity, substance abuse, and stress. The plan promotes preventive health measures, ensuring that every generation has the opportunity to live a long, healthy life.

Create Opportunities for Intergenerational Exchange
The action plan includes specific initiatives to foster intergenerational programs that encourage collaboration, sharing of knowledge, and mutual support between young and old. This could involve volunteer opportunities, community projects, mentorship schemes, and shared living arrangements. By facilitating spaces where different generations can work together and learn from one another, the EU aims to strengthen social bonds and encourage lifelong learning.

Addressing Housing Inequality
Housing affordability is a pressing concern for younger generations, while older individuals may face difficulties maintaining their homes. The action plan will address housing policies to ensure that young people have access to affordable housing options and that older individuals can age in place. Solutions such as intergenerational housing projects, where younger and older generations live together, will be explored to promote shared living and solidarity.

Environmental Sustainability and Climate Change
Another significant aspect of the action plan is to foster intergenerational cooperation in addressing environmental sustainability. The younger generation is particularly affected by climate change and environmental degradation, and it is vital that both older and younger generations collaborate to find sustainable solutions. The action plan supports initiatives that allow different generations to come together in tackling climate change through green technologies, sustainable consumption, and policy reform.

Key Actions and Initiatives

The EU Action Plan for Intergenerational Equity (2023–2027) outlines several key actions and initiatives, including:

Intergenerational Dialogue Initiatives: Programs and forums for dialogue and exchange between generations will be implemented to build mutual understanding and break down generational barriers.

Policy Reform: Legislative changes to ensure pension systems, healthcare, and social protection are equitable and sustainable for both older and younger generations.

Support for Intergenerational Projects: Funding for community-based projects that promote collaboration between generations, such as shared housing, mentorship programs, and cooperative initiatives.

Public Awareness Campaigns: Initiatives to challenge age-related stereotypes and promote intergenerational solidarity across Europe.

Expected Outcomes

By 2027, the EU expects to achieve the following outcomes:

Increased intergenerational solidarity, with stronger cooperation and mutual understanding between younger and older generations.

More equitable access to economic opportunities, such as affordable housing, fair pensions, and sustainable employment opportunities for all generations.

Improved well-being for all age groups, with greater access to healthcare, education, and social support systems.

Fewer barriers to intergenerational exchange, through enhanced programs that encourage communication and shared projects between generations.

NATIONAL STRATEGY ON LONG-TERM CARE AND ACTIVE AGING 2023–2030

This is a comprehensive framework developed by the government to address the challenges and opportunities associated with the aging population in the country. With the number of older adults increasing significantly in recent years, the strategy aims to improve the quality of life for older people, ensuring their well-being, dignity, and participation in society. It focuses on enhancing long-term care systems and promoting active aging through a range of policies and initiatives aimed at empowering older people to live independently, stay healthy, and remain engaged in their communities.

Context and Purpose

The aging population presents both challenges and opportunities for the country. According to demographic projections, the number of people over 65 years old is expected to rise steadily, which will place increasing pressure on the healthcare, pension, and long-term care systems. At the same time, older adults have significant potential to contribute to society, with their wealth of experience, skills, and knowledge.

The National Strategy on Long-Term Care and Active Aging 2023–2030 seeks to create a sustainable, inclusive, and supportive environment that enables older individuals to live fulfilling lives, participate in social and economic activities, and receive the care and support they need. This strategy not only focuses on improving long-term care services but also emphasizes the importance of maintaining health, fostering social inclusion, and ensuring that older people can live independently for as long as possible.

Main Objectives of the Strategy

Enhancing Long-Term Care Services
One of the central goals of the strategy is to ensure the availability and accessibility of high-quality long-term care services. This involves strengthening the infrastructure of both residential care and home care systems, with a focus on providing person-centered care. The strategy emphasizes improving the training of caregivers, enhancing the quality of services, and ensuring that care is delivered with dignity and respect. The aim is to provide care that meets the specific needs of each individual, with a focus on integrated care that connects medical, social, and personal services.

Promoting Active Aging and Preventive Healthcare
The strategy encourages older adults to remain active and engaged in society, focusing on prevention and health promotion. Active aging is not just about extending life but also about improving the quality of life. This includes promoting physical activity, mental health, and healthy lifestyles among older people. Programs to prevent chronic diseases and support mental well-being, such as campaigns on nutrition, physical fitness, and social engagement, will be expanded.

Supporting Independent Living
Empowering older adults to live independently for as long as possible is a key objective of the strategy. This involves improving access to age-friendly housing, transportation, and community services that enable older people to live safely and comfortably in their homes. The strategy advocates for making cities and towns more age-friendly by creating accessible environments that meet the needs of older people, such as barrier-free public spaces, better public transport, and community centers designed for elderly individuals.

Fostering Social Inclusion and Participation
Social isolation and exclusion are significant risks for older people. The strategy promotes policies that encourage older adults to stay socially connected and engaged. This includes supporting intergenerational programs, volunteer opportunities, and social clubs that bring people of different ages

together. By fostering a sense of community and participation, the strategy aims to reduce loneliness and enhance the quality of life for older individuals.

Strengthening the Care Workforce
A critical element of the strategy is to ensure that there are enough trained and qualified caregivers to meet the growing demand for long-term care services. The strategy outlines measures to improve the recruitment, training, and retention of healthcare professionals and informal caregivers. This includes offering educational programs, improving working conditions, and providing financial support for caregivers, especially family caregivers who play a crucial role in the care of older adults.

Leveraging Digital Solutions and Innovation
The strategy recognizes the potential of digital technologies to enhance the lives of older people. The use of telemedicine, remote monitoring, and digital health tools can help older individuals manage their health more effectively and access care without leaving their homes. The strategy promotes the development and adoption of innovative solutions, including assistive technologies, to help older people maintain their independence and improve their quality of life.

Ensuring Financial Sustainability
As the population ages, there is a need to ensure that long-term care services and pension systems remain financially sustainable. The strategy calls for the development of sustainable financing models for long-term care, which may include public-private partnerships, innovations in funding, and long-term care insurance schemes. Ensuring that older people can access the services they need without financial hardship is a key goal.

Key Actions and Initiatives

The National Strategy includes several key actions and initiatives to achieve its objectives:

Expansion of Community-Based Care: Investing in home care services and community-based healthcare initiatives to allow older adults to remain in their homes and receive care tailored to their needs.

Creation of Age-Friendly Environments: Supporting municipalities and regions to become more age-friendly by improving public infrastructure, public services, and housing that support older people's independence.

Support for Digital Literacy: Providing training and resources to older adults to help them use digital tools for health monitoring, communication, and accessing services.

Improvement of Long-Term Care Facilities: Upgrading the infrastructure of long-term care facilities to ensure they meet modern standards of care and comfort, and providing additional funding to support their operation.

Support for Caregivers: Creating a national framework to provide support, recognition, and training for caregivers, particularly family caregivers who often face challenges in balancing work, personal life, and caregiving responsibilities.

Expected Outcomes

By 2030, the strategy aims to achieve several key outcomes: Improved quality of life for older adults, with better access to healthcare, social services, and opportunities for active participation in society; Increased independence for older people, with more options for home care, age-friendly housing, and community support; Higher levels of satisfaction among caregivers, with better training, support, and financial assistance; Sustainability of the long-term care system, ensuring that services remain available and affordable as the population ages.

NATIONAL PROGRAM "CYBERSECURITY. INITIATION FOR SENIORS"

This is an initiative launched to support and empower older adults in developing the necessary digital skills to navigate the increasingly complex online world safely and confidently. As the digitalization of everyday life continues to expand, older generations are often more vulnerable to online threats, scams, and cyberattacks. This program aims to address these challenges by providing older individuals with the knowledge and tools they need to stay secure in the digital space.

Context and Purpose

With the rapid growth of internet use and digital technologies, there is a corresponding increase in cybersecurity risks, especially for vulnerable groups such as seniors. Older adults are more likely to fall victim to online fraud, identity theft, phishing, and other forms of cybercrime. At the same time, many seniors may lack the basic digital literacy skills needed to protect themselves in the digital world, making them more susceptible to these risks.

The Cybersecurity. Initiation for Seniors program was created to bridge this gap by providing comprehensive training, resources, and guidance to help older people become more aware of cybersecurity threats and how to avoid them. The goal is to ensure that older individuals can participate fully in the digital society without compromising their safety or privacy.

Main Objectives of the Program

Increase Digital Literacy. One of the core objectives of the program is to improve the digital literacy of seniors, enabling them to use online tools and resources with confidence. This includes providing basic training on how to use the internet, email, social media, and online banking, as well as understanding digital security practices.

Raise Awareness of Cybersecurity Risks. The program seeks to raise awareness among seniors about the specific cybersecurity risks they face, such as phishing, scams, identity theft, and malicious software. By educating seniors about these dangers, the program helps them recognize potential threats and take proactive steps to protect themselves.

Teach Safe Online Practices. Training sessions focus on safe online behavior, teaching seniors how to create strong passwords, recognize suspicious emails, avoid unsafe websites, and secure their personal data. Participants will also learn how to use privacy settings on social media platforms and other online services.

Provide Practical Guidance and Support. The program offers hands-on, practical guidance for seniors, such as how to update security settings, use antivirus software, and set up two-factor authentication. This training is delivered in a user-friendly format, tailored to the learning pace and needs of older individuals.

Promote Safe Online Transactions. As many seniors engage in online shopping and banking, the program also focuses on educating them about safe online transactions. This includes recognizing legitimate websites, understanding payment security, and ensuring that sensitive financial information is not compromised.

Empower Seniors to Protect Their Privacy. Privacy protection is a crucial aspect of cybersecurity. The program teaches seniors how to manage and protect their personal information online, understand the risks of oversharing on social media, and know their rights regarding data privacy.

Key Components of the Program

The Cybersecurity. Initiation for Seniors program is structured to provide comprehensive support through various components:

Training Workshops and Courses: These workshops focus on delivering practical, hands-on training on digital literacy and cybersecurity. They are tailored to seniors' needs, offering step-by-step guidance on how to use digital devices and stay safe online. Topics include setting up secure passwords, using email safely, recognizing online scams, and securing social media profiles.

Digital Toolkits: Participants are provided with easy-to-follow digital toolkits that include guides, checklists, and tips for staying secure online. These resources are designed to be accessible and understandable for seniors, ensuring they have the necessary support to implement cybersecurity practices in their everyday lives.

Online Resources and Webinars: The program offers a series of online resources, including videos, webinars, and articles, to help seniors stay informed about the latest cybersecurity threats and trends. These resources are regularly updated to reflect new risks and security practices.

Support Centers and Helplines: Dedicated support centers and helplines are available to assist seniors who may have questions or require help with cybersecurity-related issues. These services offer personalized assistance, from troubleshooting technical issues to answering questions about online security.

Collaborations with Local Communities and Organizations: The program collaborates with community centers, senior organizations, and local authorities to reach a wider audience and ensure that seniors have access to the resources and training they need. Outreach efforts aim to include those who may not have access to online platforms or digital resources.

Expected Outcomes

The Cybersecurity. Initiation for Seniors program aims to achieve several important outcomes:

Increased Digital Confidence: Seniors who complete the program will gain the skills and confidence to navigate the internet securely, engage in online activities, and protect themselves from common cyber threats.

Reduced Vulnerability to Cybercrime: By educating seniors on the risks of cybercrime and teaching them how to avoid common online scams, the program will significantly reduce the likelihood of seniors falling victim to online fraud, identity theft, and other cybercrimes.

Improved Online Privacy and Security: The program will help seniors secure their personal information online, protect their digital privacy, and ensure that their online activities are safe from potential threats.

Enhanced Participation in Digital Society: As seniors become more confident and capable in using digital tools safely, they will be able to fully participate in the digital society, from accessing government services to staying connected with family and friends via social media.

ROMANIA'S NATIONAL RECOVERY AND RESILIENCE PLAN (PNRR)

This is a critical framework for the country's recovery and modernization following the challenges posed by the COVID-19 pandemic and other socioeconomic factors. The plan encompasses various components aimed at improving the quality of life for all citizens, with particular attention to the integration and well-being of older adults. The PNRR includes investments and reforms across multiple sectors, and its components are designed to address the needs of Romania's aging population, ensuring they are not left behind in the country's modernization efforts. Below are the key components of the PNRR that are particularly relevant to the improvement of life quality and the inclusion of seniors:

Component 2 – Health: Improving Healthcare Services for Seniors

The Health Component of the PNRR focuses on modernizing and upgrading Romania's healthcare system to ensure that it provides high-quality, accessible, and efficient services for all citizens, including seniors. This component includes investments in hospital infrastructure, the modernization of medical equipment, and improvements in healthcare delivery that specifically benefit the elderly population.

Modernizing healthcare facilities and equipping hospitals with advanced technologies will improve diagnosis, treatment, and care for older adults who often face chronic health conditions. Additionally, improving the conditions of medical care, such as reducing waiting times and enhancing the overall patient experience, will be critical in addressing the healthcare needs of seniors. Investments in the healthcare workforce, including training for professionals in elderly care, will also contribute to a higher standard of care for the senior population.

The plan also includes efforts to promote preventive health measures and access to healthcare services, ensuring that seniors are not excluded from receiving the medical attention they need. Ultimately, these investments aim to provide older individuals with better healthcare, improving their overall well-being and quality of life.

Component 4 – Social Justice and Inclusion: Fighting Poverty and Promoting Employment Opportunities for Seniors

The Social Justice and Inclusion Component of the PNRR is designed to support social cohesion and reduce poverty, with a particular focus on the elderly population. Many seniors face financial insecurity in their later years, and the plan includes several initiatives aimed at reducing poverty among older adults.

Key projects under this component include investments in social infrastructure, such as the construction and renovation of community centers, social housing, and the provision of social services tailored to the elderly. These investments will help create more inclusive environments, offering seniors better access to social support and services.

Furthermore, the PNRR includes measures to support older adults in finding part-time employment or engaging in volunteer activities, providing them with opportunities for social engagement and supplemental income. These initiatives not only help alleviate poverty but also promote social inclusion by allowing seniors to remain active and contribute to their communities. By encouraging older adults to stay engaged in the workforce or volunteerism, Romania will foster a sense of purpose and belonging, which is critical for mental and emotional well-being.

Component 5 – Sustainable Transport and Mobility: Enhancing Mobility for Seniors

The Sustainable Transport and Mobility Component of the PNRR is crucial for ensuring that seniors can move around safely and easily, whether for daily tasks, healthcare appointments, or social activities. This component focuses on improving public transportation infrastructure and ensuring that it is accessible to older adults.

Projects under this component will include the development of age-friendly public transport systems, such as buses and trains that are accessible to seniors, with features like low floors, priority seating, and better safety measures. In addition to public transport, the plan includes investments in infrastructure for active mobility, such as bike lanes and pedestrian-friendly sidewalks, which will make it safer and easier for seniors to walk or use mobility aids.

These improvements in transportation and mobility are essential for ensuring that older adults can maintain their independence, avoid social isolation, and continue to participate in the community. By

addressing mobility challenges, Romania can improve the quality of life for seniors, making it easier for them to access essential services, meet social needs, and stay active.

Component 6 – Education and Vocational Training: Lifelong Learning for Seniors

The Education and Vocational Training Component of the PNRR recognizes the importance of lifelong learning, especially for older adults. This component aims to provide learning opportunities for seniors, helping them stay mentally active, engaged, and informed throughout their lives.

The plan proposes expanding access to educational programs that are specifically tailored to the needs and interests of seniors. These may include courses on technology, languages, health, arts, or financial literacy. By offering these opportunities, Romania aims to ensure that older individuals can continue to grow and develop intellectually, which is critical for maintaining mental agility and quality of life.

Additionally, the program will promote vocational training that helps seniors access part-time or flexible employment opportunities. This can include retraining programs for older adults who want to remain in the workforce, either by transitioning to new fields or developing new skills for existing roles. By supporting lifelong learning, Romania ensures that seniors are equipped with the tools they need to remain active, engaged, and employable for as long as possible.

Component 7 – Digital Transformation: Empowering Seniors Through Digital Skills

The Digital Transformation Component of the PNRR addresses the pressing need for digital inclusion across all age groups, with a focus on ensuring that seniors are not left behind in Romania's technological modernization. The program emphasizes the promotion of digital skills among the elderly, enabling them to fully engage in the socioeconomic life of the country.

With the world becoming increasingly digital, it is essential for seniors to gain proficiency in basic digital tools such as smartphones, computers, and the internet. The PNRR envisions providing specialized training programs to teach seniors essential digital competencies, including safe online practices, accessing public services online, and using technology for communication and social connection. This will help older adults participate more actively in daily life, reducing the risk of digital exclusion and enhancing their ability to access essential services like healthcare, government support, and financial services.

By integrating digital skills into the lives of seniors, Romania aims to create a more inclusive society where people of all ages can thrive in the digital age, allowing them to maintain independence, stay connected with family and friends, and access vital information and services.

THE MINIMAL SOCIAL SERVICES PACKAGE

This is a comprehensive framework designed to ensure that elderly individuals, particularly those facing vulnerability or social exclusion, have access to essential services that support their well-being, independence, and social inclusion. As the global population ages, it is increasingly important to provide a safety net that addresses the unique needs of older adults. This package ensures that seniors can lead a dignified life, with access to healthcare, social assistance, housing, education, and support systems that promote their quality of life.

Objective and Purpose

The core objective of the Minimal Social Services Package is to provide a basic level of support to seniors, helping them maintain their independence and participate in society. As many older individuals face challenges such as mobility issues, chronic health conditions, financial insecurity, and social isolation, this package aims to ensure they are not left behind in the provision of vital services.

The package also focuses on promoting active aging by encouraging social engagement, lifelong learning, and participation in the community. By providing essential services and support, this initiative helps reduce poverty, improve mental and physical health, and foster a sense of belonging for older adults.

Core Components of the Minimal Social Services Package

Healthcare Services and Support. One of the primary components of the package is the provision of healthcare services, which is essential for older adults, many of whom may have chronic health conditions or complex medical needs.

Social Assistance and Financial Support. Many older adults face financial insecurity due to retirement, limited income, or inadequate pensions.

Housing Support and Accessibility. Housing is a critical factor in ensuring that older adults can live independently and with dignity.

Social Inclusion and Community Engagement. Social isolation is a significant issue for many older adults, especially those living alone or in rural areas.

Legal and Administrative Support. Older adults often face challenges in navigating legal or administrative systems, particularly when it comes to accessing pensions, social security, or healthcare.

Education and Lifelong Learning. Staying mentally and socially active is essential for healthy aging. Digital literacy programs to ensure seniors are able to use modern technologies, which can help them access online services, communicate with family and friends, and engage in e-commerce or online banking safely.

Caregiver Support. Many seniors require assistance with daily living activities, and this often falls on family members or informal caregivers.

Key Benefits of the Minimal Social Services Package: Improved quality of life for older adults, ensuring they have access to healthcare, social support, and financial stability; Greater social inclusion, reducing isolation and helping seniors remain active members of their communities; Increased independence, allowing seniors to age in place and maintain their autonomy through home modifications and in-home care services; Better mental and physical health, thanks to access to healthcare services, preventive care, and mental health support; Enhanced dignity and well-being, ensuring that older adults can live their lives with respect, autonomy, and support.

DISCUSSION AND CONCLUSION

The issue of active aging is a critical priority at both the European and national levels, with a solid framework of policies and strategies designed to support this goal. However, despite this strong foundation, it is clear that continuous monitoring and adequate resource allocation are essential to ensuring the long-term success of these policies. Demographic changes are dynamic, and policies must be adaptable to meet the evolving needs of the aging population. This requires a long-term commitment from governments, stakeholders, and society at large to ensure that active aging strategies remain effective and responsive to emerging challenges.

The projects that have been implemented to support active aging have had a positive impact on the lives of older adults. These initiatives have improved access to healthcare, facilitated social inclusion, and encouraged lifelong learning opportunities. They have helped seniors maintain their independence and remain connected to their communities. However, the impact has not been equally experienced by all older individuals. Barriers to access, affordability, and availability of services still exist, particularly for those in remote or economically disadvantaged areas. As services continue to evolve and become more

digitized, ensuring equitable access for all seniors remains a challenge. Efforts must be made to eliminate geographic, financial, and digital exclusion to ensure that every older adult can benefit from these services.

To ensure the continued success and sustainability of active aging policies, ongoing financial investment and effective governance are essential. Initial investments in healthcare, digital literacy, social inclusion, and intergenerational solidarity have made significant improvements, but maintaining these efforts requires long-term resource planning. Adequate funding for healthcare infrastructure, caregiver support, and age-friendly environments must be prioritized. Additionally, the development of innovative financing mechanisms will be crucial to sustaining long-term care systems and ensuring that older adults continue to have access to high-quality services. Both public and private sector collaboration will be necessary to mobilize the resources and knowledge needed to address the complex challenges posed by an aging population.

An integrated, cross-sectoral approach is vital to the successful implementation of active aging policies. The complexity of aging-related issues, such as healthcare, housing, education, and employment, demands that different sectors work together to create a comprehensive support system for older adults. A fragmented, siloed approach will not meet the diverse needs of the aging population. Only by coordinating efforts across healthcare, social services, urban planning, and employment sectors can we ensure that seniors have access to the holistic services they require. Collaboration between government bodies, civil society organizations, and the private sector is crucial in promoting active aging. These stakeholders must work together towards common goals of social inclusion and intergenerational solidarity.

Social inclusion is another critical element of active aging. Older adults, particularly those living alone or in rural areas, often experience social isolation, which can have detrimental effects on both physical and mental health. Policies must prioritize creating opportunities for seniors to engage socially through community centers, volunteer programs, and intergenerational initiatives. These efforts can help reduce loneliness and foster a sense of belonging. Additionally, accessible transportation services and community activities can support seniors in remaining connected to their communities. Promoting social engagement helps older adults stay active and involved in society, improving their overall well-being.

Intergenerational solidarity is key to building cohesive societies where both younger and older generations contribute to and benefit from shared social and economic resources. Intergenerational programs, such as shared housing or mentorship initiatives, help bridge gaps between generations, promoting understanding and cooperation. These programs not only reduce isolation among seniors but also create opportunities for younger people to benefit from the experience and wisdom of older adults. Encouraging mutual support between generations ensures that aging populations are seen as active contributors to society, rather than passive recipients of care.

To ensure the long-term success of active aging policies, continuous evaluation and adaptation of existing frameworks will be essential. The aging population is increasing, and as a result, the needs of seniors will evolve over time. Policies must remain flexible and responsive to these changes. Public awareness campaigns and advocacy will also play an important role in maintaining momentum for active aging initiatives. Governments and organizations must continue to raise awareness about the importance of active aging and the benefits it brings to both seniors and society as a whole. By sharing best practices, conducting research, and fostering cross-border cooperation, we can improve the implementation of these policies and ensure that the needs of older adults are addressed in a timely and effective manner.

Finally, while there is a strong foundation of policies and strategies in place to support active aging, their success will depend on sustained efforts, continued investment in resources, cross-sectoral collaboration, and the promotion of social inclusion and intergenerational solidarity. Only by focusing

on these areas can we create societies where older adults can age with dignity, independence, and continued participation in all aspects of life.

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THE MACROECONOMIC IMPACT OF DIGITAL TRANSFORMATION: AN EMPIRICAL ANALYSIS OF TÜRKİYE

Hamit CAN

Dr, Independent Researcher
E-mail: hamitcan88@hotmail.com
ORCID ID: 0000-0002-6918-3234
Meltem OKUR DİNÇSOY

Assoc. Prof., Trakya University
E-mail: meltemokurdincsoy@trakya.edu.tr
ORCID ID: 0000-0002-8990-5409

Abstract

Purpose: This study aims to assess the macroeconomic implications of digital transformation in Türkiye by empirically examining how selected technological indicators influence economic growth from 2008 to 2023.

Design/Methodology/Approach: The analysis utilizes a timeseries econometric framework combined with machine learning-based forecasting techniques, implemented through the Python programming environment. Variables include GDP (USD) as the dependent variable, and ICT service exports, fixed broadband prices, mobile cellular package prices, and high-technology exports as independent variables. Econometric techniques applied include ADF, PP, KPSS, and ZivotAndrews unit root tests, impulse response analysis and linear regression modeling.

Findings: The results indicate a significant positive impact of ICT service exports and high-technology exports on GDP, highlighting the endogenous role of digital capabilities in fostering economic growth. The findings align with Schumpeter's theory of creative destruction and support the Neo-Classical Growth Theory's view on the critical role of technological progress in overcoming diminishing returns. The results reveal that ICT service exports and high-technology exports have a significant and positive effect on GDP, confirming the endogenous role of technological progress in sustaining economic growth. Conversely, the contributions of broadband and mobile costs diminish over time, consistent with the neoclassical law of diminishing returns. Forecast simulations indicate a steady upward trend in GDP under continued digital investment, though subject to volatility from external shocks.

Originality/Value: By integrating machine learning tools into traditional econometric analysis, this study offers a novel methodological contribution to the empirical literature on digital transformation and growth. It also provides actionable policy insights for emerging economies seeking to design effective digital growth strategies.

Practical Implications:The evidence presented offers a roadmap for policymakers to harness digital transformation technologies as a long-term engine of economic development, while also accounting for volatility and external shocks in the forecasting of macroeconomic dynamics. The findings suggest clear policy priorities: (i) increasing investment in R&D and hightechnology sectors, (ii) strengthening digital infrastructure to lower access costs, (iii) expanding human capital development to align with the knowledge economy, and (iv) enhancing resilience to external shocks. Together, these measures will allow Türkiye to leverage digital transformation as a sustainable engine of economic development.

Keywords: Economic growth, digital transformation, ICT exports, technological innovation, machine learning in economics

This study is based on the doctoral dissertation of Hamit CAN, a graduate of the PhD program in Economics at Trakya University, Institute of Social Sciences

INTRODUCTION

The digitalization of economic structures has emerged as one of the most transformative forces of the 21st century, representing not merely a technological shift but a reconfiguration of productivity, labor dynamics, and competitive advantage. Characterized by its distinctive patterns and trajectories, the digital economy encapsulates a broad spectrum of technologies— including artificial intelligence, robotics, and advanced information and communication In review technologies (ICTs)—that are reshaping global economic paradigms. Across both developed and developing nations, digital transformation is increasingly being leveraged to boost productivity, enhance innovation capacity, and strengthen global competitiveness.

The diffusion of ICTs has had profound implications at the national, sectoral, and organizational levels. Yet, the anticipated gains from digital technologies have not always been immediately reflected in conventional productivity metrics. This phenomenon, referred to as the "productivity paradox" by Nobel laureate Robert Solow (1987), continues to provoke critical inquiry into the mechanisms through which digital technologies contribute to economic performance. References to productivity paradox, creative destruction, and endogenous growth theory are reframed to support the study's focus on growth. Solow's assertion that "we see the computer age everywhere except in the productivity statistics" laid the foundation for an enduring debate regarding the economic returns to digital innovation.

Historically, concerns over the labor-displacing effects of technological change have also been central to economic discourse. In 1930, John Maynard Keynes presciently warned of a new form of "technological unemployment" caused by the substitution of machines for human labor. More than two decades later, Wassily Leontief (1952) similarly predicted that rapid mechanization would render labor increasingly redundant, particularly in routine occupations. Although such outcomes were initially slow to materialize, the recent acceleration of automation and artificial intelligence has revived these concerns with renewed urgency (Brynjolfsson & McAfee, 2014; Ford, 2015).

Empirical research over the past two decades has demonstrated that automation and digitalization disproportionately affect middle- and low-skill occupations, contributing to wage inequality and labor market polarization (Autor, Levy, & Murnane, 2003; Goos & Manning, 2007; Michaels, Natraj, & Van Reenen, 2014). This paper links ICT service exports, broadband affordability, mobile communication costs, and high-tech exports directly to GDP growth and overall economic performance in Turkey. These transformations raise critical questions about the future of work and the broader implications of digital advancement for inclusive and sustainable economic growth.

Against this backdrop, recent theoretical models have sought to delineate the dual nature of technological change. Acemoglu (2010) argues that the relationship between technology and labor is contingent upon whether the technology substitutes for or complements human capital. In review When technologies are labor-saving, scarcity in labor can accelerate technological adoption; when they are labor-augmenting, scarcity may instead inhibit such adoption. Furthermore, the diffusion of technology is shaped by adoption costs, regulatory frameworks, and standardization, which can intensify competitive pressures and reshape market structures (Acemoglu et al., 2012; Acemoglu & Restrepo, 2022). In light of these dynamics, this study explores the macroeconomic implications of digital transformation in the Turkish context, focusing specifically on the period between 2008 and 2023.

Turkey's rapid technological adoption, evolving ICT infrastructure, and investments in digital capabilities make it a suitable case study. The analysis focuses on how ICT service exports, broadband affordability, mobile communication costs, and high-tech exports contribute to economic growth. By

employing advanced econometric modeling and machine learning techniques, the study not only contributes to the ongoing debate on digitalization and productivity but also provides actionable insights for policymakers navigating the complexities of the digital era.

The primary objective of this study is to empirically investigate how key digital transformation indicators—such as ICT service exports, broadband affordability, mobile communication costs, and high-technology exports—affect economic growth in Turkey. The study covers a 16-year period (2008–2023), capturing key phases of ICT adoption, policy shifts, and episodes of economic volatility. This temporal focus allows for a comprehensive evaluation of how digital technologies interact with macroeconomic growth trajectories. Turkey's geographic position and industrial diversity provide further empirical variation, making it possible to assess the effects of digitalization under different economic conditions.

The distinctive contributions of this study compared to existing literature on the subject can be summarized as follows:

• It addresses the Turkish context, filling a gap in the literature on digital transformation and growth in emerging economies.

• Using Python-based econometric analysis, the study provides evidence supporting the endogenous nature of technological advancement.

• Empirical findings reveal a positive effect of ICT exports on growth. In review

• Few studies examine ICT service exports and growth in Turkey; this study provides targeted evidence.

• Within the framework of Endogenous Growth Theory, the role of technological development, human capital, and knowledge production is evaluated.

• The positive relationship between high-technology exports and growth highlights the importance of R&D and knowledge economy.

• Reductions in broadband and mobile costs are shown to improve productivity, though with diminishing effects over time.

• Schumpeter's concept of "creative destruction" is used to explain how innovation drives Turkey's economic transformation.

• The study also considers external shocks and their effects on growth forecasting.

• Investments in human capital are shown to accelerate growth and boost hightechnology exports.

• Overall, the findings highlight the crucial role of knowledge economy and technological innovation in fostering sustainable growth.

LITERATURE

Over the past decades, numerous empirical studies have investigated the relationship between information and communication technologies (ICT) and economic growth, often yielding mixed results depending on the methodological framework, country context, and time period considered. Overall, these studies suggest that ICT adoption generally promotes economic growth, but the magnitude and significance of the effect depend on factors such as institutional quality, labor market structure, and complementary investments. Despite the abundance of research, critical gaps remain, including limited country-specific studies for emerging economies like Turkey, and insufficient integration of ICT with macroeconomic forecasting using advanced methodologies. Over the past decades, numerous empirical studies have investigated the relationship between information and communication technologies (ICT)

In review and economic growth, often yielding mixed results depending on the methodological framework, country context, and time period considered.

Among the seminal theoretical contributions, Acemoglu (1998) developed the concept of directed technical change, highlighting how technological progress is often biased toward factors that are more abundant or profitable in an economy. While seminal works provide a strong theoretical foundation, many empirical studies focus on developed economies, leaving a gap in the context-specific analysis of ICT's impact on economic growth in Turkey. This study addresses this gap by examining the Turkish economy's unique ICT adoption trajectory and its interactions with GDP growth from 2008 to 2023. This framework helps explain how ICT investments can complement skilled labor and, hence, amplify economic growth in skill abundant economies.

Furthermore, Acemoglu, Autor, and Dorn (2014) empirically examined how the diffusion of computer-based technologies reshaped the labor market and productivity patterns in the United States, offering insights into the broader implications of ICT for growth and inequality. Their findings underscore the importance of institutional and labor market conditions in mediating the impact of ICT on economic performance. Below is a chronological synthesis of major contributions in this field:

Van Ark (2001) examined ten OECD countries in the 1990s by classifying sectors as ICT producing, ICT-using, and non-ICT-using. His analysis showed that both ICT-producing and ICT-using sectors contributed significantly to GDP growth, with the United States, Finland, and Japan leading in terms of ICT production. He also found that ICT's contribution to economic growth was more pronounced in the second half of the 1990s. Roller and Waverman (2001), using a simultaneous equations model with data from 21 OECD countries, demonstrated that telecommunications infrastructure significantly contributed to GDP, suggesting the presence of network externalities that amplified economic benefits.

Simon and Wardrop (2002) analyzed whether Australia, despite not having a strong ICT producing sector, could benefit from ICT investments. Using a growth accounting framework, they found that ICT capital played a crucial role in the country's economic growth during the 1990s, especially in the service sectors such as finance and communications.

In review Jalava and Pohjola (2005) investigated the effects of ICT on Finland's economic growth between 1995 and 2002. Using growth accounting, they found that approximately one-third of Finland's output growth was attributable to ICT production, and ICT capital contributed 0.66 percentage points on average to GDP growth annually.

Dinçsoy (2008) examines how ICT and its components relate to socio-economic factors at both macro and micro levels, with a specific focus on per capita GDP in East Asian countries. Using the Neoclassical Growth Model and Convergence Theory, the study emphasizes the catalytic role of ICT in fostering regional development. Findings suggest evidence of weak betaconvergence but strong sigma-convergence in per capita GDP across homogeneous regions of East Asia.

Nasab and Aghaei (2009) employed a production function approach and panel data for seven OPEC countries between 1990 and 2007. Their findings confirmed a significant and positive impact of ICT investments on economic growth, urging further resource allocation and capacity-building in digital infrastructure. Koutroumpis (2009) analyzed 22 European countries and found that broadband infrastructure positively affected GDP growth only when supported by complementary investments and enabling regulatory frameworks, underlining the conditional nature of ICT benefits. Some studies, however, emphasize the effect of economic growth on renewable energy. Dinçsoy (2009) investigates regional income convergence in major East Asian countries by focusing on the telecommunications sector. The study finds evidence of weak beta-convergence and strong sigma-convergence in per capita GDP across homogeneous regions after 1992. Using the Neoclassical Growth Model, it highlights the role of intra-country unit changes in fostering convergence and predicts a notable correlation between ICT developments and per capita GDP growth in these countries.

Sassi and Goaied (2013) investigated the interaction between financial development and ICT in 17 MENA countries from 1960 to 2009 using a dynamic panel model based on GMM. Their results indicated a positive and statistically significant joint effect of ICT diffusion and financial development on economic growth. Ahmed & Ridzuan (2013) using panel data from the ASEAN5+3 region (Malaysia, Thailand, Singapore, Indonesia, Philippines, Japan, Korea, China; 1975–2006), this study investigates telecommunications investment (as ICT proxy) within a production-function framework. Results indicate a long-term positive relationship between ICT investment and GDP in both ASEAN5 and ASEAN5+3 groups, emphasizing ICT's vital role in economic growth.

In review Lee and Brahmasrene (2014) used panel data from nine ASEAN countries (1991–2009) and found that ICT had a positive effect on both economic growth and CO_2 emissions, emphasizing the dual economic and environmental impacts of digitalization. Brynjolfsson and McAfee (2014) emphasized that digital technologies, particularly general-purpose technologies such as artificial intelligence, cloud computing, and big data, were reshaping economic structures but could also exacerbate income inequalities without inclusive policies.

Saidi et al. (2015) focused on Tunisia over the 1975–2008 period and found a strong positive correlation between GDP growth and ICT usage, particularly mobile and fixed-line telephony, supported by human and physical capital. Belloc & Guerrieri (2015) Based on panel data from European countries, the authors show that ICT diffusion significantly improves industrial sector performance and productivity. Shahbaz (2015) analyzes the positive effect of ICT investments on economic growth in developing countries using panel data from 1990 to 2011. The findings show that improvements in ICT infrastructure and usage accelerate economic growth. Kim & Lee (2015) investigates the significant positive effect of ICT investments on economic growth in South Korea, emphasizing the contribution of high-tech investments. Antonelli & Fassio (2015) examines the impact of digital technologies on economic growth across various European regions and finds that increased ICT use contributes positively to regional economic development. Koutroumpis (2015) investigates the effect of broadband infrastructure investment on economic growth in OECD countries, showing that broadband adoption increases productivity and growth.

Salahuddin and Gow (2016) found a long-run positive association between internet usage and GDP in South Africa using time-series analysis. However, the causal direction ran unidirectionally from ICT to growth, underscoring the leading role of digital development. Erumban & Das (2016) analyses India's ICT-led growth, highlighting that ICT investments have driven growth mainly through services, with weaker productivity gains in manufacturing. ICT diminishes the economic barriers posed by physical distances, lowers the costs of accessing information and starting new small businesses, and thus enhances business efficiency and competitiveness (Can & Terziev, 2016).

Mićić (2017) emphasizes that investments in high-tech solutions and ICT infrastructure significantly boost GDP, productivity, and employment—evident in European context. Aghaei & Rezagholizadeh (2017) utilizes dynamic and static panel data approaches to analyze the impact of ICT investment on economic growth across OIC countries from 1990 to 2014. The In review findings indicate a significant positive relationship, suggesting that OIC countries should implement policies to promote ICT investment. Taibah & Allah (2017) investigates the impact of ICT development on economic growth in Sudan from 1980 to 2014 using the ARDL bounds testing approach. The results indicate a long-run relationship between ICT development and economic growth, with a moderate speed of convergence to equilibrium. Pradhan (2017) examines the relationship between ICT infrastructure and economic growth in 25 European countries. The study finds a close relationship among the use of ICT, economic growth, and venture capital investments, suggesting that investments in ICT infrastructure can stimulate economic growth.

Niebel, T. (2018) Using a balanced panel of 59 countries (1995–2010), the research shows a strong positive relationship between ICT investments and GDP growth across all development levels, with no

significant difference between country groups. Toader et. al. (2018) Using EU data, this paper finds that every 1% increase in ICT infrastructure and digitalization can increase GDP per capita by 0.08–0.4%, depending on the technology type. Ali et al: (2020).

Bahrini & Qaffas (2019) apply a Generalized Method of Moments model (2007–2016) and find that mobile phones, internet usage, and broadband adoption are primary drivers of economic growth in Middle Eastern, North African, and Sub-Saharan countries. Makun, K., & Devi, S. (2019). Autoregressive distributed lag approach using Solow-framework for Fiji (1990–2016). Long-run cointegration observed; ICT proxies (especially mobile subscriptions) positively and significantly affect economic output, with coefficients between 0.04–0.06. Sedika & Emamb (2019) ICT capital and usage have a significant positive effect on growth in OECD and advanced economies, but the effect is negligible in MENA and developing countries. Mobile and fixed broadband usage positively influence GDP growth only in advanced economies.

Ali et al. (2020) used a novel composite ICT maturity index—including affordability, infrastructure, and skill dimensions—on OECD panel data. Key Finding: Each 1% increase in ICT maturity yields a 1–3.8% rise in economic development in OECD countries. Wibowo (2020) applied principal component panel regression with fixed effects to global panel data. All ICT predictors (e.g., internet use, mobile penetration) positively and significantly impact economic growth. Enhanced efficiency in employing technologies such as digitalization and artificial intelligence in diverse fields can lead to positive outcomes in different areas (Can et al., 2020). Makun & Jayaraman (2020) using Fixed-effects panel analysis across Pacific Island.

In review nations, ICT diffusion significantly boosts economic growth in small island developing economies Ejupi Ibrahimi (2022) Focusing on the Western Balkans (2000–2019), the authors find a positive and significant correlation between ICT indicators (fixed telephony, mobile, internet) and GDP growth. Niranga (2022) Using panel data for 59 countries (2018–2020), finds a positive relationship between digitalization and economic growth in most regions, except parts of Africa and Western Asia.

Kumari & Singh (2023) analysis of 85 countries (27 low-, 58 high-income) from 2000– 2019, employing OLS, Fixed Effects, and GMM techniques ICT indicators (internet, secure internet, broadband) positively affect growth in both income groups. ICT combined with financial development and trade openness has positive synergy in low-income countries but shows mixed results in high-income group. Nipo (2023) Panel data analysis for 20 Asian countries spanning 2000–2020, using Fixed Effects and Panel Feasible GLS models. Findings: Mobile subscriptions and internet penetration significantly boost economic growth in Asia, while fixed telephone lines have negligible impact—likely due to cost and practicality issues.

Ximei et al., (2024) This panel study (1990–2014) finds that ICT adoption positively influences GDP growth in South Asia, complemented by education, though FDI shows no significant impact link. Nowakowski (2024) Analyzes EU countries between 2009–2018, showing a strong correlation between ICT sector indicators (exports, employment share, online shopping) and GDP growth. UNCTAD Collaborative Study (2024) using a composite ICT index and GMM estimation (2017–2022), the study finds that ICT significantly mitigated pandemic-driven GDP declines, especially in developing countries.

In Can's (2025) study, it was observed that the increase in information and communication technology services exports (ICTE) has a positive effect on economic growth. Building on these findings, the current study extends the literature by integrating machine learning-based forecasting methods with traditional econometric models, thereby providing a more comprehensive understanding of ICT's macroeconomic implications in Turkey. This approach allows for nuanced policy recommendations tailored to the country's digital transformation strategy. This finding reveals that technological progress is not merely an external factor in the economy but also an internal driver of growth. It is evident that the

advancements in Turkey's technological infrastructure, particularly through exports, support In review economic growth. Noah & David (2025) uses panel data from African countries to analyze how ICT adoption influences the relationship between entrepreneurship and GDP growth. ICT adoption strengthens the positive effect of entrepreneurship on economic growth, indicating that digital infrastructure and tools amplify entrepreneurial contributions to national income. Wainaina (2025) employs panel data from Sub-Saharan African countries covering 2000–2022 ICT investments significantly boost economic growth across the region, with consistent positive effects found over the study period. Mohammad & Yacine (2025) results highlight the need for customized approaches that extend beyond mere infrastructure spending, encompassing improvements in education, institutional changes, and the development of inclusive policies. As digital transformation gains momentum worldwide, MENA countries should capitalize on these complementarities to promote growth that is inclusive, resilient, and driven by innovation.

MATERIALS AND METHODS

This study investigates the macroeconomic implications of digital transformation on economic growth in Türkiye over the period 2008–2023. Annual data were obtained from publicly accessible international databases, including the World Bank and the International Telecommunication Union (ITU). This timeframe encapsulates Türkiye's rapid ICT adoption phase, policy shifts toward digital infrastructure, and episodes of economic volatility, providing a robust context for empirical analysis.

Gross Domestic Product (GDP), measured in constant US dollars, is employed as the dependent variable to capture real economic growth. The independent variables selected to represent digital transformation include: (i) ICT service exports (as a percentage of service exports), (ii) fixed broadband internet prices (USD per month), (iii) mobile cellular package prices (USD per month), and (iv) high-technology exports (as a percentage of manufactured exports). These indicators are log-transformed where appropriate to account for potential non-linearity and to stabilize variance. The econometric approach integrates both traditional and modern methodologies. Stationarity properties of the time series were assessed using multiple unit root tests, including Augmented Dickey-Fuller (ADF), Phillips-Perron (PP), Kwiatkowski-Phillips-Schmidt-Shin (KPSS), and Zivot-Andrews tests to account for structural breaks. The combination of ADF, PP, and KPSS In review tests allows for robust assessment under different assumptions regarding autocorrelation, heteroskedasticity, and the null hypothesis (unit root vs. stationarity). The Zivot-Andrews (ZA) test was included to detect potential structural breaks endogenously, which is critical in the Turkish economic context due to historical policy shifts, economic crises, and digitalization milestones. Unit root tests are performed at the outset to determine whether the series are stationary, which is a prerequisite for reliable econometric modeling. Stationarity ensures that the statistical properties of the series, such as mean and variance, remain constant over time, preventing spurious regression results and enhancing the validity of inference.

In addition, this study incorporates machine learning-based forecasting techniques within the Python programming environment to complement the econometric analysis. Specifically, linear regression models were implemented to predict future trajectories of economic growth under varying digital transformation scenarios. A linear regression framework was adopted due to its interpretability, transparency, and compatibility with the first-differenced log-transformed series. While nonlinear dynamics may exist in macroeconomic variables, the logarithmic transformation stabilizes variance and mitigates nonlinearity, allowing linear models to capture the main effects of ICT indicators on GDP. Future research may extend this approach to nonlinear or machine learning-based models to explore complex interactions. This hybrid framework enables the analysis to go beyond static relationships and assess the potential pathdependency and volatility embedded in Türkiye's digital economy.

By applying the combination of unit root tests, Zivot-Andrews structural break analysis, and linear regression modeling, the study empirically evaluates the relationship between ICT indicators and GDP

in Turkey. The results indicate a positive association between ICT service exports and economic growth, providing evidence-based insights that can inform policy considerations.

FINDINGS

The descriptive statistics indicate that GDP and the ICT-related variables exhibit relatively low standard deviations, suggesting limited dispersion around their means over the 2008–2023 period. Skewness values are close to zero for most variables, indicating approximate symmetry in the distributions. The Jarque-Bera (JB) test statistics do not reject normality at conventional significance levels, which justifies the use of linear regression models and supports the assumption of normally distributed residuals in subsequent econometric analyses. Furthermore, the absence of extreme kurtosis values suggests that the series do not contain significant outliers that could distort the estimation results. These characteristics provide a rationale for applying unit root tests—including those accounting for structural breaks—and linear regression methods in the analysis.

Table 1: Descriptive Stats

	GDP	ICTE	FBBE	MCLUBE	HCE
Mean	27.454343	20.887834	2.434058	2.716710	21.987175
Median	27.467121	2.905778	2.394953	3.133202	22.065405
Maximum	27.742786	22.170890	3.135059	4.012049	22.858805
Minimum	27.199144	19.883936	1.736951	1.153732	21.185711
Standart Deviation	0.126905	0.674995	0.438116	0.987701	0.470629
Skewness	0.207141	0.165677	0.094282	-0.342833	-0.014200
Kurtosis	0.405229	-0.758705	-0.925551	-1.468941	-0.713733
Jarque-Bera P-Value	0.894092	0.795745	0.742746	0.416456	0.843603
Number of Observations	16	16	16	16	16

Unit Root Test

To determine the stationarity properties of the variables, Augmented Dickey–Fuller (ADF; Dickey & Fuller, 1979), Phillips–Perron (PP; Phillips & Perron, 1988), and Kwiatkowski– Phillips–Schmidt–Shin (KPSS; Kwiatkowski et al., 1992) tests were applied to the firstdifferenced logarithmic series. The null hypothesis of ADF and PP tests is the presence of a unit root (non-stationarity), while the null hypothesis of the KPSS test is stationarity.

Table II presents the unit root test results separately for the levels and first differences of the logarithmic variables. For each variable, results are reported for models with and without deterministic trends, providing a comprehensive view of stationarity properties. The null hypothesis of the ADF and PP tests

is the presence of a unit root, whereas for the KPSS test the null is stationarity. Significance at the 5% level is indicated in the table. These distinctions In review clarify the integration order of each variable and support the choice of subsequent econometric methods.

Table 2: ADF, PP and KPSS unit root tests

Variables	ADF	ADF	PP	PP	MCLUBE
MCLUBE					
	Test Statistic	p-value	Test Statistic	p-value	Test Statistic	p-value
diff_log_ICTE	-3.485	0.008	-3.976	0.0015	0.188
0.1					
diff_log_FBBE	-3.203	0.020	-7.469	5.13×10^{-11}	0.280
0.1					
diff_log_MCLUBE	-4.056	0.001	-5.273	6.22×10^{-6}	0.103
0.1					
diff_log_HCE	-2.857	0.051	-4.904	3.43×10^{-5}	0.109
0.1					
diff_log_GDP	-3.104	0.026	-3.129	0.024	0.188
0.1					

The ADF and PP test results show that the null hypothesis of a unit root can be rejected at the 5% level for most variables, indicating stationarity at first differences. For diff_log_HCE, the ADF test statistic is marginally above the critical value at the 5% level, but the PP test still suggests stationarity. The KPSS test statistics are all below the critical value, and their pvalues exceed 0.05, supporting stationarity.

Zivot-Andrews Unit Root Test

The Zivot-Andrews (1992) test is a critical advancement in time series analysis, designed to improve the reliability of unit root tests by explicitly accounting for potential structural breaks within the series. Traditional unit root tests, such as the Augmented DickeyFuller (ADF) test, may yield misleading inferences when structural breaks—arising from economic, political, or other exogenous shocks—are present but ignored (Zivot & Andrews, 1992). To address this limitation, Zivot and Andrews developed a testing procedure that endogenously determines the breakpoint from the data itself, rather than relying on a priori knowledge of the break date.

The test allows for a single structural break either in the intercept or in the deterministic trend under the alternative hypothesis, thus integrating the potential impact of regime changes into the stationarity assessment. This feature makes the Zivot-Andrews test particularly suitable for economic time series, where external shocks can induce significant structural shifts that affect the behavior of the series

In this study, the Zivot-Andrews test was applied to the logarithm of information and communication technology exports (log_ICTE) to examine its stationarity properties while controlling for unknown structural breaks.

Table 3: Zivot-Andrews Unit Root Test Results for log_ICT

Test Statistic	-3.6063

p-value	0.6099
Critical Value (1%)	-5.2764
Critical Value (5%)	-4.8107
Critical Value (10%)	-4.5661

This result indicates that although structural breaks are conceptually relevant, the log_ICTE series exhibits consistent growth dynamics without abrupt regime shifts during 2008–2023. Hence, the traditional unit root tests remain valid, and the series can be appropriately modeled in its logarithmic first-difference form. The Zivot-Andrews (ZA) test allows for a single endogenous structural break in either the intercept, trend, or both. In this study, ZA tests were applied to all logarithmic variables to account for potential structural shifts in the Turkish economy during 2008–2023. Although the ZA test statistic for log_ICTE does not exceed the critical values, indicating no statistically significant structural break was detected in this sample, this result should not be interpreted as an absence of economic shocks. Instead, it confirms that, within the sample period, the variable's stationarity properties are not materially affected by a single structural break. The use of the ZA test remains appropriate as a robustness check for potential breaks

Impulse Response Analysis

Impulse response analysis is a widely used technique in time series econometrics to trace the effect of a one-standard-deviation shock in one variable on the current and future values of itself and the other variables in the system. The methodology was introduced by Sims (1980) in the context of Vector Autoregressive (VAR) models, which allow for an unrestricted estimation of the dynamic interactions among variables. The general formula of the impulse response function (IRF) can be expressed as follows:

$$IRFij\ (h) = Y_{i,t+h} \ / \ \partial\varepsilon_{i,t}$$

where $IRFij\ (h)$ denotes the response of variable i at horizon h to a one-unit shock in variable j at time $\varepsilon i,t$ and is the innovation in j.

Impulse responses graphically present the dynamic effects of shocks along with confidence intervals, typically constructed using bootstrap methods. The solid blue line in the graphs below depicts the estimated response, while the dashed lines represent the confidence bands, indicating the statistical significance of the response at conventional levels.

Figure 17: log *ICTE* → log *ICTE*

The response of log ICTE to its own shock is initially positive and gradually declines over time. The confidence intervals suggest that this positive effect is statistically significant in the early periods. This finding implies that an increase in information and communication technology (ICT) exports tends to reinforce itself in the short term, highlighting a degree of persistence in ICT exports.

Figure 2: log GDP → log ICTE

The response of log ICTE to a shock in log GDP is initially small and becomes negative over time. The confidence intervals indicate that the response is not statistically significant in the initial periods but tends to be weakly negative thereafter. This result suggests that changes in economic growth exert only

a limited and short-lived influence on ICT exports, potentially reflecting structural constraints or lagged adjustment mechanisms in the ICT sector.

Figure 3: log ICTE → log GDP

A positive shock in log ICTE generates a positive response in log GDP, which increases at first and then diminishes over time. The confidence intervals indicate that the effect is statistically significant in the short term. This finding underscores the role of ICT exports as a driver of economic growth in the short run.

Figure 4: *log GDP→log GDP*

The response of log GDP to its own shock is initially positive and declines over time, remaining statistically significant in the early periods. This reflects the inherent persistence in economic growth dynamics and the self-reinforcing nature of GDP shocks in the short term.

Impulse response analysis provides valuable insights into the dynamic interrelationships among economic variables and the effects of policy shocks. However, it should be noted that most of the impulse-response results are not statistically significant at conventional levels. Therefore, the short-term positive responses observed should be interpreted with caution. The results suggest that changes in ICT exports can positively impact economic growth in the short term, while the effect of economic growth on ICT exports is relatively weak. These observations are descriptive and indicative rather than statistically conclusive, ensuring the interpretations align with the limitations of the data. These findings highlight the importance of supporting ICT export policies to stimulate overall economic activity.

In summary, the short-term positive impact of ICT exports on GDP and the self-reinforcing dynamics of both ICT exports and GDP emphasize the strategic role of the ICT sector in economic development. Policymakers should consider targeted interventions to enhance the ICT sector's contribution to growth while addressing potential constraints limiting the responsiveness of ICT exports to GDP growth.

Linear Regression Model

The analysis is based on a Linear Regression Model, one of the most fundamental and widely used econometric techniques for modeling the relationship between a dependent variable and one or more explanatory variables. The origins of the linear regression framework can be traced back to the works of Francis Galton (1886), who introduced the concept of In review "regression toward the mean" when studying the relationship between the heights of parents and their children, and Karl Pearson (1896), who formalized the method of least squares estimation within a statistical context.

Linear regression models aim to explain the conditional expectation of the dependent variable as a linear function of independent variables. The general formulation of the linear regression model can be expressed as:

$$Y_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \cdots + \beta_k X_{ki} + \varepsilon_i$$

where:

Y_i is the dependent variable for observation i,

$X_{1i}, X_{2i}, \ldots, X_{ki}$ are the explanatory variables,

β_0 is the intercept term,

$\beta_1, \beta_2, \ldots, \beta_k$ are the slope coefficients representing the marginal effect of each explanatory variable on Y,

ε_i is the stochastic error term, assumed to have mean zero and constant variance ($E[\varepsilon_i]=0$, $Var(\varepsilon_i) = \sigma^2$).

The analysis is based on a Linear Regression Model. The mathematical formulation of the model is presented as follows:

$$GDP_t = \beta_0 + \beta_1 * ICTE_t + \beta_2 * FBBE_t + \beta_3 * MCLUBE_t + \beta_4 * HCE_t + \varepsilon_t$$

Where:

GDP_t : Estimated Gross Domestic Product in year *t* (measured in USD)

β_0 : Intercept term, representing the baseline level of GDP in the absence of any influence from the independent variables.

$\beta_1, \beta_2, \beta_3, \beta_4$: Coefficients representing the marginal impact of each independent variable on GDP.

$ICTE_t$: Exports of ICT services in year t (measured in USD).

$FBBE_t$: Fixed broadband cost in year t (measured in USD).

$MCLUBE_t$: Mobile cellular low-usage cost in year t (measured in USD).

HCE_t : High-technology exports in year t (measured in USD).

ε_t: Error term capturing unobserved factors and random disturbances not explained by the model.

Figure 5: Prediction via Python-Based Linear Regression Model With 2% Noise and Specified Variables

Table 4: GDP Forecasts Using Python-Based Linear Regression Model With Noise Factor

Year	Forecast (Noise Shock)
2024	1.109.600.183.837 USD
2025	1.170.866.631.729 USD
2026	1.237.764.740.639 USD
2027	1.324.508.112.251 USD
2028	1.390.984.895.768 USD
2029	1.470.755.285.130 USD
2030	1.551.044.615.462 USD

The estimated coefficients ($\beta 1$–$\beta 4$) indicate the marginal impact of each digital transformation variable on GDP. For example, a positive $\beta 1$ suggests that increases in ICT service exports are associated with higher economic growth, while the negative or positive signs of $\beta 2$ and $\beta 3$ In review reflect the effect of communication costs on GDP. These results are interpreted in line with prior literature, such as Nasab & Aghaei (2009), Koutroumpis (2009, 2015), and Ahmed & Ridzuan (2013), which emphasize the role

of ICT investments and infrastructure in supporting economic performance. Furthermore, the predicted GDP trajectories generated by the Pythonbased linear regression model provide insights into potential future growth scenarios under varying digital transformation conditions, while accounting for uncertainty introduced by the 2% noise factor.

DISCUSSION AND CONCLUSION

This study examined the growth trends of the Turkish economy between 2008 and 2023 in the context of the impact of information and communication technologies (ICT) on economic growth. The empirical findings are evaluated in light of prominent economic growth theories, with a particular focus on endogenous growth, neoclassical perspectives, and innovation-driven models. The main results are summarized under the following thematic areas:

Relationship with Endogenous Growth Theory and the Knowledge Economy

The findings are consistent with the framework of Modern Growth Theories, particularly the Endogenous Growth Theory, which emphasizes technological progress, human capital, and knowledge production as key drivers of sustainable economic growth.

- **ICT Service Exports (ICTE):** The results indicate a positive and significant effect of ICT service exports on GDP, showing that technological development operates as an internal engine of growth.

- **High-Technology Exports (HCE):** The increase in high-technology exports—such as electronics and software—has contributed substantially to growth, highlighting the importance of R&D and knowledge-intensive sectors.

Alignment with Neoclassical Growth Theory and the Law of Diminishing Returns

According to neoclassical growth models, capital accumulation initially drives growth but diminishing returns reduce its long-term effect.

- **Fixed Broadband and Mobile Usage Costs (FBBE and MCLUBE):** Decreasing broadband and mobile costs improved efficiency and access, but their growth contribution declines over time, consistent with diminishing returns.

Innovation and Schumpeter's Theory of Creative Destruction

Schumpeter emphasized innovation as a disruptive force that reshapes economies.

- The growth of the ICT sector in Turkey has acted as a driver of structural transformation, improving competitiveness through technology integration.

- By incorporating noise and volatility into forecasts, the analysis also accounts for the impact of external shocks, consistent with Schumpeter's view of cyclical fluctuations.

Human Capital and Education

Investments in human capital accelerate economic development in knowledge-driven economies.

• The rise in high-technology exports reflects both infrastructure improvements and a more skilled workforce, underscoring the role of education and training in Turkey's growth.

Implications for Economic Growth

Positive Outcomes:

• ICT exports and high-technology products positively and significantly contribute to GDP.

• Declining broadband costs have supported digital transformation and growth.

• Forecasts indicate a steady upward trend in GDP, reinforcing the role of technology in sustainable development.

Uncertainty and External Shocks:

Forecasts show that exogenous shocks—such as crises or geopolitical risks—can negatively affect growth trajectories, highlighting that economic outcomes are not fully predictable.

Policy Recommendations

- Increase investment in R&D and high-technology sectors.
- Continue strengthening digital infrastructure and reducing broadband and mobile costs.
- Expand education and training programs aligned with knowledge economy demands.
- Develop policies to enhance resilience against external shocks and economic uncertainties.

Overall, the analysis provides evidence that ICT and high-technology exports make a significant contribution to Turkey's economic growth. The results confirm the importance of technological advancement and human capital in achieving sustainable development. At the same time, the influence of external shocks underlines the need for flexible policy frameworks and careful interpretation of the findings. Rather than presenting prescriptive "roadmaps," the study emphasizes the potential of digital transformation while recognizing its limitations and the role of broader economic conditions.

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STRUCTURAL INEQUALITIES AND THE SINGLE AGRICULTURAL POLICY OF AGRICULTURAL AID IN THE EUROPEAN UNION: A COMPARATIVE ANALYSIS OF THE CONTROL MECHANISMS OF EUROZONE COUNTRIES WITH EMPHASIS ON GREECE.

Summary

This article is based on a bibliographical comparative analysis of the mechanisms governing control and distribution of agricultural aid in Central and Southern European Member States, such as Greece, Germany, Romania and other European countries at a level economy-administrative structure similar to that of Greece. Effectiveness of control measures, bureaucratic problems and success with respect to sustainability and rural development objectives are here assessed. By presenting some commonalities and divergences between countries, it is hoped to showcase examples in order to secure the transparency and effectiveness of the agricultural aid apparatus in Greece, as well as its adherence to European standards.

Keywords: Common Agricultural Policy, subsidies, control mechanisms, agricultural aid, Greece, Romania, Germany, rural development.

1. Introduction

The Common Agricultural Policy (CAP) is one of the most laborious and expensive instruments within the European Union; it consumes ca. 30% of the budget in total (European Commission 2021). CAP is not only a financial instrument for farmers, its probably one of the key instruments on European integration that connected economic convergence with sustainability and social justice in rural space (Matthews, 2018). Yet, visible disparities between member countries regarding the absorption and successful implementation of aids underline the internal mechanism of inequality within the EU. These

disparities are not merely economic in nature, but have strong connections with the administrative, institutional, and technical capacities of each country (European Audit Service, 2019; Heyl et al., 2022).

The analysis of control mechanisms in the field of agricultural assistance here is especially important, as it reveals the level of usefulness, transparency and institutional maturity within that country (Glowinkel 2020). Especially in Greece, where agricultural policies are of administrative centralization, bureaucracy and limited technical support, examining control mechanisms compared to more efficient countries like Germany or Denmark can be crucial to reconstructive policy (OPEKEPE 2022; Doukas 2021). The originality of this paper, then, is the fact that it helps in understanding why institutional inequality persists or is increasing within a common European system which should function under an equal set of rules in theory but does so to varying degrees in reality.

This paper aims to point out the differences and resemblances between agricultural aid control instruments owned by member states of Eurozone with emphasis on Greece, Germany and Romania applying a comparative method. The aim is to analyse the administrative and institutional factors of differentiation on the one hand, and to make concrete policy recommendations that will enhance transparency and efficiency within the Greek agricultural administration, facilitate reasonable access to agricultural land and promote local alternative agricultural practices on marginal territories. At the same time, the analysis seeks to shed light on how technological innovation, decentralization, and sustainability indicators can be levers to balance the gap within Europe (BMEL, 2022; Cagliero, et al., 2023).

The need for this study stems from the fact that despite numerous CAP reforms, the gap between the northern and southern parts of the EU remains stable (European Commission, 2020). For example, Greece has always been one of the countries with the highest percentage of subsidies per farmer, but its management efficiency is low (MDPI, 2023). This shows that quantitative financing is not the same as qualitative growth, and it is necessary to study the institutional parameters that affect the distribution and control of agricultural aid. Due to the lack of comparative studies on aid management in different administrative systems, this article makes an important contribution to the literature.

Based on the above, this article attempts to answer three basic research questions.

1. What are the main structural and administrative differences affecting the effectiveness of agricultural aid control mechanisms in EU member states?

2. What determines the difference between a country with high efficiency (e.g., Germany) and a country with low administrative capacity (e.g., Greece and Romania)?

3. How would political and institutional interventions make the Greek control system more efficient and closer to the Central European standard?

The answers to these questions could generate theoretical and policy value, in terms of contributing at the level of the comprehension of Europe's deficiencies in terms of agricultural policy, set up promoting institutional solutions that might improve sustainable rural areas. Furthermore, the paper aims to offer a political-economic and administrative approach for upgrading Greek instruments of control in the field of EU regulation.

The article is structured as follows: Part 1 will have a bibliographic review and theoretical framework of perspective, control mechanism to CAP. Section 2 examines the subsidy systems of several European countries, including specific sections for Greece, Germany and Romania. Part 3 will compare benchmarking with national polices and control frameworks. The fourth section will serve to discuss the findings and contributions of the present study and, finally, some general conclusions will be provided in the last section as well as specific answers to our research questions and directions for future research and policy comments.

2. Bibliographic Review

Though the basic principles are the same, they have never been exactly identical. Grants, conditionality and control instruments are designed according to institutional, economic and social circumstances of the member countries with relevant policy effects in several countries (Heyl et al., 2022). The international literature teaches that the effectiveness of agricultural aid does not only depend on the size of funding, but mostly on state institutional readiness and administrative ability to channel it in transparent and proper manner. Ekardt (2020) and Heyl et al. (2022), CAP is a field of "sustainability governance". This is where grants are not simply financial rewards but tools of social and environmental transformation. In some countries such as Germany and Austria, aid policies escape depen dency geopolitics by building strong institutional machinery, check systems of monitoring and digital control (BMEL 2022) 28. This effectiveness harnesses the power of generating payments for clear performance and environmental compliance without running into error or distortion.

Then, in southern and eastern member states such as Greece, Romania and Bulgaria grants continue to work as income substitution rather than development instruments. According to Doukas, 2021 and Galluzzo (2020), bureaucratic slowness of the administrative systems and inability to properly control programs is common in these countries. The process of control system digitization, staff training as well as data connections are still insufficient and collaboration with local agencies is often disjointed. Accordingly, the same policies have diverse effects in countries with strong institutions and weak administrative traditions (Glowinkel, 2023).

A comparison study for Pufahl and Sinabell (2014) and Cagliero et. (2022) empirically demonstrate this differentiation. Their findings illustrate that countries like Austria and Germany have high scores in institutional readiness, transparency, digital audits and digital evaluation whereas Greece is an outperformer only in comparison with Turkey on these indicators. As illustrated in Figure 1, they concern not only specific technicalities but also structural governance dimensions—such as a decentralization pattern vs. cooperation between ministries and regions or the involvement of agricultural organizations in control mechanisms. The existence of these institutional nets in the northern countries is an indicator as to Just why (in the northern countries) aid is connected with innovation and environmental adaptation, whereas aid in the southern countries operates mainly at conservative levels of revenue management.

In other words, existing literature stresses that disparities in aid absorption and use are not only geographical but also social. The biggest farms occupy around 80% of all CAP resources (European Commission, 2021), contributing to land concentration and undermining the position of small and medium-sized farmers. This reality undermines social policies as little farms cannot invest in the green transition and technological innovation that are a precondition for genuinely sustainable agriculture (Heyl et al., 2022). On the other hand, in countries like Austria, the close linkage between subsidies and environmental performance indicators has led to improved resource targets and greater acceptance of policies by farmers themselves (BMEL, 2021).

Overall, the literature converges that the **success of the CFP depends on each member country's** institutional background**,** digital infrastructure**,** culture of responsibility**, and governance capabilities**. These differences, reflecting the most acute North-South divide in the EU, cannot be resolved by economic means alone. Structural reforms are needed to increase transparency and transparency. Continuous evaluation of decentralization and policies to ensure that CAP can evolve from a stabilization tool to a real driver of sustainable development and social equality.

3. Policies of European Countries

3.1. Politics of Greece

Greece is a typical case of country which CAP agricultural aid is highly necessary to maintain the viability of agricultural sector, but ineffective due to lack in administrative and institutional arrangements. Both nation and subnational strategies have traditionally addressed agricultural income, and not production or referred to greening in strategies (Doukas, 2021). Some modernisation attempts have been already made through the OPEKEPE (Community Map and Guarantee Support Payment and Control Agency) but problems, as delays in payments, limited transparency or low degree of digitization of procedures persist (OPEKEPE 2022).

Studies by ELIAMEP (2020) and the European Commission (EU, 2021) demonstrate that aid allocation continues to be anchored in historical rights and does not have a strong connection to environmental or development criteria. As a consequence, the resources are not fairly distributed and most of the money ends up with large landowners rather than small, productive farmers. Meanwhile, the fragmented nature of agri-advisory services has impeded producers' ability to access new farming techniques (Daskalakis, 2019).

In recent years, Greek agricultural policy has sought to incorporate gradually actions and activities for promoting green agriculture, agri-food innovation and collective resource management in the framework of RDP 2023-2027 plan (Ministry of Rural Development and Food (YPAAT, 2023). But the effectiveness of these reforms will hinge on streamlining bureaucracy and enhancing decentralization, as well as improving control. As Heyl et al. (2022) note, in absence of well-defined targeting and quantifiable evaluation criteria, Greece may be stuck in a subsidy model without promoting more sustainable growth.

3.2. Policies of Germany

Germany serves as a role model for the implementation of C-AP with respect to regulations, technical experiences, and transparency. The federal principle of the country, which allows responsibilities to be decentralized between different layers of government, including state level governments, also becomes important for sugarcane grants delivery and monitoring (BMEL, 2022). This management address changes was made for central control of the Federal Ministry of Food and Agriculture Federal Office BMEL (BMEL) with a regional responsibility increase the transparency and efficiency.

The arm relating to Germany is very strong. The country utilises digital systems in order to maximise the Integrated Management and Control System (IACS) for following agricultural practices, land use as well compliance with environmental regulation (European Court of Auditors, 2019). It also pursues strict system of job evaluation based on productivity, efficiency and environment performance. The results of these assessments are published year by year, and they become part of subsequent years' policy plans to create a dynamic circle of improvement (Pfeifer et al., 2016).

Yet another element of the German solution is that green transformation will have precedence. Through embedding environmental components in the grants through programmes on bi-diversity, emission reduction and sustainable soil management, Germany has turned out to be a role model for the EU (BMEL 2021). As Heyl et al. (2022) note, the success depends not just on sufficient funding. Transparency and accountability held aloft, but never carried through to the interrelationships between political ends and means.

3.3. Romanian Policies

Romania has made steps forward in the adoption of CFP, however it still struggles with major institutional and administrative difficulties. The state authority APIA (Agenția de Plăți și Intervenție pentru Agricultură) manages payment plans on the basis of an integrated management and control system (IACS), yet the process is frequently slow and bureaucratic (Galluzzo, 2020). Farm fragmentation and the low administrative of local services are the causes for delays and hardships in absorbing community fund (Glowinkel, 2020).

Farmers in rural Romania are reported to lack technical support and advisory services, which have thus far hindered the successful roll-out of the programme (ARC2020 2020). The absence of specialized personnel and of digital instruments lowers the institution efficiency, reducing transparency. European auditors' norms are being also adopted by Romania, but its applicability at regional level is frequently blocked by bureaucracy and limited decentralization (Galluzzo, 2020; Glowinkel, 2023). There has, however, been a modernization push recently with the introduction of electronic registers and increased collaboration with local government. Despite these advances, the literature concurs that Romania is a case of transition: it has an institutional framework but does not yet possess full administrative maturity to manage aid efficiently.

4. Comparison

4.1. Control Mechanisms for the Allocation of Aid in the EU

The control mechanisms are set by the European Commission, but the national paying agencies are responsible for the correct allocation and monitoring of subsidies. The differences arise from the administrative capacity, the use of digital tools, risk control and the political culture of each country (European Commission, 2021; OLAF, 2021). The efficiency of these mechanisms therefore varies significantly from country to country.

In Greece, despite high funding through the CAP, its implementation is characterised by high administrative complexity, delays in the payment of aid, limited adequacy in control mechanisms (ELIAMEP, 2020) and the absence of a transparent eligibility system (MDPI, 2020). The lack of advisory services and the allocation of aid based on historical entitlements have been an obstacle to the restructuring of the agricultural sector (MDPI, 2020). The control mechanisms, although strengthened in recent years through OPEKEPE, remain inadequate in capturing the true picture of agricultural practices (OPEKEPE, 2022), as there is a delay in the digitization of controls (OPEKEPE, 2022) and a lack of regional technical support (Springer, 2020). In fact, the Greek case is characterized by a strong dependence of farmers on subsidies, with limited use of advisory services and innovation (Daskalakis, 2019 ;D oukas, 2021) and as noted by Heyl et al. (2022), the lack of linking subsidies to specific and measurable objectives reduces the effectiveness of aid policies.

Romania has similar administrative malfunctions as Greece. Romania, through the APIA (Agenția de Plăți și Intervenție pentru Agricultură), implements the Integrated Administration and Control System (IACS) used to monitor and control agricultural aid granted under the European Union's Common Agricultural Policy, but the country faces significant problems of fragmentation of agricultural land and low institutional efficiency, resulting in insufficient absorption of Community funds. The low absorption rate of CAP funds is due, inter alia, to bureaucracy, reduced administrative capacity, such as staff shortages, complexity in procedures and limited decentralisation (Glowinkel, 2020; Galluzzo, 2020) and the lack of local technical advisory services (ARC2020, 2020). As Glowinkel (2020) mentions, agribusinesses in Romanian regions operate in an environment of limited institutional support, resulting in them being overly dependent on subsidies, but without enhancing their long-term viability. In addition, the inability to adopt innovative tools and controls leads to delays and losses of resources (ARC2020, 2020; Galluzzo, 2020).

Unlike Greece and Romania, Germany is an example of best practice as it has sophisticated and decentralised monitoring and control mechanisms. In fact, it has established stricter and more digital control mechanisms, which enhance transparency and fair distribution of subsidies (BMEL, 2022; European Court of Auditors, 2019). The implementation of the CAP in Germany is characterized by clear institutional frameworks, multi-level control as well as stable federal supervision and state supervision (BMEL, 2021; Pfeifer et al., 2016). At the same time, there is an integration of environmental criteria into subsidy systems (European Court of Auditors, 2019; BMEL, 2022). The

mechanism for evaluating the effectiveness of rural development policies is embedded in annual reports and is based on quantitative data (Pfeifer et al., 2016). This mechanism contributes to the high efficiency of agricultural aid and the viability of farms in Germany. As Heyl et al. (2022) argue, such examples make it clear that strengthening sustainable agriculture requires more funds than resource allocation: it needs to be linked to targets, indicators and continuous evaluation.

It is observed that central European countries such as Denmark and Austria, following the policy of Germany, show strong administrative efficiency, as well as strict control systems with a high level of digitalization that link agricultural aid to environmental performance (Springer, 2020). In contrast, in the European south, countries such as Italy, Spain and Portugal have a mixed profile, with some regions implementing pioneering practices and others facing similar obstacles to Greece (European Commission, 2020). The modest administrative capacity of these countries does not allow the full use of the subsidies. Despite modernisation efforts, difficulties in absorption and implementation of audits are still recorded (European Court of Auditors, 2019). In these countries, the main problem has been political in nature, with subsidy distribution being politicized and control being hard to enforce at the local level (Heyl et al., 2022). Finally, as was the case with Romania, Bulgaria also suffers from structural weaknesses in public administration which have contributed to low subsidy absorption rates and an inadequate system of control for the distribution of agricultural aid. (FAO, 2020).

It can be seen in Table 1 that more developed with a decentralized technological basis and effective control systems are the countries from Central and North Europe (Germany, Denmark) while those in South-Eastern Europe have the drawbacks of congestion, bureaucracy and technological delays (Greece, Romania, Bulgaria). Italy falls in the middle, with strong subnational communities engaging in creative approaches and weak ones failing to keep up. The comparative discussion also illustrate area where we could improve both the coordiantion and digitalisation to make the CFP implementation more level playing field and effective (European Court of Auditors, 2019; Cagliero, et al., 2023).

Country	**Main Control & Management Body**	**Level of Digitization / Technology**	**Administrative Capacity & Organization**	**Key Weaknesses**	**Best Practices / Specifics**	**Sources**
Greece	OPEKEPE – IACS	Moderate – limited use of GIS and satellite controls	Centralized system with low regional decentralization	Bureaucracy, late payments, reliance on historical rights	Development of new digital services (e.g. e-IACS) from 2021	(OPEKEPE, 2022· Doukas, 2021· MDPI, 2020)
Germany	BLE (Bundesanstalt für Landwirtschaft und Ernährung) and state authorities	Very high – fully automated GIS/LPIS system	Federal and decentralized control system	Limited problems – high technology maintenance costs	Integration of environmental indicators and annual quantitative assessment	(BMEL, 2021· BMEL, 2022· Pfeifer et al., 2016)
Romania	APIA (Agency for Payments and Intervention for Agriculture)	Moderate – IACS use with	Weak administrative capacity, lack of staff	Land fragmentation, limited	Phasing-in of new eligibility	(Glowinkel, 2020· Galluzzo, 2020·

Country	Main Control & Management Body	Level of Digitization / Technology	Administrative Capacity & Organization	Key Weaknesses	Best Practices / Specifics	Sources
		deficiencies in automation		technical infrastructure	indicators (2020–2023)	ARC2020, 2020)
Denmark	Ministry of Food, Agriculture and Fisheries (Landbrugsstyrelsen)	Very high – fully digitized systems, remote sensing	Strong decentralization, technical proficiency	Reliance on centralised EU data for cross-checking	Automatic verification of beneficiaries and environmental performance	(Springer, 2020· European Commission, 2020)
Italy	AGEA (Agenzia per le Erogazioni in Agricoltura) – Regional offices	High but heterogeneous between regions	Decentralized model – uneven efficiency	Different yields by region, administrative inconsistency	Pioneering GIS projects in regions such as Emilia-Romagna	(European Court of Auditors, 2019· MDPI, 2020)
Bulgaria	State Fund Agriculture (SFA)	Low – limited GIS usage	Weak public administration and delays	High error rates, lack of transparency	Steps towards alignment with EU standards post-2020	(FAO, 2020· Popescu & Călin, 2019)

After that, Austria and Germany are the top performing countries, with scores extremely high in each category (80%-90%+). This is the evidence of sound administrative work and tidy technical backup. A new chart on page six provides a snapshot of % performance levels for CAP implementation and evaluation in six important areas (2023 – 2027): institutional readiness, digitization of control systems; open data transparency; availability of performance indicators monitoring frequency local authorities' involvement. Peru's statistical average of less than 30% is indicative that it has quite poor performance in this respect. Greece is in the sort of 50-70% bracket, though it is the worst apex across Asia by far. What really sticks out here? Its data is poor when compared with any other country. So Greece's presence here is kind of univocal evidence for problems of decentralization and need to strengthen control mechanisms (Heyl et al., 2022; Glowinkel, 2023· European Commission, 2021).

Figure 1. Benchmarking of the 2023–2027 CAP monitoring and evaluation mechanisms in Austria, Germany and Greece

The comparative analysis highlights the need to redesign the control framework for the CAP in southern European countries, including Greece. The introduction of measurable indicators, the strengthening of digitalisation, the reduction of bureaucracy, the independence of controls and transparency are required. The experience of countries such as Germany or Denmark shows that efficiency and sustainability are not only achieved through subsidies, but through a combination of technical support, targets and

transparency (Heyl et al., 2022). Greece must make use of the European experience and move from a system of simple subsidy to an efficient system of agricultural management and development.

4.2. Structural Differences in the Implementation of the CFP

The implementation of the Common Agricultural Policy (CAP) presents significant structural differences between the countries of Central and Southern Europe, reflecting the rural structures, administrative capacity as well as the level of technological and digital readiness of each country. In particular, countries such as Greece, Romania and Bulgaria face increased challenges due to fragmented land tenure and agricultural production, limited digitalisation and bureaucracy (Eurostat, 2021; FAO, 2020). In contrast, countries such as Germany, Denmark and Austria have strong institutional support, decentralised administration and advanced information systems, which makes the implementation of the CFP more efficient and transparent (BMEL, 2022; European Commission, 2020). Denmark in particular has a high level of automation and fully digitalised procedures in agricultural aid (Springer, 2020).

Greece is characterized by a centralized governance model with high funding through the CAP but limited technical support structures, as the CAP allocation system is mainly implemented through OPEKEPE, with the help of the IACS (European Commission, 2020). Clearly, digital recording is done through the IACS for the submission of declarations and the confirmation of the beneficiaries. However, despite this, on-site control as well as remote control with satellite monitoring is incomplete, with the implementation of geospatial systems for the verification of cultivated areas being called into question (Doukas, 2021). At the same time, the lack of a transparent eligibility system, bureaucratic delays, especially in the payments and absorption of CAP funds (Daskalakis, 2019), the insistence on historical rights and the limited use of digital tools slow down not only the transformation of the agricultural sector (MDPI, 2020; OPEKEPE, 2022) but also the efficiency of the control mechanisms that is still lagging behind other EU Member States that are considered models such as Germany and Denmark (European Commission, 2020). Similarly, Romania faces significant difficulties in absorbing aid due to low administrative capacity, limited advisory structures and dysfunctional rural organisation (Glowinkel, 2020; ARC2020, 2020). However, steps have been taken towards the adoption of environmental and objective allocation criteria (FAO, 2020).

In contrast, Germany implements the CAP through a federally organized and technologically advanced mechanism known as the BLE (Federal Agency for Agriculture and Food), with a strong interface between government agencies and producers. The German system relies on accurate recording through geospatial systems such as GIS and LPIS (Doukas, 2021; Gatzweiler et al., 2017) for the verification of cultivated areas through satellite monitoring, the registration and confirmation of aid beneficiaries and the evaluation of on-the-spot and remote checks to avoid irregularities and mismanagement (Pfeifer et al., 2016; European Court of Auditors, 2019). Technical support, appropriations for innovation and full digital oversight enhance the transparency and efficiency of the CAP. Spain and Italy apply decentralised models, with regional differentiation, allowing for flexibility but sometimes reinforcing inequalities (MDPI, 2020). In Portugal and Bulgaria, despite funding opportunities, limited administrative capacity and delays in controls prevent the full use of resources (Popescu & Călin, 2019; European Court of Auditors, 2019). The above differentiations demonstrate the need for institutional and administrative harmonisation, technical and digital support and the promotion of innovation in low-performing states to ensure the sustainable and fair implementation of the CFP across Europe

4.3. Agricultural Aid Policy under Inequalities

The uniform application of the CAP does not similarly support all EU member states. It is observed that countries with already developed agricultural structures such as Germany, Denmark and Austria can

better absorb and use aid more efficiently (Matthews, 2018). The model followed by powerful countries such as Germany offers stability and transparency (BMEL, 2022). In contrast, in less developed regions such as Greece, Romania and Bulgaria, the subsidy often functions as an "income replacement" rather than as a tool for transformation or development. Southern European countries are lagging behind in efficiency and administrative efficiency compared to those of central and northern Europe (Doukas, 2021).

CAP is the "same drug", but all it same way in dinoses with different physiology. “The middle way,” as it’s known in Germany, Denmark and Austria, includes elements consisting of high-level administrative capacity for disbursals to farmers, digital controls (and requirements) on aid spending, powerful cooperatives and medium-size to large farms. Accordingly, the same euro is more readily charged with income stabilization AND investment, innovation and environmental effects as well (Heyl et al., 2022). The payment of the farmers in Germany ‘is linked’ to clear indi cators as (biodiversity, energy efficiency, emissions) and a decentralised control with coordination between the federal and state level is performed. This, in turn, establishes predictability for farmers and responsi- bility towards the administration (BMEL, 2021–2022; European Audit Service, 2019; Heyl et al., 2022). Denmark and Austria also share that combination of strong IACS/LPIS, high penetration of advisory services and culture of cooperation (producer groups, collective action for green results). This is how they make use of 'mature' forms of support like sound ecological planning and se rvice -based remuneration (e.g. biodiversity, water quality) that needs to be measured and continually ovserved (Cagliero, et al., 2023; Heyl et al., 2022).

Meanwhile, a different set of "baselines" apply for Greece, Romania and Bulgaria: fragmented land, historical rights to "lock" out allocations, lags in digitising/ control systems, and poorer access to technical assistance in the region's least favoured areas. As a consequence, aid is largely income compensation rather than an instrument of leverage. In Romania the fragmentation and lack of capacity at local administration level are decreasing the absorption of investments measures and productivity. We also find that "friction" such as Lags, qualification disparities and disparity of access to counseling are circulating in Greece (Glowinkel, 2023; Galluzzo, 2020 · Ducasse, 2021· MDPI,2020).

It’s more than just technical differences; It’s systemic. Under the “Northern” model, direct payments encompass investments in agricultural advice, collective action (remote sensing, risk-based control), digital tools and tight coupling with objectives. In the ‘South/East’ this mirror aid has also the opposite side when these ‘intermediate goods’ are not available: diminished innovation, decreased opportunities of small producers to ‘go up the rungs’, and increased dependency on subsidies (Heyl et al., 2022; European Commission, 2021). The distinction is a matter of scale, though. Investments have scale effects (precision equipment, renewables on farms, collective intervention in waterways) In Germany/Denmark/Austria because there are medium and large sized farms. With small or no active collectivisation, the same investment is expensive and difficult in Greece and Romania, so subsidies "disappear" following short-term needs (Glowinkel (2023), Ganda, 2023). It will also deepen the gulf between haves and have nots, particularly at European level where about 20% of beneficiaries received ~80% of direct payments and so good news for large farms and regions with mature administrations. If the administrative filters are clearer, and smaller filters and rules eliminate disbursement effectively (the bigger the filter – or rule — you have to break through, the more efficient each euro of CAP), then larger yield from said Cap. If the process is opaque, feedback can function as 'safety net' rather than unambiguous environmental/productive 'reward' (European Commission, 2021; Heyl et al., 2022).

And of course there are “mixed” cases. Italy, Spain and Portugal have world-beating constituencies (digital audits,wise results in waste /biodiversity) alongside other regions with the same malfunctions (latency, mutilation of resources) as Greece. This demonstrates that regional planning (e.g., a collective payment for all the river basins) but also results-based one can "spoil" national averages when having the means to implement them (European Commission, 2020; European Court of Auditors, 2019). One

thing that all "successful" countries have in common, is the tie between payments and achievement. If the grant is associated with measurable metrics (biodiversity areas, nitrate/phosphorus measures, soil healthy, adoption of precision practices) then transparency and action can be seen. When linkage is weak, reinforcement emerges as a frequent transfer with low "policy effectiveness," particularly in politically challenged administration (Heyl et al., 2022; Matthews, 2018).

After all, the same European financial flows have different outcomes, because they "click" on different capabilities like bureaucracy management, digitalization, consulting skills, collective action and market proportions. If the South/East invests in intermediate goods (advice, cooperation plans, targeted digitization of control), if resources are shifted away from horizontal to target/effective payments, so that CAP performs as it does for Northern states. In other words, it starts to act itself as a motive force of transformation not only an "addition" (Cagliero, et al., 2023; European Commission, 2023).

5. Debate

The comparative analysis of the control mechanisms between the EU member states reveals significant structural weaknesses in the countries of southern and southeastern Europe, such as Greece, Romania, Bulgaria and partly Spain. These countries are characterised by low institutional and technological capacity, administrative congestion and limited transparency in the management of agricultural aid (European Court of Auditors, 2019; MDPI, 2020). In contrast, countries such as Denmark, Germany and the Netherlands have developed technologically advanced and decentralized administrative systems, which are based on unified GIS tools, remote sensing checks and automatic verification of beneficiary data (BMEL, 2021; European Commission, 2020).

In order to achieve substantial convergence, it is necessary for the countries of the South to invest in strengthening the independence, know-how and decentralisation of control mechanisms. In particular, it is proposed to establish decentralized technical units for the control and management of aid, with enhanced staffing and specialization. Decentralization not only allows for targeted implementation of policies by region, but also increases efficiency through better knowledge of local specificities (Springer, 2020). This model is already successfully implemented in some strong member states of central and northern Europe, where local government plays an active role in the monitoring, distribution and evaluation of agricultural subsidies (Cagliero, et al., 2023).

The case of Spain is noteworthy, which – although belonging to Southern Europe – has a decentralised administration system that allows flexibility in the implementation of policies at regional level. However, the absence of a single technical infrastructure and large discrepancies in the efficiency of individual autonomous regions create gaps in control and transparency (MDPI, 2020). This implies that decentralization in the absence of common tools and standard ways of doing things was contributing to administrative variability.

Yet at the same time many European countries in the south of Europe - together with Greece, Italy and Bulgaria - are woefully lacking in transparency, and there is no rationality or efficacy to how aid is distributed even though the union has ample resources. This vulnerability is to be counteracted by the compulsory activation of digital instruments (sole GIS, LPIS, IACS) and the disclosure of open data on final beneficiaries; with a view to a public accountability and in order to lower the opacity (European Commission, 2021; Popescu & Călin, 2019). In addition, the creation of unified GIS databases at EU level would allow for comparable, automated and more valid checks, while enhancing cooperation and exchange of know-how between Member States (Glowinkel, 2020).

Another crucial element of differentiation is the education and training of auditors, but also of farmers and civil servants. Countries with developed control mechanisms apply common standards of certification and training, unlike Greece or Bulgaria, where training is often fragmented and insufficient (Cagliero, et al., 2023; Galluzzo, 2020). A European initiative to harmonise training standards in control mechanisms would help reduce inequalities in the implementation of the CFP.

Finally, it becomes evident that the proper use of aid requires a combination of strategic planning, innovation and sustainable distribution. Subsidies must be linked to criteria of necessity, efficiency and environmental performance – a practice already applied in states such as the Netherlands and Germany (Klein et al., 2019 ; BMEL, 2022). Greece and the rest of the countries of southern Europe must invest in long-term planning and the development of policies that take into account local needs and structures, in order to ensure sustainable and effective rural development.

6. Conclusions

Theoretical discussion In an attempt to address debate about the everyday functioning of CAP, we should consider whether the routine application of control strategies and regulations for implementing this particularly complex policy reflects a geographical split between northern and southern Europe. The efficiency in monitoring and disbursing aid is a function not only of the financial resources but also essentially of institutional maturity, technical capabilities, and administrative ethos (Heyl et al., 2022· Glowinkel, 2023). Nordic and Central European countries like Germany, Austria and Denmark have established multilevel governance systems in which transparency, decentralization and digital tools are integrated into agricultural policy (BMEL, 2022). On the other hand, in some Southern European Member States like Greece (Botti et al., 2021; Doukas et al., 2021; Ringer and Nicholas, 2010), Italy (Ciffolilli and Massini, 2007EOF) and Portugal, structural weaknesses are still present in addition to administrative τ mutations involving a lack of payments as well as politicization in the allocation of funds.

This division is not due to differences in administrative traditions among the individual member states, but reflects historical and institutional asymmetries at the heart of public administration. Fragmented governance and transparency in public administration have remote antecedents across the Nordic countries (Pfeifer, et al. 2016), which arguably facilitate aid monitoring and policy evaluation. At the other end of the process, it has been reported in the case of some local administrative structures that centralized organization and a lack of personnel investment means disproportionality in fund uptake combined with reduced accountability (Glowinkel 2020; FAO 2020). Hence, inequality in effectiveness of the CAP mechanism is a complex issue with institutional, managerial and economic elements.

The complex perspective addressed the research question of efficiency gap between North and South. Among the Central and Northern countries, it is at a higher level of best practice because the continuity administration exist along with technological infrastructure and feedback & transparent culture are developed (European Audit Service, 2019· BMEL, 2022). Southern countries like Greece and Romania, in contrast, face institutional instability, a lack of coordination as well as limited technological development and digitalization (ARC2020, 2020; OPEKEPE, 2022). It is these factors that also account for how identical European policies attain different outcomes within the Union.

The second research question, Greece is currently characterized by an institutional framework that seems to be more stable now and under the guise of a new CAP 2023-2027 strategy (YPAAT, 2023) which requires further reforms for it to reach levels similar to those found in countries belonging to the Nordic model. Most significant of these reforms is the delegation of powers to rural administration. It is connected with the personnel that staff local mechanisms, reinforcing digital infrastructure and training human resources (Daskalakis, 2019; Doukas, 2021). At the same time, an attempt to link grants to both innovation and sustainability results in the "depoliticization" of aid and the establishment of measurable performance standards (Heyl et al., 2022).

So, harmony is not a utopian, but a theoretical long-term process of coming together that needs political will, transparency and institutional continuity. Greece can move from a model of subsidies to the key development with the support of technology, policy mentality and involvement that could be producers. Otherwise, CAP can be utilized as means to lever the construction and cohesion of rural sustainability.

At the European level of policy making, results from this analysis indicate that a more flexible and diversified CAP should be considered that reflects national and institutional specifics of each member state. The European Commission has the possibility of investing in technology convergence programs, so that the function of independent audit bodies can be enhanced and the administrative divide between North and South is narrowed.

Lastly, the future research could be concentrated on empirical studies on digital transformation in rural administration, a quantitative relationship between organizational capacity and aid absorption. Assessment of the social aspect of subsidies in particular helping small and medium-sized farmers, young farmers. The road to a fairer, greener and more efficient EU farm policy is not preordained but the consequence of long-term commitment, collaboration and reform of administration.

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Marianna Kichurchak

Acting Head, Professor of the Department of Economy of Ukraine

Ivan Franko National University of Lviv

79008, Lviv, 18 Svobody Ave.

e-mail: Marianna.Kichurchak@lnu.edu.ua; ORCID: https://orcid.org/0000-0002-1927-570

Iryna Paslavska

Associate Professor at the Department of Economic Cybernetics

Ivan Franko National University of Lviv

79008, Lviv, 18 Svobody Ave.

e-mail: Iryna.Paslavska@lnu.edu.ua; ORCID: https://orcid.org/0000-0003-3955-5751

SHOCK RESILIENCE OF UKRAINE'S BANKING SECTOR: A BAYESIAN DYNAMIC MODELLING APPROACH

The banking sector in Ukraine has been shaped by a series of profound economic, social, political, and military shocks, including the 2008–2009 global financial crisis, the annexation of Crimea and the occupation of parts of the Luhansk and Donetsk regions, multiple episodes of national currency devaluations, the commercial bank reform of the 2014–2016, the COVID-19 pandemic, and the full-scale Russian invasion launched in February 2022. This study examines the temporal structure of factors affecting the dynamics of non-performing loans (NPLs), which reflect the resilience of Ukraine's banking sector under conditions of persistent uncertainty and external shocks. An autoregressive distributional lag (ARDL) model with Bayesian estimation was employed to derive posterior parameter distributions and assess their statistical significance. Quarterly data from the National Bank of Ukraine (NBU) for Q1 2006–Q3 2025 were used. The model was found to be adequate based on parameter estimates and diagnostic tests.

The dependent variable (Y_t), representing the banking sector's resilience to shocks, is the share of NPLs (%). Exogenous variables include the rate of change in real GDP (X_1, % compared to the same quarter of the previous year), the consumer price index (X_2, %), and the NBU's policy rate (X_3, %). Bayesian modelling indicates that NPLs largely depend on their lagged value Y_{t-1} (coefficient 0.942), reflecting process inertia. Lagged effects of independent variables were also significant: $X_{1,t-1}$ captures the influence of the previous economic cycle phase on loan portfolio quality (coefficient -0.097), $X_{2,t-4}$ reflects the delayed effect of inflation on banking sector stability (coefficient 0.134), and $X_{3,t-4}$ captures the lagged impact of monetary policy on borrowers' solvency (coefficient 0.121). The Bayesian regression results demonstrate a high level of explanatory power (Bayesian R^2=0.980), indicating that the included factors account for approximately 98% of the variation in NPLs. Low predictive errors (MAE=1.293, RMSE=2.121) indicate good model fit to historical data. Taking together, the findings indicate that the banking sector's resilience to shocks, as reflected in the NPL dynamics, depends on economic policy initiatives aimed at stabilizing the macroeconomic environment, as well as on the NBU's decisions regarding the policy rate. These results may be useful for shaping policies intended to enhance the capacity of Ukraine's banking sector to withstand external and internal shocks that affect the quality of commercial banks' loan portfolios and the accumulation of NPLs.

Key words: Banking sector, Non-performing Loans, Autoregressive Distributional Lag model, Bayesian inference, Macroeconomic indicators

Introduction. Over the past two decades, Ukraine's banking sector has been exposed by significant shocks that have shaped a distinctive risk landscape and necessitated continuous institutional adaptation. The sector has experienced a complex trajectory of transformation: from periods marked by excessive dependence on external financing and pronounced vulnerability to currency fluctuations, to a phase of comprehensive structural reform. This reform agenda included the removal of insolvent institutions from the market, the introduction of risk-based supervision, the implementation of large-scale recapitalisation and restructuring programmes, and the alignment of banking practices with updated standards for capital adequacy, liquidity management, and credit-risk assessment. Taken together, these transformational processes have strengthened the institutional resilience of the banking system and enhanced its capacity to withstand macroeconomic and financial shocks.

The current stage of banking sector's development is characterised by a sustained increase in capitalisation**. For example, commercial banks' capital adequacy levels significantly exceed the minimum regulatory requirements, with an average Tier 1 capital adequacy ratio of 17% and a total regulatory capital ratio of 17.5%; high liquidity, as reflected in liquidity coverage ratios in all currencies (LCR all) and in foreign currency (LCR fx), which exceed the regulatory minimum of 100% by a factor of three; and increased attention to asset quality through regular asset quality reviews conducted by external auditors, alongside updates to the National Bank of Ukraine's (NBU) regulatory standards aimed at strengthening credit-risk coverage** (National Bank of Ukraine, 2024). **Collectively, these developments contribute to reinforcing the sector's risk-management mechanisms**

Consequently, in the current environment, study and management of credit risk in the banking sector are among the most critical tasks. Non-performing loans (NPLs) constitute a key indicator of the sector's stability and operational risks, as their growth directly affects asset quality, capital adequacy, lending activity, and the capacity to support economic recovery (Bondarenko et al., 2020; Salas et al., 2024; Velliscig, Floreani, & Polato, 2023). Therefore, a detailed analysis of NPL dynamics, along with an assessment of the impact of macroeconomic and monetary factors on their evolution, is essential both from a scientific perspective and for the development of effective insights to strengthen the sector's shock resilience. The dynamics of NPLs in the Ukrainian banking sector during 2006–2025 exhibited significant fluctuations – from 6.2% in January 2006 to 56.2% in July 2017, and 27.9% in July 2025 (National Bank of Ukraine, 2025b) – reflecting changes in the economic environment as well as the effects of regulatory decisions and institutional reforms. Analysing these dynamics requires methodological tools capable of accounting not only for short- and long-term lag effects, but also for the stochastic nature of credit risk, parametric uncertainty, and potential structural shifts.

While a substantial body of international research exists on NPLs (Ari, Chen & Ratnovski, 2021; Ahmed et al., 2021; Kjosevski & Petkovski, 2021; Petkovski et al., 2021; Erdas & Ezanoglu, 2022), most studies rely on classical econometric techniques, such as panel data models, GMM, or non-equilibrium ARDL approaches. Although these methods have proven useful, they may have limitations in adequately addressing parametric uncertainty, non-linearity, asymmetry of effects, and the risk of structural changes that characterise economies subject to frequent and severe shocks. This points to a relevant avenue for further investigation, namely the application of methodologies capable of analysing both short-term and long-term lagged dependencies while accounting for the stochastic nature of credit risks and their transmission mechanisms. From this perspective, the use of dynamic models with Bayesian estimation is particularly appropriate, as such an approach provides complete posterior distributions of parameters, explicitly accounts for uncertainty, and enables the identification of the lag structure in the transmission channels of macroeconomic and monetary shocks. In contrast to classical methods, the Bayesian ARDL

(BARDL) model enables the derivation of coherent probabilistic conclusions and adequately captures processes under structural breaks, which is particularly relevant in the Ukrainian context.

Given this context, the research focuses on a detailed assessment of the stability and adaptability of Ukraine's banking sector to shocks of various types by analysing the dynamics of NPLs over 2006–2025 applying the BARDL model. This approach enables a thorough examination of the lag mechanisms of key macroeconomic indicators, the identification of inertial properties, and the assessment of the risk structure in an environment of heightened uncertainty. The findings are expected to provide an evidence-based foundation for further analysis and may support more informed decision-making regarding banking sector resilience.

Literature Review. The theoretical framework for credit risk assessment is grounded in financial accelerator models, balance sheet deterioration mechanisms, and agency conflicts, which explain how macroeconomic shocks translate into increases in NPLs. The dynamics of NPLs are widely recognised in academic publications as key determinants of the financial resilience of the banking sector and its sensitivity to macroeconomic and political disturbances. Of particular significance are the effects of the financial cycle, whereby changes in the macroeconomic environment directly influence borrower solvency, contributing to the accumulation of non-performing assets (Ari, Chen, & Ratnovski, 2021).

Recent academic research consistently highlights the role of macroeconomic factors – such as GDP, inflation, exchange rates, unemployment, and interest rates – in driving NPL dynamics. A global empirical study by Salas et al. (2024) demonstrates that macroeconomic variables exert a significant and heterogeneous influence on NPL levels across countries and time periods. Similar findings have been reported for Italy by Foglia (2022), where inflation, economic activity, and labour markets are identified as key drivers of NPLs. The study by Nwafor & Nwafor (2023) extends these insights through the application of five ensemble learning techniques and a one-dimensional convolutional neural network. Empirical evidence indicates that these determinants exhibit a pronounced lag and phase structure, whereby their impact varies according to the phase of the economic cycle. Fallanca et al. (2021) illustrate this by using a conditional correlation model that captures structural changes in the relationships between macro factors and NPLs.

Some research focuses on banking-specific factors, including capital adequacy, liquidity, loan portfolio concentration, management quality, and risk management systems. Kjosevski et al. have offered valuable additional insights into this area, demonstrating through a series of empirical studies (2019-2021) that banking characteristics exert an impact on NPL levels comparable in magnitude to that of macroeconomic shocks. Consistent results are observed by Ahmed et al. (2021) for developing countries. Research on NPLs in countries that have experienced banking crises, wars, or large-scale structural changes indicates substantial heterogeneity in the determinants of problem debt dynamics. The impact of NPLs on lending and the economic cycle is analysed in detail by Huljak, Moccero, and co-authors (2020, 2022), who employ a panel Bayesian VAR approach for Eurozone countries.

The frequent occurrence of shocks, structural shifts, and uneven risk transmission underscores the need for modelling frameworks capable of capturing parametric uncertainty and regime changes. However, although the NBU (2025c) regularly publishes high-quality analytical reports on credit risk dynamics, these assessments cannot fully account for latent nonlinearities or evolving structural regimes. Building on this, Hrytsenko et al. (2025) highlights the importance of incorporating currency shocks, changes in regulatory standards, shifts in the macro-financial environment, and institutional reforms when analysing credit risk formation. Employing a dynamic panel framework with bank-level data, Vyshnevskyi and Sohn (2023) show that NPL dynamics in Ukraine are strongly linked to related-party lending and specific bank-level vulnerabilities, underscoring how lending patterns and portfolio composition shape credit quality. **Vovchak et al. (2019),** applying k-means clustering combined with econometric modelling, demonstrate that structural and behavioural differences across banks generate distinct trajectories of problem-loan accumulation. Additionally, Kichurchak (2019) finds that bank

deposit activity in Ukraine, shaped by depositor behaviour and macro-financial conditions, plays a crucial role in sustaining liquidity and enhancing the banking sector's resilience to shocks. Although these studies contribute valuable insights, they typically rely on shorter observation periods and conventional econometric techniques, limiting their ability to capture long-run adjustment processes and parameter uncertainty.

ARDL modelling remains a widely used approach for analysing NPLs due to its capacity to accommodate variables with different levels of integration. The methodological foundations of this approach are established in the classic work by Pesaran, Shin, and Smith (2001), which introduced bounds testing for level relationships. Additionally, Bayesian econometric models have gained increasing attention over the past decade due to their flexibility, capacity to account for parametric uncertainty, and robust performance with small samples. Earlier studies by Koop & Korobilis (2010) and Chan et al. (2020) suggest that Bayesian VAR/ARDL models can be useful for capturing lag structures, assessing probabilistic effects, and accommodating structural changes. A more recent contribution in this area is the model proposed by Senyk et al. (2024), which employs a Bayesian network to analyse, evaluate, and forecast bank credit risk, including the probability of borrower default.

Despite the valuable contributions of Bayesian approaches in recent credit risk studies, there remains an opportunity to further extend these methods to the macroeconomic level, as traditional linear and static models offer limited flexibility in adequately capturing the uncertainty, non-linearity, and context-dependent effects of macroeconomic factors on NPLs in the Ukrainian banking sector. These considerations underscore the potential of Bayesian approaches as an adaptive and informative framework for developing models that are relevant under conditions of heightened instability.

Statement of objectives. This study aims to explore the stability and adaptive capacity of Ukraine's banking sector in response to economic, financial, and social shocks arising from periods of persistent uncertainty and the full-scale war initiated by the Russian Federation.

H1: The dynamics of non-performing loans (NPLs) between Q1 2006 and Q3 2025 reflect the resilience of the Ukrainian banking sector's operational functionality under conditions of persistent uncertainty and wartime.

H2: The dynamics of NPLs are influenced by key macroeconomic and monetary factors, including inflation expectations, monetary policy measures implemented by the National Bank of Ukraine (NBU), and GDP fluctuations.

H3: The impact of the uncertainty on NPLs exhibits lagged effects in response to economic, financial, political, and military shocks.

Research Methods. The Bayesian framework enables the integration of existing information on NPLs and related influencing factors through the specification of prior distributions that reflect preliminary information about likely parameter values. In addition to providing point estimates, Bayesian modelling yields full parameter distributions, allowing for a probabilistic interpretation of the relationships between variables and supporting more nuanced and evidence-informed conclusions.

The application of the ARDL framework relies on an integrated approach to time series analysis, allowing for the assessment of how past values of independent variables influence on the current values of the dependent variable. Nkoro and Uko (2016) emphasise the flexibility of the ARDL cointegration technique for small sample sizes and its suitability for examining both short- and long-run relationships among variables. Additionally, Kripfganz and Schneider (2023) provide a methodology for estimating ARDL and error correction models (ECM) in Stata, including guidance on lag selection, model stability testing, and result interpretation. Lee, Rushworth, and Napier (2018) demonstrate that Bayesian spatiotemporal modelling can be employed to estimate lag effects and obtain full posterior distributions of parameters, accounting for temporal dependence and uncertainty. Empirical applications of ARDL

models illustrate their relevance for NPL dynamics: Golitsis, Khudoykulov, and Palanov (2022) show that unemployment, GDP, and interest rates influence NPLs in North Macedonia in both the short and long term, while Foglia (2022), analysing Italian banks over 2008–2020, finds a negative effect of GDP and public debt and a positive effect of unemployment and domestic lending on the NPL ratio. Accordingly, integrating the Bayesian framework with ARDL modelling enables not only a comprehensive analysis of time series, but also a probabilistic assessment of the short- and long-term impacts of key determinants on NPLs.

To evaluate the contribution of various factors to the resilience of Ukraine's banking sector, the BARDL model can be employed and represented by the following equation:

$$Y_t = \alpha + \sum_{i=1}^{p} \beta_i Y_{t-i} + \sum_{j=1}^{q} \sum_{k=1}^{l_j} \gamma_{jk} X_{j,t-k} + \varepsilon_t, \varepsilon_t \sim N(0, \sigma^2) \quad (1),$$

where Y_t denotes the dependent variable; Y_{t-i} represents lagged values of the dependent variable capturing autoregressive dynamics; $X_{j,t-k}$ are lagged exogenous predictors; α is the intercept term; β_i, γ_{jk} are the coefficients of the lagged dependent and independent variables, respectively; p indicates the number of lags of the dependent variable; q denotes the number of independent variables; l_j specifies the number of lags for the j-th independent variable; and ε_t is the stochastic error term.

In the BARDL model, all parameters are assigned the following prior distributions:

$$\alpha \sim \text{Normal}(\mu_\alpha, \sigma_\alpha^2), \beta_i \sim \text{Normal}(\mu_{\beta i}, \sigma_{\beta i}^2), \gamma_{jk} \sim \text{Normal}(\mu_{\gamma jk}, \sigma_{\gamma jk}^2), \sigma \sim \text{Normal}(0, s_\sigma) \quad (2).$$

The observation equation is specified as:

$$Y_t \sim \text{Normal}\left(\alpha + \sum_{i=1}^{p} \beta_i Y_{t-i} + \sum_{j=1}^{q} \sum_{k=1}^{l_j} \gamma_{jk} X_{j,t-k}, \sigma^2\right) \quad (3).$$

The model parameters are estimated within a Bayesian framework using Bayes' theorem:

$$P(\theta|X_t) \propto P(X_t|\theta) \cdot P(\theta) \quad (4),$$

where $P(\theta|X_t)$ – posterior distribution of model parameters given the observed data; $P(X_t|\theta)$ – likelihood function representing the probability of the observed data given the parameters; $P(\theta)$ – prior distribution reflecting prior beliefs about the parameters; X_t – observed data; the normalizing constant $P(X_t)$ is typically omitted in computation.

For the BARDL model, the likelihood is expressed as:

$$P(X_t|\alpha, \beta, \sigma) \sim \mathcal{N}\left(\alpha + \sum_{i=0}^{p} \gamma_i X_{t-i}, \sigma^2\right) \quad (5).$$

Full posterior distributions of the model parameters (α, β_i, γ_{jk}, σ) will be obtained using Markov chain Monte Carlo (MCMC) methods.

The integration of Bayesian analysis with the ARDL framework facilitates robust modelling of the dynamic response of Ukraine's banking sector to various types of shocks. This approach enhances the model's resilience to structural breaks and extreme events observed in Ukraine between the first quarter of 2006 and the third quarter of 2025. Furthermore, the BARDL model enables a comprehensive evaluation of the model adequacy through posterior predictive checks (PPC), Bayesian R^2, leave-one-out cross-validation (LOO-CV), and Pareto-smoothed importance sampling diagnostics, thereby confirming the robustness of the obtained results. Model fit and predictive performance are additionally assessed using the mean absolute error (MAE) and root mean square error (RMSE) metrics, providing a holistic appraisal of the model's alignment with the data. Accordingly, this approach proves valuable for the empirical analysis of banking sector resilience, as it accommodates dynamic dependencies, shock effects, and uncertainty in parameter estimates.

Results. Using a Bayesian dynamic modelling approach, this study examines the temporal structure of factors influencing the dynamics of non-performing loans (NPLs), which serve as indicators of the banking sector's resilience. It further assesses how the Ukrainian banking sector adjusts its behaviour to maintain stability and adapt to extreme external shocks. The dependent variable (Y_t), representing the banking sector's resilience to shocks, is defined as the share of NPLs (%). The exogenous variables are specified as follows: X_1 – the rate of change in real GDP, % compared to the same quarter of the previous year; X_2 – the consumer price index (CPI), %; and X_3 – the NBU's policy rate, %. For the selected variables, the BARDL model can be represented as:

$$Y_t=\alpha+\beta_1 \cdot Y_{t-1}+ \gamma_1 \cdot X_{1,t-1}+ \gamma_2 \cdot X_{2,t-4}+ \gamma_3 \cdot X_{3,t-4}+\varepsilon_t,\ \varepsilon_t \sim N(0,\sigma^2) \quad (6),$$

where Y_{t-1} denotes the lagged dependent variable, reflecting the sector's dynamic inertia; $X_{1,t-1}$ – GDP growth with a 1-quarter lag; $X_{2,t-4}$ – CPI with a 4-quarter lag; $X_{3,t-4}$ the NBU policy rate with a 4-quarter lag; α is the constant term; γ_i are the coefficients of influence; ε_t is the stochastic error term.

To specify the model parameters, weakly informative prior distributions were employed to avoid undue complexity. The regression coefficients β_j, γ_{jk}, the constant term (intercept) α, and the standard deviation of the residuals σ assigned normal prior distributions N(0,1), N(0,5) and N(0,2), respectively. Parameter estimation was carried out using a Bayesian framework with four independent Markov Chain Monte Carlo (MCMC) chains, each consisting of 50,000 iterations, of which the first 5,000 iterations were designated for the warm-up phase. Following this phase, 45,000 post-warm-up samples per chain were retained without thinning (thin=1), resulting in a total of 180,000 samples for constructing the posterior distributions. This approach ensures robust estimation of the coefficients for the independent variables while adequately reflecting the uncertainty inherent in the model.

To assess potential multicollinearity between independent variables of model Y_{t-1}, $X_{1,t-1}$, $X_{2,t-4}$, and $X_{3,t-4}$, the variance inflation factor (VIF) was calculated. All VIF values fall below commonly accepted thresholds (5, or more conservatively, 10), indicating that multicollinearity is unlikely to pose a serious concern in the model. Specifically, the VIF values for Y_{t-1}, $X_{1,t-1}$, $X_{2,t-4}$, and $X_{3,t-4}$ are 1.51, 1.11, 1.08 and 1.71, respectively, indicating sufficient independence among the explanatory variables and supporting the robustness of the BARDL coefficient estimates. The stationarity of the variables was tested using the Augmented Dickey–Fuller (ADF) test. Results indicate that Y_{t-1}, $X_{1,t-1}$, $X_{2,t-4}$, and $X_{3,t-4}$ exhibit non-stationarity, which is typical for macroeconomic time series, whereas $X_{3,t-4}$ was found to be stationary.

The dynamic structure of the BARDL model, in combination with the with the Bayesian estimation framework, may mitigate potential risks arising from non-stationarity and supports robust inference.

The Durbin–Watson test was applied to assess first-order autocorrelation of the residuals. With a sample size of 75 observations, the lower and upper critical bounds at the 1% significance level are D_L=1.368 and D_U=1.587, respectively. The observed DW statistic is 1.70 (p-value=0.048), which lies above D_U and below 4−D_U, indicating that there is no evidence of first-order autocorrelation in the residuals. This suggests that the BARDL model estimates are not adversely affected by autocorrelation. Simultaneously, the Breusch–Godfrey test indicated the absence of higher-order autocorrelation, confirming the appropriateness of the model's dynamic structure.

The Wald test confirmed that joint significance of the explanatory variables $X_{1,t-1}$, $X_{2,t-4}$ and $X_{3,t-4}$, highlighting their cumulative influence. The Breusch–Pagan test revealed heteroscedasticity in the residuals **(**BP=**22.03**, p-value=**0.0002)**, which is common in financial and macroeconomic time series. This observation further motivates the use of a Bayesian framework, which accommodates stochastic variation in the error term. The diagnostic results support the adequacy of the model specification and the relevance of the included lagged factors. The observed characteristics, including the non-stationarity of most variables, lack of first-order autocorrelation, and heteroscedasticity, are consistent with the behaviour of dynamic financial series and are explicitly addressed in the Bayesian formulation of the model.

Table 1

Bayesian Posterior Estimates and Convergence Diagnostics of the Model

Parameter	Posterior **Mean**	SE Mean	Posterior **SD**	**Quantile**			**Effective Sample Size (n_eff)**	**Rhat**
				2.5th	**Median**	97.5th		
alpha	-13.5775	0.0158	4.1310	-21.5851	-13.6222	-5.3359	67933.54	1.0001
β_Y_{t-1}	0.9422	0.0001	0.0202	0.9023	0.9423	0.9818	96867.45	1.0000
$\gamma_X_{1,t-1}$	-0.0968	0.0001	0.0280	-0.1521	-0.0967	-0.0417	113320.63	1.0000
$\gamma_X_{2,t-4}$	0.1340	0.0002	0.0408	0.0527	0.1344	0.2130	67211.13	1.0001
$\gamma_X_{3,t-4}$	0.1211	0.0002	0.0558	0.0122	0.1209	0.2311	91292.13	1.0000
sigma	2.2059	0.0006	0.1981	1.8583	2.1924	2.6331	101552.49	1.0000
Bayesian R^2	0.9795	0.0000	0.0017	0.9756	0.9797	0.9822	74342.84	1.0000

Source: Calculated based on data from the State Statistics Service of Ukraine, the National Bank of Ukraine, and the Ministry of Economy, Environment, and Agriculture of Ukraine.

Following the results presented in Table 1, the BARDL model provides robust posterior estimates and reliable inference, as the convergence index $\hat{R}$ (Rhat) for all model parameters equals 1. Furthermore, the sample exhibits a high effective size (n_eff) for all parameters (~67,000–113,000), confirming the convergence of the chains and the stability of the obtained estimates. These characteristics support the robustness and precision of the posterior distributions and allow for a detailed assessment of the short- and long-term effects of independent variables. The posterior estimates of the coefficients β_j, γ_{jk}, lie

within their respective confidence interval and do not cross zero, indicating a statistically significant impact of the corresponding predictors on the dependent variable. The estimated value of σ reflects a moderate level of unexplained variability in the dynamics of the NPL share in Ukraine's banking sector. This BARDL model captures the key determinants, while also acknowledging the potential influence of unpredictable shocks, such as war-related risks, regulatory changes, or bank failures.

The obtained results can be interpreted as follows. The Bayesian R^2 value of 0.9795, suggests a high explanatory capacity of the model in capturing the dynamics of NPLs in the Ukrainian banking sector across different periods (Table 1). The median value of R^2, equal to 0.9797, being close to the mean, indicates relative stability of the estimate. These outcomes support the suitability of the selected lag structure in the BARDL specification and the relevance of the included macroeconomic indicators. The estimated predictor coefficients point to a coherent and economically plausible pattern of relationships between macroeconomic landscape and the evolution of problem loans in the Ukrainian economy, while acknowledging the inherent uncertainty in the system.

The posterior coefficient for variable Y_{t-1} highlights the prominent role of inertia in the dynamics of NPLs, with a value close to unity (Table 1). Specifically, a 1% increase in the share of NPLs in the previous quarter (t-1) is associated with an average increase of 0.9422% in the current quarter (t). This suggests the presents of significant autocorrelation and a gradual adjustment of the loan portfolio to changes in Ukraine's macroeconomic environment, which is shaped by a variety of external and internal factors that are difficult to predict. The rate of correction to equilibrium ($1-\beta \approx 0.0578$) is relatively slow for the quarter. This can be explained by the structural characteristics of the Ukrainian banking sector, such as lengthy enforcement procedures, limited collateral liquidity, and elevated litigation risks. Consequently, this indicates that the dynamics of NPLs are consistent with expectations for the Ukrainian banking sector, which operates under conditions of heightened economic and political instability, where the accumulation of problem loans occurs gradually and their reduction follows an inertial and protracted process.

The findings indicate that real GDP growth contributes to a reduction in the share of non-performing loans in the short term. Specifically, a 1% acceleration in real GDP growth is associated with an average decrease of 0.0968% in the share of NPLs in the subsequent quarter. This underscores that the improvement in Ukraine's economic conditions contributes enhance borrower solvency and mitigate the risk of rising NPLs in the banking sector. The result further highlights the critical role of macroeconomic stabilisation in ensuring the sustainable operation of the banking sector and its capacity to absorb shocks of various types.

Simultaneously, the inflationary processes exert a delayed adverse effect on the resilience of the banking sector, as they are accompanied by an increase in the share of NPLs in the loan portfolio structure. A 1% rise in inflation leads, on average, to a 0.134% increase in the share of NPLs one year (four quarters) after the change in the price level. In other words, inflation, by eroding real household incomes and reducing profitability, weakens borrowers' capacity to service their debt obligations, with this effect materialising approximately one year after the initial inflationary shock. This pattern reflects the presence of lagged inflationary pressure on the debt burden and solvency of borrowers in the Ukrainian economy, ultimately intensifying credit risks and constraining the resilience of the banking sector.

Similarly, the dynamics of the NBU policy rate exhibit a clear and economically consistent pattern. A 1% increase in the NBU policy rate raises the share of NPLs by an average of 0.1211% after one year. In other words, this reflects the operation of the standard monetary policy transmission: an increase in the policy rate leads higher borrowing costs, which subsequently intensifies borrowers' debt burdens. The effect manifests with a delay, which is characteristic of credit markets, where borrowers typically adjust their financial behaviour only gradually. In other words, monetary tightening, although aimed at restraining inflation, simultaneously increases the financial pressure on borrowers and contributes to a gradual rise in the share of NPLs in the Ukrainian banking sector.

The intercept term (α) is statistically significant and negative (Table 1). This suggests a systematically lower baseline level of NPLs under fixed values of the lagged dependent variable and all predictors. Such a result may reflect the structural features of the Ukrainian banking sector, shaped by the prolonged post-crisis adjustment, institutional transformations, permanent shocks, which generate a persistent downward shift in the conditional mean of NPL dynamics. From a Bayesian perspective, this implies that even under neutral macroeconomic conditions, the posterior distribution points to a substantial level of latent financial stress embedded in the system.

The standard errors of the posterior means (Se Mean) for all model parameters are very small (Table 1), indicating high precision of the estimated posterior means and strong chain convergence. To further assess model adequacy, a Bayesian p-value was computed using the sum of squared residuals as the test statistic. The resulting Bayesian p-value of 0.538 is close to the ideal benchmark of 0.5, suggesting a good match between the simulated and observed data. This implies that the BARDL model successfully reproduces the empirical dynamics of the NPLs and that the predictive distributions appropriately capture actual fluctuations. In other words, these diagnostics provide additional confirmation of the model's internal consistency and its suitability for analysing the influence of macroeconomic conditions on the resilience of Ukraine's banking sector.

Figure 1. Observed and Posterior Predicted Share of Non-Performing Loans in the Ukrainian Banking Sector with 95% Predictive Uncertainty Interval, Based on Bayesian Regression

Source: Calculated based on data from the State Statistics Service of Ukraine, the National Bank of Ukraine, and the Ministry of Economy, Environment, and Agriculture of Ukraine.

A visual comparison of actual and model-implied values (Fig. 1) demonstrates that the constructed BARDL model is capable of accurately reproducing the dynamics of the NPLs in the Ukrainian banking sector over the period Q1 2006–Q3 2025. The observed values fall almost entirely within the posterior predictive interval (Posterior y_rep), confirming their empirical plausibility. Figure 1 also reveals pronounced fluctuations around observations 40–45, corresponding to Q4 2015–Q1 2017, the period of intensive banking-sector reforms in Ukraine. Given this visualization, the specification of the BARDL model effectively captures both the central tendency and residual variability, offering a reliable representation of the underlying data-generating process. This, in turn, enables a robust assessment of the adaptive capacity of the Ukrainian banking sector and its resilience to various macroeconomic and financial shocks.

The Q4 2015–Q1 2017 has specific deviations (Fig. 1) that are typical for macroeconomic processes at times of structural shifts or external shocks, and therefore requires institutional interpretation based on the economic events of the period. The analysis of the deviation observed in Q4 2015–Q1 2017 relies on both posteriori characteristics of the model and official information on the NBU's policy initiatives and government decisions. According the NBU, the fourth quarter of 2015 was marked by an improvement in the structure of GDP components, particularly the recovery of gross capital formation and a positive contribution of net exports, which helped mitigate the pace of economic decline (National Bank of Ukraine, 2015a).

Additionally, in May 2015, a memorandum on the restructuring of consumer foreign currency loans between banks and the NBU entered into force, introducing targeted mechanisms to alleviate the debt burden of affected households (Verkhovna Rada of Ukraine, 2015). The NBU's official publications for 2015 also document a ranges of initiatives related to bank recapitalization, diagnostic assessments, and the strengthening of prudential supervision (National Bank of Ukraine, 2015b), while the consolidated financial statements for that year outline additional steps taken to mitigate the effects of currency

depreciation and adjust banking policy. Taken together, these policy initiatives formed a set of instruments to improve the solvency of specific borrower categories and stabilising selected segments of the economy, which is consistent with the deviations captured by the BARDL model in this period.

In parallel, in February 2015, the Minsk II peace agreements were signed between Ukraine and the Russian Federation, contributing to a partial reduction in geopolitical tensions. This development was reflected in improved market expectations and a gradual restoration of confidence in the banking system. The strengthening of the macroeconomic landscape manifested in a steady appreciation of the hryvnia, an increase in international reserves to USD 13.3 billion as of January 1, 2016, representing a 77% growth compared to 2015 (National Bank of Ukraine, 2015c), and a deceleration of inflation. In the fourth quarter of 2015, the NBU also initiated a progressive reduction in the policy rate (from 30% to 22%), which eased financing conditions and supported the gradual normalisation of banking sector activity (National Bank of Ukraine, n.d.-a). During 2014-2015, the NBU implemented large-scale initiatives to recapitalise commercial banks and strengthen the resilience of the banking sector.

In particular, commercial banks were required to develop and implement recapitalisation programmes designed to restore capital adequacy and cover accumulated losses (National Bank of Ukraine, 2015d). The implementation of these programmes during 2014-2016 resulted in a substantial increase in the regulatory capital of the banking sector, totalling UAH 108 billion (National Bank of Ukraine, 2016a). State-owned banks, including Oschadbank and Ukreximbank, received additional capital injections through the issuance of domestic government bonds, which helped stabilise their balance sheets and improve the structure of their loan portfolios (Interfax-Ukraine, 2016). Alongside these initiatives, the NBU continued its policy of cleaning up the banking sector, removing more than 80 insolvent bank institutions from the market between 2014 and 2016 (National Bank of Ukraine, 2017). As a result, by mid-2016, these actions produced a cumulative effect, contributing to a positive deviation (decrease) in the dynamics of the share of NPLs captured by the BARDL model.

Furthermore, additional diagnostics of the constructed BARDL model were conducted to assess its predictive performance. Leave-One-Out Cross-Validation (LOO-CV), based on a 180,000 × 75 log-likelihood matrix, yielded an expected log predictive density (elpd_loo) of -175.0 (SE=27.4), an effective number of parameters (p_loo) of 14.9 (SE=12.4), and a LOO information criterion (looic) of 350.0 (SE=54.2). These results indicate that the BARDL model exhibits high reliability and adequacy, effectively predicting out-of-sample observations without substantial overfitting and demonstrating robust overall predictive capability.

Pareto k diagnostics revealed that 74 out of 75 values (98.7%) belong to the “good” category ($k \leq 0.7$), while one observation has a $k=1.371$, which significantly exceeds the recommended threshold. Considering that this is only one observation out of 75, it is likely to represent a structural shock. The observation corresponds to the first quarter of 2017. During this period, two significant events occurred simultaneously that could have caused such a deviation. Firstly, in accordance with NBU Resolution No. 351 (2016), it was introduced a stricter definition of NPLs in line with international standards, leading to a one-off review of commercial banks’ loan portfolios (National Bank of Ukraine, 2016b). Secondly, following the nationalisation of PrivatBank in November 2016, there was a large-scale recognition of problem loans: the share of NPLs in the bank increased from 14.4% in October 2016 to 76.7% in January 2017, and to 88.8% by July 2017 (National Bank of Ukraine, 2025a). Both of these factors were strong enough to generate a one-off structural deviation, which is reflected in the high value of the Pareto k indicator. Given the large sample size and context of the event, this represents a minor concern; however, it should be considered when interpreting the results. Nevertheless, the BARDL model successfully captures the underlying structure of the data-generating process, providing accurate predictions and a realistic representation of residual uncertainty, while highlighting individual critical observations.

To further validate the robustness and convergence of the model estimates, MCMC diagnostics were performed. Trace plots (Fig. 2, a) for each model parameter exhibit good mixing, with no evidence of stagnation or slow transitions in any region of the parameter space. Visually, the four chains for each parameter converge, as evidenced by their dense overlap and the absence of discernible trends. The parameter values fluctuate around a stable mean without directional drift. Furthermore, the autocorrelation functions for the model parameters (Fig. 2, b), estimated across the four MCMC chains, show a rapid decline at the initial lags, indicating high mixing efficiency and high-quality samples. These diagnostics confirm the reliability of the MCMC draws for making robust inferences regarding the posterior distributions of the model parameters.

a) b)

Figure 2. Traceplots and Autocorrelation Analysis of Posterior Samples for Model Parameters*

*beta_Y11 – β_Y_{t-1}; beta_X111 – $\gamma_X_{1,t-1}$; beta_X2l4 – $\gamma_X_{2,t-4}$; beta_X3l4 – $\gamma_X_{3,t-4}$. Source: Calculated based on data from the State Statistics Service of Ukraine, the National Bank of Ukraine, and the Ministry of Economy, Environment, and Agriculture of Ukraine.

Building on the reliability and convergence of the MCMC draws, the predictive performance of the BARDL model was further assessed using PPC. The PPC, based on comparing the test statistic T(y)=mean with the distribution of mean values T(Yrep) generated by the model, demonstrates that the model adequately reproduces the mean value of the observed data (Fig. 3, a). The PPC results indicate that the estimated distribution density of the observed data fits well within the "cloud" obtained from 1000 repeated simulations of Yrep, confirming the model's ability to reproduce the general shape, central tendency, and variability of the empirical data (Fig. 3, b). A combined analysis of both graphs indicates that the model exhibits high predictive power and is suitable for describing the observed data.

Furthermore, standard forecast accuracy metrics were calculated to quantify the model's performance. The MAE of 1.293 indicates a slight deviation of the BARDL model from the observed values. The RMSE, equal to 2.121, reflects the typical magnitude of forecast errors, with a higher penalty for larger deviations. The mean absolute percentage error (MAPE) of 6.35% demonstrates a fairly high accuracy of the predicted values. Collectively, these metrics confirm that the model achieves an acceptable level of accuracy in reproducing the observed variation of the dependent variable.

a) b)

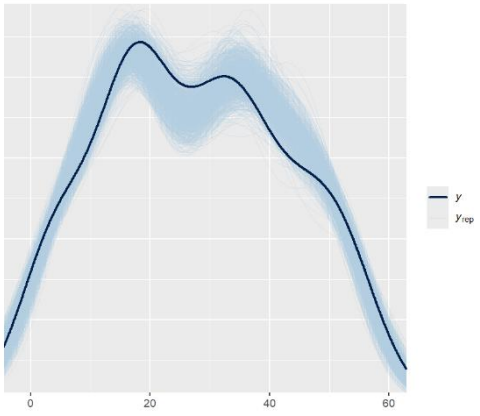

Figure 3. Posterior Predictive Check Density and the Test Statistic Comparison

Source: Calculated based on data from the State Statistics Service of Ukraine, the National Bank of Ukraine, and the Ministry of Economy, Environment, and Agriculture of Ukraine.

Conclusions. This study provides a comprehensive assessment of the resilience and adaptability of Ukraine's banking sector to prolonged economic, financial, and geopolitical shocks based on the

BARDL model of NPLs for the period Q1 2006–Q3 2025. The findings indicate that the dynamics of NPLs are governed by a combination of substantial inertia and time lags in the transmission of macro-financial factors. The high coefficient for the lagged dependent variable NPLs (Y_{t-1}) signifies the persistence of NPLs over time, implying that deviations from equilibrium, whether increases (accumulation) or decreases (reduction) in problem loans, adjust gradually. In other words, past levels of NPLs strongly influence current levels, so both upward and downward adjustments occur slowly, reflecting the inertial response of the banking sector to changes in macroeconomic and financial conditions.

The BARDL model exhibits high statistical rigor and robust predictive performance. Elevated Bayesian R^2 values, low prediction errors, stable MCMC chains, and satisfactory diagnostic outcomes collectively confirm that the model accurately captures both the central tendency and residual variability in NPL dynamics. The identified lags structure are consistent with economic reasoning: real GDP growth reduces the share of NPLs; inflationary shocks deteriorate the quality of the loan portfolio with a four-quarter lag; and monetary tightening, through an increase in the policy rate, raises borrowers' debt burdens with a four-quarter lag.

Beyond predictive accuracy, the model carries valuable theoretical and practical implications. From a theoretical perspective, it formalises the temporal transmission of macro shocks, quantifies the degree of internal inertia in the Ukrainian banking sector, and enables the assessment of interdependencies between parameters through posterior correlations. Practically, it can serve as an early warning tool: persistent deviations from predicted NPL levels signal the need for institutional evaluation and potential policy intervention, while a posteriori forecasts with uncertainty bounds provide a robust basis for scenario planning by the NBU.

The events of 2015 reflect the cumulative impact of preceding economic and financial shocks, including military risks and deep structural imbalances, which contributed to heightened credit risk. Simultaneously, the implementation of stabilisation policies, bank recapitalisation programmes, asset quality reviews, and the restructuring of foreign-currency loans established favourable conditions for a gradual recovery of borrowers' solvency and the strengthening of the banking sector. The deviation observed in the beginning of 2017 highlights the model's capacity not only to reproduce general NPL dynamics, but also to respond sensitively to structural shifts arising from regulatory changes, revisions in the NPL definition, and the nationalisation of systemic banks. This underscore the model's ability to adequately capture extreme values and episodes of abrupt market transformation.

From a broader perspective, the findings suggest that the macro-financial stabilisation policies implemented during 2015–2017 laid the groundwork for enhancing the resilience of Ukraine's banking sector. This resilience, in conjunction with international support and coordination with external partners, emerged as a critical factor enabling the Ukrainian economy to withstand the extraordinary challenges of the subsequent decade, including the repercussions of the full-scale war, while maintaining the operation of banking institutions and sustaining confidence in the banking sector.

Future research could focus on modelling of nonlinear effects, asymmetries in responses to shocks of various types, and incorporating regime-switching frameworks to more accurately capture structural breaks in the banking sector. Expanding the set of explanatory variables to include household debt burdens, corporate sector performance, regulatory quality, and institutional indices would provide further insights. A key limitation of the current analysis is the model's sensitivity to short samples following extreme events; this could be addressed through the adoption of more flexible Bayesian structures, such as stochastic volatility or time-varying parameters. Extending the framework to multifactor or vector BARDL models may further elucidate transmission mechanisms and enhance the precision of scenario-based forecasts.

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DEVELOPMENT OF THE MODERN LABOR MARKET

Farkhad BATIROV

PhD researcher of the Tashkent state university of economics

E-mail: farxadbatirov@gmail.com
ORCID: 0009-0002-9252-8373

Abstract

The article outlines the indicators used to assess global unemployment levels and discusses strategies to reduce it. It also examines the organizational and economic mechanisms aimed at decreasing unemployment. The world of work has been impacted by numerous interconnected challenges, including the aftermath of the COVID-19 pandemic, rising living costs, extreme weather events, geopolitical instability, conflicts, and a looming global debt crisis. Despite these growing challenges, the global labor market has shown remarkable resilience, marked by strong job growth and a decline in the unemployment rate, with the jobs gap falling below pre-pandemic levels. A significant milestone in the history of the International Labour Organization (ILO) was the recognition of a safe and healthy working environment as a fundamental principle and right at work. The achievements made during this biennium are the result of the unwavering commitment and efforts of the ILO's constituents, along with the invaluable support of development partners at country, regional, and global levels. Moving forward, the ILO must strengthen its actions to ensure that its primary goal of social justice remains at the forefront of all national and international policies.

Keywords: Labor, unemployment, economy

INTRODUCTION

Unemployment is one of the biggest problems in the world, and its causes and consequences are not limited to the solution of one country. Improving the standard of living and stabilizing people's lives, ensuring employment for the population by improving the financing of entrepreneurial activities has become an urgent issue for the global community. The world's population is growing every day, and the need to create jobs is also growing proportionally.

The modern labor market is developing with innovative economies through digitalization, which changes employment structures, creates demand for new skills, and necessitates flexible work arrangements. Key drivers include technological progress, automation, and a shift toward a service-based economy, leading to both job creation in new sectors and challenges like skill gaps and potential inequality. Addressing these requires a focus on continuous education, reskilling, and a balance between supporting innovation and ensuring social protection.

MATERIALS AND METHODS

Explaining the main characteristics of unemployment in the labor market, reducing poverty, explaining the issues related to poverty, its definition, and its reduction. During the research, monographic observation, systematic approach, analysis, and synthesis methods were used.

FINDINGS

The world economy slowed down in the biennium with gross domestic product (GDP) growth rates of 3.5 per cent in 2022 and 3.0 per cent projected in 2023[25]. Economic growth was very uneven and the outlook for 2025 is not encouraging. Ongoing geopolitical tensions, persisting and broadening inflation, climate challenges, technological advancement and demographic shifts are transforming world economic growth and social development, demanding labour market adjustment and impacting its performance – in some cases eroding progress in social justice.

The above decent work-related data available for the biennium provides yet another warning sign in the journey towards sustainable development. As pointed out by the Secretary-General of the United Nations (UN), the world is on track to achieve less than 20 per cent of the Sustainable Development Goals (SDGs) by 2030. This means that by 2030, 575 million people – 7 per cent of the world population – will be living in extreme poverty and hunger[26]. As regards SDG 8 on economic growth and decent work for all, ILO analysis concluded that the world is a long way from achieving SDG objectives for nearly two thirds of the relevant indicators[27]. This situation calls for immediate and urgent action to put social justice at the centre of sustainable development efforts, national policy choices and international cooperation.

The Global Accelerator on Jobs, launched in 2021 and spearheaded by the ILO, is a UN initiative to offer sustainable and integrated solutions to generate jobs and extend protection by the provision of policy advice, the mobilization of financial resources and investments, and the improvement of multilateral cooperation It aims to create at least 400 million decent jobs, primarily in the green, digital and care economies. Since the start of the practical operationalization of the Global Accelerator, the initiative was welcomed in multilateral forums and has mobilized resources for international cooperation from the Governments of Belgium, Germany and Spain. These resources are allocated to pathfinder countries through a UN Joint SDG Fund window and through a trust fund managed by the World Bank. At country level, by the end of 2023 the Governments of Albania, Cambodia, Indonesia, Malawi, Namibia, Nepal, Paraguay, Rwanda, Senegal and Uzbekistan officially confirmed their interest in joining the Global Accelerator as pathfinder countries and had started establishing national road maps. The Global Coalition will also build on the ILO's continued support to international cooperation and policy dialogue forums such as the G7, the G20 and the BRICS. In 2022 and 2023, the ILO made substantial contributions to summits of leaders and meetings of labour and employment ministers of these groups.

Table 2: Labor market in Uzbekistan: Number of employed population[28]

Names of places	2018	2019	2020	2021	2022	2023	2024
Republic of Uzbekistan	13273,1	13541,1	13236,4	13538,9	13706,2	14014,2	14261,9
Karakalpakstan Re.	705,2	711,3	707,4	702,6	714,2	735,5	759,4

[25] International Monetary Fund, World Economic Outlook: Navigating Global Divergencies, 2023
[26] UN, The Sustainable Development Goals Report 2023: Special Edition – Towards a Rescue Plan for People and Planet, 2023
[27] ILO, Transformative Change and SDG 8: The Critical Role of Collective Capabilities and Societal Learning, 2023; and ILO, Sustainable Development, Decent Work and Social Justice: An update on progress towards SDG 8, Policy Brief, September 2023.
[28] National statistics committee of the Republic of Uzbekistan

Andijan region	1266,8	1284,5	1225,9	1264,3	1296,8	1329	1338,6
Bukhara region	810,1	797,1	788	777,3	780,6	803,2	796,7
Jizzakh region	486,6	536,2	534,3	550,7	546,4	553,9	559,2
Kashkadarya region	1222	1220	1171	1202,5	1207,3	1220,1	1296,3
Navoi region	407,7	412,7	399,4	410,4	410,1	426,4	435,2
Namangan region	1051,5	1104,6	1088,7	1104,8	1100,6	1129,1	1159,6
Samarkand region	1463,3	1455,8	1418,3	1441,3	1479,8	1504,2	1521,1
Surkhandarya region	984	1024,2	985,5	1001,9	1006,3	1011,2	1024,9
Syrdarya region	354,2	350,1	332,2	334,1	335	338	351,2
Tashkent region	1227,7	1232,9	1177,2	1222,1	1204,5	1234,9	1251,6
Fergana region	1451	1492,6	1448,6	1483,3	1511,7	1555,4	1563,9
Khorezm region	711,8	736,5	716,4	726,4	741,8	776,5	779,5

Despite the difficult global situation, Uzbekistan's economy is showing steady growth of over 6%. Over the past eight years, gross domestic product has doubled to $115 billion, and by the end of this year, it is expected to grow to $130 billion. This year alone, about 9,000 new enterprises and service complexes will be built with investments amounting to $35 billion. The number of small and medium-sized businesses has doubled in eight years, and today more than 10 million people are employed in this sector, Shavkat Mirziyoyev stated. Since the beginning of the year, 5 million citizens were provided with employment, and another 700,000 returned from abroad to their families.

DISCUSSION AND CONCLUSION

The modern labor market has evolved through globalization, technological innovation, and shifting workforce expectations, leading to more flexible, skill-driven, and digitally integrated employment landscapes:

• Globalization and economic shifts. Global interconnectedness has expanded labor markets beyond national borders, enabling outsourcing, remote work, and international competition. Geoeconomic fragmentation and economic uncertainty are now major forces influencing labor demand and job stability.

• Technological advancements. Automation, AI, and digital platforms have transformed job roles, especially in manufacturing, services, and logistics. The rise of platform-based gig work (e.g., Uber, Upwork) has created new employment models but also raised concerns about job security and benefits.

• Digital access and remote work. Broadening digital access is expected to be the most transformative trend, with 60% of employers anticipating major changes by 2030. The COVID-19 pandemic accelerated the shift to remote and hybrid work, which continues to redefine workplace norms.

• Labor Market Dynamics. Flexible work arrangements, such as freelancing and part-time roles, are becoming more common. Demographic shifts, including aging populations and youth unemployment in certain regions, are reshaping labor supply and demand. Looking ahead, the labor market will continue to be shaped by emerging technologies, climate imperatives, and evolving worker

expectations. Employers and policymakers must adapt by fostering inclusive, resilient, and future-ready workforce strategies.

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MALİYET MUHASEBESİNDE SİPARİŞ MALİYET YÖNTEMİ: TEORİK VE LİTERATÜR AÇISINDAN İNCELENMESİ

EDİP İĞDE

Gaziantep Üniversitesi, Yükseklisans Öğrencisi, edipigde@outlook.com,

ORCID ID: 0009-0008-5201-2675

Murat KARAHAN

Gaziantep Üniversitesi Doç. Dr. Öğr. Üyesi karahan@gantep.edu.tr

ORDIC ID: 0000-0002-5066-4257

1. Özet

Rekabetin yoğun olduğu günümüz piyasalarında, işletmelerin sürdürülebilir bir rekabet avantajı elde etmeleri, maliyetlerini etkin bir şekilde yönetmelerine bağlıdır. Bu bağlamda maliyet muhasebesi, kaynakların verimli kullanımını sağlayan ve işletmelerin karar alma süreçlerini destekleyen temel bir araç olarak öne çıkmaktadır. İşletmeler, seri üretimin yanı sıra siparişe dayalı üretim süreçlerini de yürütmekte ve bu süreçlerde maliyetlerin doğru bir şekilde hesaplanması büyük önem taşımaktadır. Özellikle **sipariş maliyet yönte**mi, üretilen her siparişin maliyetini ayrı ayrı izleme ve analiz etme olanağı sunan bir sistem olarak, özel üretim ve proje bazlı işletmeler için stratejik bir öneme sahiptir. Bu çalışma, maliyet muhasebesi ve sipariş maliyet yöntemine ilişkin temel kavramları açıklamakta ve yöntemin işletmelerde uygulanışını teorik bir çerçevede açıklanmakta ve literatür ışığında değerlendirmektedir. Elde edilen bulgular, sipariş maliyet yönteminin doğru uygulanmasının maliyet kontrolünü güçlendirdiğini ve kârlılık analizinde etkisini ortaya koymaktadır.

Anahtar kelimeler: Maliyet Muhasebesi, Sipariş Maliyet Yöntemi, Üretim

Abstract

In today’s highly competitive markets, the ability of businesses to achieve a sustainable competitive advantage depends on the effective management of their costs. In this context, cost accounting emerges as a fundamental tool that ensures the efficient use of resources and supports managerial decision-making processes. Companies carry out not only mass production but also job-order–based production, and in these processes, the accurate calculation of costs is of great importance. In particular, the job order costing method holds strategic significance for customized production and project-based enterprises, as it provides the opportunity to track and analyze the cost of each order separately. This study explains the basic concepts related to cost accounting and the job order costing method, presents the theoretical framework of its application within businesses, and evaluates the method in light of the existing literature. The findings indicate that the proper implementation of the job order costing method strengthens cost control and enhances its effectiveness in profitability analysis.

Keywords: Cost Accounting, Job Order Costing Method, Production

2. GİRİŞ

İşletmelerin temel amacı olan kâr sağlama hedefine ulaşabilmeleri, maliyetlerini mümkün olduğunca azaltmaları ve maliyet kontrol süreçlerini etkin şekilde yönetmelerine bağlıdır. Bu bağlamda stratejik maliyet yönetimi uygulayan işletmeler, sahip oldukları kaynakları bilinçli ve etkin biçimde kullanarak kârlılıklarını en üst düzeye çıkarabilirler. Değişen tüketici beklentilerine uyum sağlamak ve rekabetin yoğunlaştığı piyasalarda hem varlıklarını sürdürebilmek hem de daha güçlü bir konuma ulaşabilmek

için işletmelerin modern yönetim yaklaşımlarını benimsemeleri, geleceğe yönelik planlamalar yapmaları ve sürekli yenilik peşinde olmaları büyük önem taşımaktadır. Yoğun rekabet ortamında uygun maliyetleme tekniklerini kullanan işletmeler, mevcut avantajlarını güçlendirebilir, müşteri memnuniyetini artıracak ürün ve hizmetler sunarak kârlılık düzeylerini iyileştirebilirler (Saylan ve Demir, 2021). Günümüz piyasasında, müşteri beklentilerine hızlı ve etkili biçimde cevap verebilen işletmeler rekabette öne çıkmaktadır. Bu gerçek, firmaların maliyet hesaplamalarını daha titiz ve duyarlı bir şekilde yapma gereğini ortaya koymuştur. Üreticiler artık ürün fiyatlarını istedikleri kâr oranlarını ekleyerek belirleyememekte; bunun yerine, tüketicilerin ödemeye hazır olduğu fiyat seviyelerini dikkate almak zorunda kalmaktadır. Bu değişen koşullar, maliyet yönetimine verilen önemi artırmış ve doğru maliyet belirlemeye yardımcı olacak yöntemlerin geliştirilmesi sürecini hızlandırmıştır. Geleneksel maliyet yöntemlerinden biri olan Sipariş Maliyeti Yöntemi de bu gereksinimlere yanıt verebilmek amacıyla ortaya konmuş bir maliyetleme yaklaşımıdır (Terzi, 2021). Sipariş maliyeti yöntemi, özellikle belirli periyotlarda ve sınırlı sayıda, farklı niteliklerde ürünler üreten küçük ve orta ölçekli işletmeler için tasarlanmış bir birim maliyet hesaplama tekniğidir. Yöntemin temel prensibi, üretim faaliyetleri sırasında ortaya çıkan tüm maliyetlerin her bir üretim emri için özel olarak oluşturulan maliyet kartlarında toplanması ve bu maliyetlerin sipariş bazlı takip edilmesine dayanmaktadır. Sipariş maliyeti yöntemi, özellikle belirli periyotlarda ve sınırlı sayıda, farklı niteliklerde ürünler üreten küçük ve orta ölçekli işletmeler için tasarlanmış bir birim maliyet hesaplama tekniğidir. Yöntemin temel prensibi, üretim faaliyetleri sırasında ortaya çıkan tüm maliyetlerin her bir üretim emri için özel olarak oluşturulan maliyet kartlarında toplanması ve bu maliyetlerin sipariş bazlı takip edilmesine dayanmaktadır (Aydemir, 1993).

3. MALİYET MUHASEBESİ

Maliyet muhasebesi, üretim işletmelerinde yönetimsel karar süreçlerine rehberlik eden ve maliyet kontrolünü mümkün kılan kritik bir yönetim bilgi sistemi bileşenidir. Finansal sistemin bir alt sistemi olmasının yanı sıra, kendi başına bağımsız bir bilgi sistemi olarak da işlev görerek hem iç hem de dış paydaşların bilgi ihtiyaçlarını karşılar. İşletme faaliyetlerinin maliyetlerini, kârlılığını ve performansını ölçen, analiz eden ve raporlayan maliyet muhasebesi; aynı zamanda planlama ve kontrol mekanizmalarına hem parasal hem de parasal olmayan veriler sunar. Bu nitelikleriyle, maliyet muhasebesi yönetim muhasebesinin temel yapı taşlarından biri olarak kabul edilir(Anasız, 1999). Maliyet kontrol süreci, işletme giderlerinin yönetilmesi ve maliyetlerin kabul edilebilir seviyelerde seyredip seyretmediğinin değerlendirilmesi amacıyla hayata geçirilir. Bu kapsamda; üretim, hizmet veya projelerle ilgili maliyetler hesaplanır, takip edilir, detaylı şekilde analiz edilir ve raporlanır. İşletmenin mali performansını doğru anlamak, maliyet etkinliğini geliştirmek ve yönetim kararlarına sağlam verilerle destek olmak için vazgeçilmez bir araçtır. Yalnızca üretim maliyetlerini değil, aynı zamanda pazarlama, araştırma-geliştirme ve diğer tüm operasyonel faaliyetlerin maliyetlerini de kapsayarak, işletmenin yaptığı her türlü fedakarlığın parasal karşılığının izlenmesi, yorumlanması ve kontrol altına alınmasını mümkün kılmaktadır (Tuğrul, 2025).

3.1. Maliyet Türleri ve Sınıflandırılması

Sipariş Maliyet Sistemi

Sipariş maliyet yöntemi, her sipariş veya ürün grubunun maliyetlerini üretim döneminden bağımsız olarak ayrı ayrı hesaplamayı esas alır. Amaç, maliyetleri doğru şekilde ilgili siparişlerle ilişkilendirmektir. Direkt malzeme ve işçilik maliyetlerinin dağıtımı nispeten kolayken, genel üretim giderlerinin paylaştırılması daha karmaşıktır. Üretim süreçleri çeşitlendikçe, doğru ve adil dağıtımın sağlanması zorlaşır. Sistemin etkinliği, maliyet kalemlerinin net ayrıştırılmasına ve uygun dağıtım anahtarlarının kullanılmasına bağlıdır (Erbilir, 2015).

Safha Maliyet Sistemi

Safha maliyet yöntemi, seri üretimle ve birbirine benzer ürünlerin birden fazla aşamada üretildiği işletmelerde uygulanan bir maliyetlendirme sistemidir. Bu sistemde temel prensip, üretimin her bir aşamasında (safhasında) gerçekleşen maliyetleri ayrı ayrı izlemek ve toplamaktır. Toplanan bu maliyetler, ilgili safhada üretilen çıktı birim sayısına bölünerek, her bir aşama için birim maliyet hesaplanır. Hesaplamalar, hem fiziksel birim akışını (miktar hareketleri) hem de maliyet verilerini temel alır. Bir üretim safhasında tamamlanan birimler, bir sonraki aşamaya devredilir ve bu aşamada katlanılan yeni maliyetler, bir önceki aşamadan gelen maliyetlere eklenir. Bu şekilde maliyetler son üretim aşamasına kadar birikimli olarak taşınır ve nihai mamulün toplam maliyeti bu birikimle oluşur (Şahin, 2002).

4. SİPARİŞ MALİYET YÖNTEMİ

Sipariş maliyet yöntemi, her üretim partisi veya iş için yapılan giderlerin ayrı ayrı izlenip biriktirilmesine dayanır. Bu yöntemde sipariş; tek bir ürün, benzer özellikteki bir ürün grubu veya çeşitli mamullerden oluşabilir ve maliyetler muhasebe dönemi yerine her iş veya üretim partisi bazında hesaplanır. Yöntem, farklı dikkat ve özen gerektiren, birbirinden net şekilde ayrılabilen üretim süreçlerinde etkin bir biçimde uygulanabilmektedir. Makine, uçak, mobilya, inşaat ve matbaacılık sektörleri, bu yöntemin tipik uygulama alanları arasında yer almaktadır. Yöntemin temel mantığı, direkt giderlerin doğrudan ilgili üretim partilerine izlenmesi ve genel üretim giderlerinin makine saatleri, işçi saatleri veya diğer uygun ölçütler kullanılarak partiler arasında dağıtılmasıdır. Özellikle birbirinden farklı özellikte ürün veya hizmet üreten işletmeler tarafından tercih edilen bu yöntem, müşteri taleplerine göre şekillenen üretimlerde maliyetlerin bağımsız olarak izlenmesini sağlar. Matbaa işleri, inşaat projeleri, özel mobilya üretimi ve kişiye özel hizmetler, yöntemin uygulama alanlarına örnek olarak verilebilir. (Aydemir, 1993). Sistemin işleyişinde maliyetler, her sipariş için açılan maliyet kartlarında toplanır. Direkt malzeme ve direkt işçilik giderleri doğrudan kartlara kaydedilirken, genel üretim giderleri önceden belirlenen yükleme anahtarları aracılığıyla dağıtılır. Sipariş maliyeti, üretimin gerçekleştirildiği merkezde kullanılan ölçü birimi ve yükleme oranı dikkate alınarak hesaplanır. Takip sürecinde toplam giderler, üretimdeki mallar hesabı üzerinden izlenir ve her siparişin maliyeti ilgili kartlar aracılığıyla kontrol edilir. Direkt malzeme, direkt işçilik ve genel üretim maliyetleri, üretim süreci boyunca maliyet kartlarında izlenir ve üretim tamamlandığında nihai mamule yüklenir (Tercan, 2017).

4.1. Sipariş Maliyet Yöntemi Kavramları

○ 4.1.2. Direkt ilk madde ve Malzeme Giderleri

Mal ve hizmet üretiminde kullanılan tüm girdiler, direkt ilk madde ve malzeme, endirekt malzeme ve üretimle ilişkili dış hizmetleri kapsar. Bu girdiler arasında direkt ilk madde ve malzeme, ürün maliyetinde önemli bir paya sahiptir. Bir malzemenin bu kategoriye dahil edilebilmesi için, ürünün temel yapısını oluşturması, kullanım miktarının ilgili ürün veya ürün grubu bazında doğrudan belirlenebilir olması ve ekonomik açıdan anlamlı bir ölçüme dayanması gerekir (Erbilir, 2015). Direkt ilk madde ve malzeme, üretimde kullanılan ve mamulün yapısına doğrudan katılan temel girdilerdir. Bu girdilerin hangi ürün veya ürün grubu için hangi miktarda kullanıldığı kesin olarak tespit edilebilir ve izlenebilir. Örneğin, pamuk iplik üretiminde, kereste mobilya imalatında, deri ve kösele ise ayakkabı üretiminde bu kategoride yer alır. İlk maddeler, mamulün ana bileşenleri olduklarından kullanım miktarları açıkça takip edilebilir ve toplam üretim maliyetinde önemli bir pay oluşturur. Bu nedenle, her mamul için kullanılan malzemenin miktarı dikkatle kaydedilir ve maliyetler doğrudan ilgili ürünlere aktarılır (Tercan, 2017).

Tablo 1: Direk İlk Madde Ve Malzeme İstek fişi

DİREK İLK MADDE MALZEME İSTEK FİŞİ	Fiş no : …….
	Tarih: ……

Malzeme Kod No	Malzemenin Adı	Ölçü Birimi	Miktar	Birim Fiyat	Tutar

4.1.3. Direkt İşçilik Giderleri

Üretim birimlerine işçilik maliyetlerinin dağıtılmasında en önemli zorluk, giderlerin direkt mi yoksa endirekt mi olduğunun doğru biçimde belirlenmesidir. Örneğin, üretim dışı görevlerde bulunan personel ile hizmet birimlerinde çalışan işçilere ödenen ücretler, ek ödemeler ve bunlara ait işveren sosyal güvenlik primleri genellikle endirekt işçilik olarak sınıflandırılır. Bu ayrımın yapılmasında işletmeler farklı uygulamalar benimseyebilir. Bazı işletmeler, üretim merkezindeki tüm çalışanların giderlerini direkt işçilik olarak kaydeder. Bazıları yalnızca doğrudan üretimde görevli işçilerin giderlerini direkt işçilik kabul ederken, diğerleri üretim işçilerinin yalnızca belirli giderlerini bu kapsamda değerlendirir (Tercan, 2017). Direkt işçilik giderleri, esas üretim birimlerinde ortaya çıkan ve belirli bir ürün veya hizmetin maliyetine doğrudan yüklenebilen işçilik maliyetlerini ifade eder. Bu giderler, hangi ürün veya ürün grubu için gerçekleştirildiği kolaylıkla izlenebilen ve herhangi bir dağıtım yöntemine gerek olmaksızın, çalışan başına düşen çalışma süresinin doğrudan ölçümüyle belirlenen maliyetlerden oluşur (Anasız, 1999).

Tablo 2: Direk İşçilik Maliyet Kartı

DİREK İŞÇİLİK MALİYET KARTI

İŞÇİLER	İşe Başlama Saati	İş Bitiş Saati	Çalışma Süresi	Saatlik Ücreti	Toplam
İşçi A					
İşçi B					
TOPLAM					XXX

4.1.4. Genel Üretim Giderleri

Genel üretim giderleri, üretim faaliyetleri kapsamında gerçekleşen, ancak direkt ilk madde ve malzeme ile direkt işçilik maliyetleri dışında kalan tüm maliyet unsurlarını kapsamaktadır. Söz konusu giderler, üretilen mal veya hizmetlerin maliyetine doğrudan yüklenemeyip, sistematik dağıtım yöntemleri vasıtasıyla maliyetlere dahil edilmektedir. Bir maliyet unsurunun genel üretim gideri sınıflandırmasına dahil edilebilmesi için temel koşul, üretim süreciyle doğrudan bağlantılı olması ve maliyetlendirmeye ancak dolaylı yüklemeler veya dağıtım anahtarları aracılığıyla aktarılabilmesidir (Kutlu, 1987).

Tablo 3: Sipariş Maliyetinin Oluşumu

1.		2.		3.
DİREK İLK MADDE VE MALZEME GİDERİ	+	**DİREK İŞÇİLİK GİDERLERİ**	+	**GENEL ÜRETİM GİDERLERİ**

1+ 2 + 3 = SİPARİŞ MALİYETİNİN OLUŞUMU

5. Literatür İncelemesi

Analizler, sipariş maliyeti yönteminin uygulanmasıyla siparişlerden kâr elde edildiğini göstermiştir. Ancak belirlenen fiyatların gerçekçi olmaması, beklenen kârın doğruyu yansıtmadığını ortaya koymuştur. Bu durum, sipariş üzerine üretim yapan işletmelerde doğru maliyet bilgisinin önemini vurgulamaktadır. Bu nedenle, özellikle mobilya sektöründe ve genel olarak sipariş üretimi yapan işletmelerde sipariş maliyet yönteminin uygulanması önerilmektedir (Terzi, 2021).

Bu çalışmada, siparişe bağlı üretim yapan KOBİ'lerde işlemsel maliyet yönteminin performans değerlendirme ve karar alma süreçlerine katkı sağlayabileceği vurgulanmaktadır. Uygulama kısmı bu yaklaşımı desteklemekte, ancak yöntemin maliyet sistemine tam entegre edilmemesinin bir eksiklik olduğu görülmektedir. Özetle, siparişe dayalı üretim yapan işletmelerde işlemsel maliyet yöntemi karar alma, performans ölçümü ve ara mamul transferlerinde uygulanabilir bir sistem olarak önerilmektedir (Anasız, 1999).

İşletmelerin maliyet sisteminin belirlenmesi ve üretim giderlerinin izlenmesi için etkin bir maliyet muhasebesi organizasyonuna ihtiyaç vardır. Konfeksiyon işletmelerinde üretim, siparişe dayalı veya seri üretim şeklinde olabilir; her iki durumda da sipariş maliyeti yöntemi en uygun maliyetleme yöntemi olarak öne çıkar. Bu yöntemde, direkt malzeme ve işçilik giderleri doğrudan mamul maliyetine yüklenirken, genel üretim giderleri uygun maliyet dağıtım anahtarları ile mamule eklenir ve böylece birim maliyet hesaplanır (Şahin, 2002).

Matbaa işletmelerinde üretim dizgi, baskı ve ciltleme aşamalarında gerçekleşmekte olup, sipariş maliyeti yöntemi ile her aşamada harcanan direkt madde, işçilik ve genel imal giderleri sipariş maliyeti kartında toplanmaktadır. Çalışmasında maliyeti etkileyen unsurlar incelenmiş, kayıt ve planlama düzenleri matbaa yapısına uygun hale getirilmiştir. Örnek uygulamada, rasyonel bir matbaada üretilen bir kitaba yöntemin uygulanması sonucu gerçek maliyet başarıyla tespit edilmiş ve maliyet ile yöntem sonucu maliyetin eşitliği, sipariş maliyeti yönteminin matbaa işletmelerinde uygulanabilirliğini göstermiştir (Aydemir, 1993).

Tercan çalışmasında aydınlatma sistemleri üzerine faaliyet gösteren ve LED-Line üretimi yapan bir işletmenin maliyet verileri analiz edilmiştir. Araştırmada, tüm maliyet kalemleri doğrudan ve dolaylı olarak belirlenmiş, en uygun dağıtım anahtarları kullanılarak giderler paylaştırılmıştır. İkinci dağıtım aşamasında kademeli dağıtım yöntemi uygulanmıştır. Çalışmada yalnızca işletmenin bir stadyum projesi ele alınmış, diğer projeler inceleme dışında bırakılmıştır. Sonuçta, işletmenin mevcut maliyet sistemiyle yapılan hesaplamalarda proje kârlı görünürken, Sipariş Maliyeti Yöntemi kullanılarak yapılan hesaplamalarda projenin aslında zarar ettiği ortaya konmuştur (Tercan, 2017).

6. Sonuç ve Değerlendirme

Bu araştırmada yapılan teorik incelemeler ve literatürde yer alan bulgular, Sipariş Maliyeti Yöntemi'nin özellikle heterojen ürün çeşitliliğine sahip, siparişe dayalı ve düşük hacimli üretim yapan işletmeler açısından kritik bir maliyetleme yaklaşımı olduğunu göstermektedir. Yöntemin temel

avantajı, her bir siparişin ayrı bir maliyet nesnesi olarak ele alınması ve maliyet bileşenlerinin ilgili siparişe doğrudan atanabilmesidir. Bu özellik, işletmelerin ürün ve hizmet maliyetlerini yüksek doğrulukla belirlemesine olanak tanıyarak karar süreçlerinin şeffaflığını ve güvenilirliğini artırmaktadır. Literatürde yöntemle ilgili olarak vurgulanan ortak nokta, doğru fiyatlandırma, kârlılık analizi, performans ölçümü ve maliyet kontrolü gibi alanlarda işletmelere sunduğu stratejik katkılardır. Maliyetlerin ayrıntılı izlenmesi, gereksiz harcamaların tespiti, kaynak kullanımının optimize edilmesi ve üretim sürecinin daha etkin yönetilmesi açısından önemli avantajlar sağlamaktadır. Bununla birlikte, yöntemin uygulanması bazı operasyonel güçlükleri de beraberinde getirmektedir. Kapsamlı kayıt tutma gerekliliği, genel üretim giderlerinin siparişlere rasyonel biçimde dağıtılmasındaki zorluklar ve yüksek uygulama maliyetleri, yöntemin eleştirilen yönleri arasında yer almaktadır. Özellikle geleneksel dağıtım anahtarlarının kullanıldığı işletmelerde, dolaylı maliyetlerin günümüz otomasyona dayalı üretim ortamları için yeterince gerçekçi sonuçlar üretmediği ifade edilmektedir.

Genel olarak değerlendirildiğinde, Sipariş Maliyeti Yöntemi esnek üretim yapısına sahip işletmeler için önemini korumakla birlikte, modern üretim teknolojilerinin gerektirdiği bilgi düzeyi ve hız karşısında tek başına yeterli olmayabilmektedir. Bu nedenle yöntemin diğer çağdaş maliyet yönetimi teknikleriyle bütünleşik biçimde uygulanması ve işletme koşullarına uygun şekilde sürekli geliştirilmesi gerekmektedir.

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TAX AWARENESS AND TAX PERCEPTION AMONG UNIVERSITY STUDENTS: THEORETICAL FRAMEWORK AND AN EMPIRICAL ASSESSMENT*

ÜNİVERSİTE ÖĞRENCİLERİNDE VERGİ BİLİNCİ VE VERGİ ALGISI: KURAMSAL ÇERÇEVE VE AMPİRİK BİR DEĞERLENDİRME**

İbrahim OLGUN

Assist. Prof. Dr., Recep Tayyip Erdogan Universty
E-mail: ibrahim.olgun@erdogan.@edu.tr
ibrahimolgun29@gmail.com
ORCID ID: 0000-0002-5526-958X

Ayşe SANCAR

Student, Recep Tayyip Erdogan Universty
E-mail: aysesancar7048@gmail.com
ORCID ID: 0009-0008-1386-3215

Abstract

Tax awareness refers to individuals' attitudes and behaviors toward taxation beyond its legal obligation, while tax perception denotes the aggregate of individuals' cognitions and affect regarding taxes and the tax system. Strengthening both constructs is critical to enhancing tax compliance. The literature accords extensive attention to tax awareness and tax perception as core determinants of voluntary compliance. This study assesses the tax perception and awareness of students at Recep Tayyip Erdoğan University (RTEÜ) Faculty of Law. Given the scarcity of research on law students in Turkey, the study is original in addressing a gap. Examining law students is salient, as graduates may serve in administrative judiciary pathways. The scale developed by Çelebi (2016) is employed to obtain reliable and valid measurements of tax awareness and perception. Using a quantitative approach and a cross-sectional survey design, data were collected via stratified sampling from RTEÜ law students. A 37-item, seven-point Likert-type questionnaire was administered; data were analyzed in SPSS using descriptive statistics, independent-samples t-tests, and ANOVA. The presentation reports demographic indicators, differences across class levels, and findings by prior tax-related coursework. The conclusion discusses whether curriculum-based education affects law students' tax perception and awareness, and offers actionable education strategies and policy recommendations to strengthen tax awareness.

Keywords: Tax Awareness, Tax Perception, Tax Education, Law Students

Özet

Vergi bilinci, vergilerin yasal bir yükümlülük olmasının ötesinde bireylerin vergiler karşısındaki tutum ve davranışlarını, vergi algısı ise kişilerin vergilere ve vergi sistemine ilişkin düşünce ve duygularının toplamını ifade etmektedir. Vergi uyumunu artırmak için her iki kavramın güçlendirilmesi önem arz etmektedir. Literatürde gönüllü uyumun temel belirleyicileri bağlamında vergi bilinci ve vergi algısına geniş yer verilmektedir. Bu çalışmada, Recep Tayyip Erdoğan Üniversitesi (RTEÜ) Hukuk Fakültesi öğrencilerinin vergi algısı ve bilinci değerlendirilmektedir. Türkiye literatüründe hukuk fakültesi öğrencilerine odaklanan çalışmaların sınırlı olması, araştırmanın literatürdeki bir boşluğu doldurması bakımından özgünlüğünü ortaya koymaktadır. Hukuk öğrencilerinin vergi algısı ve bilincinin incelenmesi, mezuniyet sonrasında idari yargı süreçlerinde görev üstlenebilecek olmaları nedeniyle

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ayrıca önem taşımaktadır. Çalışmada Çelebi (2016) tarafından geliştirilen ölçek kullanılmış; böylece vergi bilinci ve algısına ilişkin güvenilir ve geçerli ölçümler elde edilmiştir. Araştırma nicel yöntemle, kesitsel tarama modeli kullanılarak yürütülmüş, veriler RTEÜ Hukuk Fakültesi öğrencilerinden tabakalı örnekleme yöntemiyle toplanmıştır. Öğrencilere 37 maddelik, 7'li Likert tipi bir anket uygulanmış, elde edilen veriler SPSS yazılımında betimleyici istatistikler, bağımsız örneklem t-testi ve ANOVA ile analiz edilmiştir. Sunumda, demografik göstergeler, sınıf düzeylerine göre farklılıklar ve vergiye ilişkin ders alıp almama durumuna göre ortaya çıkan bulgular ele alınacaktır. Sonuç bölümünde, müfredat temelli eğitimin hukuk fakültesi öğrencilerinin vergi algısı ve bilinci üzerindeki etkisi tartışılarak vergi bilincini güçlendirmeye yönelik uygulanabilir eğitim stratejileri ve politika önerileri sunulacaktır.

Anahtar Kelimeler: Vergi Bilinci, Vergi Algısı, Vergi Eğitimi, Hukuk Öğrencileri

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ƏRAZİ BÜTÖVLÜYÜNÜN TƏMİN OLUNMASI SİYASƏTİNİN GEOSİYASƏTİN İNKİŞAFINA TƏSİRİ

Nərgiz Məmməd-zadə

siyasi elmlər namizədi, dosent

Bakı Dövlət Universiteti

nargizmamedzade@mail.ru

ORCID ID: 0000-0002-3432-3460

XÜLASƏ

Əsrlər boyu müstəqil dövlətlərin əsas məqsədi və vəzifəsi torpağların müdafiəsi uğrunda mübarizəsidir. Bu istiqamətdə aparılan xarici siyasətin proiritetləri məhz bu maraqdan irəli gəlib və formalaşıb. Müasir dövrdə də bu reallığı təşkil edən amillərin əsasıdır. Məlumdur ki, dünya inkişafının hər mərhələsi müvafiq xüsusiyyətlərlə və yeniliklərlə tarixə yazılır. Lakin belə aspektlərdə var ki, onların aktuallığı və üzərində mübarizəsi əhəmiyyətini itirmir. Və millətlərə aid olan torpağlar, mövcud dövlət sərhədləri və təbii sərvətlər məhz belə amillərdəndir.

Bəşəriyyətin tarixi inkişafı müxtəlif müharibələrlə zəngindir. Və onların əsas nəticəsi siyasi xəritənin dəyişməsidir. Güclü ölkələr hər zaman öz hökmranlığını möhkəmləndirmək və günişlənmək üçün zəif dövlətlərin torpağlarını tutmaq və resurslarından öz məqsədlərinə uyğun istifadə etmək olub. Vurğulamaq vacibdir ki, dünyanın yeni qaydaları da əsasən güclü dövlətlərin maraqları naminə meydana gəlib. Onu da qeyd etməliyik ki, hər bir yeni beynəlxalq münasibətlər sisteminin mahiyyətini də tutulan torpaqların kimə məxsus olunmasını dövlətlərarası sazişlərdə öz əksini tapıb. Və gələcəkdə torpağların yeni sahibi bu əraziləri mənimsəmək niyyətilə yeni düşüncəni və normalarını əhaliyə güc vasitəsilə yeridə bilib. Bu hal da öz növbəsində xalqların şüurunda və inkişafının növbəti mərhələsində təsir qüvvəsinə çevrilib (təhsildə, adətlərdə, mədəniyyətdə).

Keywords: dövlət sərhədləri, beynəlxalq hüquq, xarici siyasət, geosiyasi vəziyyət, siyasi və iqtisadi nəticələr, problemlər.

GİRİŞ

Qeyd etdiyimiz kimi, ərazi bütövlüyü müstəqil dövlətin təməlini və mövcudluğunu göstərən əsas varlıq və meyyardır. Məhz bu iki aspect xarici siyasətin müəyyən olunmasında mühüm rol oynayır. Və prioritetlər də bunların təməlində formalaşır.

Ərazi bütövlüyünün təmin olunması habelə beynəlxalq hüququn əsas prinsipidir. Bu da bütün ölkələr tərəfindən qəbul edilən vəziyyətdir. Ölkələrarası münasibətlər də məhz bu prinsipi əsas tutaraq əlaqələr yaradır və onların üzərində hərtərəfli siyasət yürüdür.

Qeyd etmək zəruridir ki, ərazi bütövlüyü prinsipi birbaşa geosiyasətə təsir göstərir. Bu təsirin göstəricisi kimi müasir qlobal siyasətinin yeni qaydalarının formalaşması prosesində diqqəti cəlb edir. Məhz bu məsələ siyasi elminin hal-hazırda da diqqət mərkəzindədir, və bir sıra tədqiqatçılar öz araşdırmalarında vəziyyəti sübut etmək istiqamətində müxtəlif fikirləri ərsəyə gətirir.

Məlumdur ki, beynəlxalq münasibətlərin hər bir nəzəriyyəsi coqrafi məkanı tədqiq edir, və onun əlverişli xüsusiyyətlərini izah etdikdə, ölkələrin gücünə əsas kimi göstərir. Belə nəzəriyyəçilərdən geosiyasət elminin klassikləri olan Mexeni, Makkinderi, Hausxoferi, Ratseli, Spaykmeni və Çelllini xüsusi qeyd etmək vacibdir. Onların nəzəriyyələri vurğulayıb ki, dövlətlərin mövqeyi, xüsusən də aparıcı statusu, məhz coqrafi məkandan asılıdır. Adları göstərilən alimlər "xartlend" və "rimlənd" konsepsiyalarını açıqlayaraq, göstəriblər ki, ölkə nə qədər əlverişli məkanda yerləşirsə, onun hökmranlığı da məhz bu aspektin üzərində mümkündür. Okeanlara çıxışları, su yollarını əldə edilməsi, dünya ticarət istiqamətlərinə nəzarətin aparılmasına və böyük resurslara hakimlik etməyə böyük dəstək olmuşdur. Göstərilən amillər də, böyük siyasətin qaydalarını yaratdı. Nəticəsi də müstəmləkəçilik, saysız ərazi və etnik münaqişələr, kütləvi qırğınlar kimi beynəlxalq cinayətlərin artması oldu.

Müasir zamanda da tədqiqatçılar üçün ərazi məsələsi və onun geosiyasətlə uzlaşması tədqiqatın predmeti və obyekti olaraq qalmaqdadır. XX yüzilliyin sonunda Yalta-Potsdam sisteminin dağılması və dünya xəritəsində növbəti dəyişikliklər müasir tədqiqatçılar tərəfindən ərazi bütövlüyü prinsipinin yeni geosiyasətin formalaşmasında əsas səbəb kimi vurğulanır. Bunlardan Jack S.Levy, William R., Thompson, Paraşevina, Karasyova, Skripkina və s. tədqiqatçıları qeyd etmək olar.

Təqdim olunan məqalədə icmal təhlil metodundan istifadə edilərək, müasir dövrdə ərazi bütövlüyü prinsipinin aktual olmasının və onun geosiyasətə təsirinin birdaha sübut edilməsidir.

Tarixi şərtlər və ərazi bütövlüyü prinsipinin formalaşması. Məlumdur ki, hər vəziyyətin və statusun müəyyən olunmasının arxasında müvafiq proseslər durur. Ərazi bütövlük də istisna deyil. İlk növbədə buna aid tarixin gedişatıdır. Dövlətlərin yaranması və inkişafı tarixi hadisələrin mövcudluğu əsasında mümkün olub. Təbiət elə nizamlanmışdır ki, kainat və yer kürəsinin yaranmasına səbəb olmuşdur. Qədim zamanlardan insanlar təbiətin qorxusu qarşısında həmişə birləşməyə cəhd ediblər. Həyatın zəruriliyi insanları əlverişli torpağlara yönəldir. Dünya miqyaslı köçlər kimi proseslər artır və nəticədə dövlət adlı birliklər yaranır və getdikcə onların sayı çoxalır. İlk quldarlıq dövlətlər meydana gəlir. Zaman getdikcə onları feodal, kapitalist dövlətləri əvəz edir. Və hər dövlət öz əhatə dairəsini formalaşdıraraq müəyyən torpaqları tutur və sərhədlərini elan edir. Beləliklə də, "milli dövlətlər", "xalqlar" kimi amillər yaranır.

Tədricən, dünyada insanların sayı artdıqca, onların yerləşməsi məsələsi gündəmə gəlir və torpaqlar üzərində mübarizə əsas və taleönəmli məsələyə çevrilir. Bu yolda qədim və orta dövrün insanları münaqişələrə, müharibəyə üstünlük verir. Bu hal da sonralar elmdə öz izahatını axtarır. Və "ərazi bütövlüyü", "dövlət sərhədləri" kimi anlayışlar gündəmə gəlir. Bu kateqoriyaların təsdiqi orta əsrlər dövründə beynəlxalq hüququn ümumi qəbul edilməsi nəticəsində öz hüquqi əsasını möhkəmləndirir. Birinci Vestfal beynəlxalq münasibətlər sisteminin əsas müddəaları da ilk dəfə məhz "dövlət suverenliyi", "milli dövlətlər" anlayışlarını bəyan edir. Və müasir zamanda da bu kateqoriyalar öz aktuallığını nəinki itirməyib, hətta onlar üzərində mübarizəni daha da kəskinləşdirib. Qlobal deyilən dünyanın, vahid hökümətin yaranması kimi ideyalar hökm sürsə də, hələ ki, heç bir dövlət oz torpaqlarından imtina etməyə razı deyir. Buna sübut kimi müasir münaqişələrin sayı, insan itkiləri, kütləvi qırğın silahlarının yaranması və artması kimi amilləri göstərmək kifayətdir.

Xüsusi qeyd etmək zəruridir ki, Otuz illik müharibənin əsas səbəbi də məhz İngiltərə və Fransa arasında müvafiq torpaqlara yiyələnməsi və orada öz hökmranlığının təmin olunması olmuşdur. Bu səbəb də beynəlxalq hüquq normalarının əsasını Vestfal sistemində təşkil etdi və möhkəmləndirdi. Zaman getdikcə ərazi bütövlüyü prinsipi dövlətlərin suverenliyinin qorunmasını təmin etmək və münaqişələrin

qarşısını almaq üçün BMT Nizamnaməsində və digər beynəlxalq sənədlərdə təsbit edilmiş beynəlxalq hüququn fundamental norması kimi ortaya çıxmışdır. Onun mahiyyəti ondan ibarətdir ki, dövlətlər digər ölkələrin sərhədlərinə hörmət etməyə və onların daxili birliyini poza biləcək və ya ərazilərin ilhaqına səbəb ola biləcək hər hansı bir hərəkətdən çəkinməyə borcludurlar.

Dövlətlərin geosiyasi maraqları və onların bütövlük siyasətində əks etməsi. Qloballaşma şəraitində siyasi, iqtisadi, sosial, hüquqi, ekoloji və s. qlobal məkanlar formalaşır. Bu cür məkanların inkişaf amilləri vahidləşdirilir. Və qeyd olunan məkanları bir-birinə yaxınlaşdıran universal amillərdən biri də məhz ərazi amilidir.

Ərazi öz əhalisi və idarəetmə sistemi ilə birlikdə dövlətin əsas xüsusiyyətidir. Müasir dünyada da ən vacib ərazi vahidi olan yalnız dövlətdir. Ərazinin sistemli təbiəti onun vahid xüsusiyyətləri ilə xarakterizə olunur: ərazinin bölünməzliyi, zamanla dəyişməzliyi, sərhədlərin toxunulmazlığı, məkan əhatə dairəsi, xarici və daxili təsirlərə müqavimət və s. Bu xüsusiyyətlərin inteqrativ tərifi ərazinin vahidliyini və bölünməzliyini, onun quru və su səthinin, hava məkanının və yeraltı hissəsinin bir hissəsinin və dəniz dibinin ayrılmasının mümkünsüzlüyünü təmin edən "dövlətin ərazisinin bütövlüyü" anlayışıdır. Onu da qeyd etmək vacibdir ki, ərazinin bütövlüyü dövlətin bütövlüyünün yalnız bir aspektini təşkil edir ki, bu da, əlavə olaraq, əmlak komplekslərinin, ilk növbədə dövlət mülkiyyətinin vəhdəti ilə xarakterizə olunur: vahid vətəndaşlıq, vahid dövlət hakimiyyəti orqanı, vahid büdcə və vergilər və s. [4]

Beynəlxalq münasibətlərdə bir dövlətin ərazisinin yerüstü və yeraltı olmaqla iki yerə bölündüyü bir presedent da var. Məsələn, Versal müqaviləsinə əsasən, Saar vilayəti beynəlxalq nəzarəti altına alındı. Daha sonra isə əhaliyə bölgənin Almaniyaya qayıtmasını, Fransaya birləşməsini və ya müstəqil olmasını istəmələri ilə bağlı səs vermək hüququ verildi. Həmçinin Saar vilayətinin Almaniyaya və ya müstəqilliyə çevriləcəyi təqdirdə mineral ehtiyatlara olan hüquqların Fransada qalacağı da şərtləndirilmişdi. Lakin Fransa hökuməti bu vəziyyətin qeyri-adiliyini dərk edirdi. V referendumdan sonra Almaniyaya mineral ehtiyatları almaq hüququ verildi. Və 1935-ci ildə Almaniya bundan istifadə etdi. [4]

XX əsrin sonlarında SSRİ-nin və sosialist sisteminin dağılması ilə dünyada bir sıra dəyişikliklər baş verdi. Soyuq müharibənin sonu ilə beynəlxalq münasibətlərin əsas güc mərkəzləri yeni geosiyasi reallıqları rəhbər tutaraq fəaliyyətlərini mövcud şəraitə uyğunlaşdırmaq qərarına gəldilər. Əvvəlki beynəlxalq münasibətlər sisteminin dağılması ilə yanaşı, yeni dünya nizamının təməli qoyulmağa başladı. Belə şəraitdə ərazi bütövlüyü prinsipi də mürəkkəb bir mərhələdə daha da kəskin şəkildə gündəmə gəldi. Keçmiş SSRİ-nin məkanında yaranmış gənc dövlətlər öz əraziləri uğrunda mübarizəyə məruz qaldı (Ukrayna, Gürcüstan). Bu mübarizədən Azərbaycan da kənarda qalmadı. Ölkəmiz ərazilərin müdafiəsini iki istiqamətdə təmin olunması oldu: Dağlığ Qarabağın qaytarılması və Xəzər dənizinin hüquqi statusunun müəyyən edilməsi.

Dövlətlərin geosiyasi maraqları dedikdə, onların coqrafiyası, iqtisadiyyatı, resursları, mədəniyyəti kimi amillər nəzərdə tututlur. Və bunlar dövlətin ərazi bütövlüyü siyasətinə birbaşa təsir göstərir. Bu siyasət özünü sərhədlərini və təsir dairələrini qorumaq və ya genişləndirmək cəhdlərində, o cümlədən ittifaqların yaradılması, hərbi və iqtisadi gücdən istifadə, sərhədlərinin və resurslarının qorunması yolu ilə müşahidə olunur. Təsir dairələrini yenidən bölüşdürməyə çalışan dövlətlər qlobal iqtisadiyyata və siyasətə birbaşa təsir göstərərək digər ölkələrin bütövlük siyasətində dəyişikliklərə səbəb oldu.

Qlobal sistemdə ərazi sabitliyinin qorunması üçün müasir çətinliklər və perspektivlər. Ərazi sabitliyinə qarşı müasir çağırışlara artan geosiyasi gərginlik, separatçı hərəkatlar, aqressiv millətçilik və qeyri-dövlət aktyorlarının artan təsirləri daxildir. Sabitliyin qorunması perspektivləri beynəlxalq

hüququn gücləndirilməsindən, çoxtərəfli dialoqların və münaqişələrin həlli mexanizmlərinin inkişaf etdirilməsindən və yeni hibrid təhdidlərə effektiv şəkildə qarşı çıxmaqdan asılıdır.

Müasir dövrdə aparıcı dövlətlər arasında siyasi rəqabətin güclənməsi və hərbi münaqişələrin artması dövlətlərin ərazi bütövlüyünə ciddi təhlükə yaradır. Ölkələr daxilində etnik, dini və siyasi fərqlər separatçı hərəkatlara və regionlarda sabitliyi pozan daxili münaqişələr üçün əsas səbəblərdəndir. Təcavüzkar millətçilik və ksenofobiya ideologiyaları ərazi iddialarını təhrik edə və dövlətlərarası gərginliyi artıra bilər. Terrorçu qrupların, özəl hərbi şirkətlərin və digər qeyri-dövlət subyektlərinin fəaliyyəti də sabitliyə təhdid yaradır və münaqişələrin kəskinləşməsinə səbəb ola bilir. Dezinformasiya və kiberhücumlar dövlətçiliyi sarsıtmaq və ölkələrdə daxili vəziyyəti pozmaq üçün alət kimi istifadə edilir.

Qeyd olunan təhdidləri aradan qaldırmaq üçün perspektivdə bəzi ciddi addımları dövlətlər atmalıdır. Bunardan, beynəlxalq hüquq və təsisatların gücləndirilməsi. Beynəlxalq hüquqda təsbit olunmuş ərazi bütövlüyü və suverenlik prinsiplərinə hörmətin sabitliyini təmin etməkdir.

Çoxtərəfli dialoqların inkişafını yüksək səviyyəyə çatdırılması və təmin edilməsi. Hibrid təhdidlərə effektiv mübarizənin təmin olunması. Habelə, iqtisadi inkişaf və sosial inteqrasiyanı gücləndirmək. Ölkələr daxilində sosial və iqtisadi bərabərsizliyin azaldılması və inklüzivliyin təmin edilməsi separatizm və daxili münaqişə risklərini azalda bilər.

Və ən əsası: diplomatik həllin daha da aktiv istifadəsi. Vasitəçilik və arbitraj da daxil olmaqla, ərazi mübahisələrinin diplomatik və dinc yollarla həllinə üstünlük vermək sülhün qorunmasının ən perspektivli yoludur.

NƏTİCƏ

XXI əsr bəşəriyyət üçün yeni sınaqlarla vurğulandı. Bunlar da əsasən torpaqların üzərində mübarizənin növbəti mərhələsi kimi gündəmə gəldi. Halbuki, dövlətlər arasında mövcud olan toqquşmalar müxtəlif səbəblərdən göstərilir (etnik, enerji), bizim fikrimizcə, nəticə etibarı ilə müasir münaqişələrin əsas səbəbi əlverişli torpaqlara yiyələnməkdir (hətta müharibə və hərbi əməliyyatlar vasitəsilə). Buna sübut kimi bir neçə hadisələri nəzərdən keçirmək vacibdir.

Beynəlxalq arenada ərazilər üzərində mübarizənin növbəti mərhələsi 1991-ci ildə SSRİ-nin dağılması ilə başladı. Yetmiş ilə yaxın güclü dövlətin dağılması beynəlxalq münasibətlərdə mövcud olan təhküləsizlik sisteminin çökməsinə də təsir göstərdi. Zamanında işləyən beynəlxalq mexanizmin iflici siyasi tarazlığı pozdu. Nəticəsi isə - yeni subyektlərin meydana gəlməsi və onlara siyasi və iqtisadi təsiri yaymaq üzərində saysız münaqişələrin başlanması oldu.

Sovet İttifaqının dağılması dünya siyasi xəritəsində gənc müstəqil dövlətlərin yaranması ilə nəticələndi. Socialist cəmiyyətinin süqutu sovet ərazisindən əlavə Şərqi və Qərbi Avropada ərazi dəyişiklikləri qeydə aldı. SSRİ-nin məkanında yeni on beş respublika öz müstəqilliyini bərpa etdi, Almaniya dövlətləri birləşdi, Yuqoslaviya dağıldı, Çexoslovakiya yenidən iki ölkə oldu. Göstərilən proseslər sülh yolu ilə olmadı. Bu dəyişiklikləri böyük dövlətlər birmənalı qəbul etmədi və uzun illər davam edən siyasi münaqişələrə start verildi. Və tarixən olduğu kimi, bu mərhələdə də zəif olan ölkələrin torpağları gündəmə gəldi.

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AZƏRBAYCANIN LOGİSTİKA SİSTEMİNİN RƏQƏMSALLAŞDIRILMASI İMKANLARININ TƏHLİLİ

Yusif Əziz oğlu Ələkbərli:

Doktorant, Bakı Dövlət Universiteti:

ORCİD: 0009-0008-8332-0806

E-mail: yusif_elekberli.2002@mail.ru

Xülasə

Tədqiqatın əsas məqsədi Azərbaycanda logistika xidmətlərinin rəqəmsallaşdırılması sahəsində mövcud problemlərin müəyyənləşdirilməsi və alternativ həllərin hazırlanmasıdır. Bu məqsədlə logistika xidmətlərinin mövcud vəziyyəti və rəqəmsallaşma gözləntiləri Azərbaycanın logistika bazarında fəaliyyət göstərən şirkətlərin nümunəsi ilə araşdırılıb. Məlum olduğu kimi, şirkətlərin innovasiya və rəqəmsallaşma üçün ayırdığı xərclər inzibati xərclər qrupuna daxil edilir. Şirkətlərin rəqəmsallaşmaya keçid üçün ayırdıqları inzibati xərclərin onların satışlarına necə təsir etdiyini təhlil etmək üçün biz bu təsiri Azərbaycan logistika bazarında çox məşhur olan "Kristal 2008" MMC və "Foursea Logistics" MMC işlərində araşdırdıq. Bu məqsədlə ilk növbədə bir-birimizə təsir edən göstəriciləri müəyyənləşdirərək münasibətləri modelləşdirməyə çalışdıq. Sözügedən modelin qurulması üçün ilk növbədə asılı və müstəqil dəyişənlər müəyyən edilməli və məlumatlar yaradılmalıdır. Tədqiqatın mahiyyətinə uyğun olaraq, rəqəmsallaşma xərcləri də daxil olmaqla inzibati xərclər müstəqil dəyişən kimi qəbul edildi və logistika şirkətinin satışları asılı dəyişən kimi qəbul edildi. Göstərilən dəyişənlər arasındakı əlaqənin formasını təyin etmək üçün bir reqressiya modelindən istifadə edildi və əlaqənin intensivliyini ölçmək üçün korrelyasiya modelindən istifadə edildi. Bu modellər Excell 2019 proqramı ilə hazırlanmışdır. Rəqəmsal transformasiya bütün sahələrdə olduğu kimi, logistika sənayesində də ən aktual məsələlərdən biridir. Robotlar və süni intellektlə hazırlanmış proqram təminatı və nəqliyyatda dronlardan istifadə kimi yeni logistika sahələrinin ortaya çıxması şirkətləri yeni proqram təminatından istifadə etməyə sövq edir. Bundan əlavə, fiziki obyektlərin bir-biri ilə əlaqəli olduğu IoT tətbiqləri, bulud texnologiyası və s., şirkətlərin özlərini tamamilə rəqəmsal bir mühitdə işləmək üçün dizayn etmələri deməkdir. Bu vəziyyət ənənəvi olaraq təklif olunan logistika xidmətlərinin rəqəmsallaşdırılmasına da gətirib çıxarır. Qlobal valyuta dalğalanmalarından təsirlənməyən blokçeyn kimi tətbiqetmələr daha çox cəlbedici olur və şirkətləri rəqəmsal düşünməyə məcbur edir. Bu, şirkətlərə qlɔbal rəqabət mühitində daha müasir avtomatlaşdırma sistemləri ilə tanış olmağa imkan verir. Logistika şirkətləri texnologiyaya uyğunlaşdıqca, yeniliklərə davam etdikcə və sürətli dəyişikliklərə imkan verdikcə, sənayedə transformasiyaya rəhbərlik edə bilərlər.

.**Açar sözlər:** Logistika, rəqəmsallaşma, reqressiya, mənfəət və zərər.

Summary

The main objective of the research is to identify existing problems in the field of digitalization of logistics services in Azerbaijan and to explore alternative solutions. For this purpose, the current state of logistics services and the prospects for digitalization were examined on the example of companies operating in the Azerbaijani logistics market. As is known, the expenses allocated by companies for innovation and digitalization are included in the administrative expense group. In order to analyze how the administrative expenses allocated by companies for the transition to digitalization affect their sales, we examined this effect on the examples of “Kristal 2008” LLC and “Foursea Logistics” LLC, which are quite well-known in the Azerbaijani logistics market. For this purpose, we first tried to model the relationships by identifying the indicators that affect each other based on regression analysis. To build the mentioned model, first the independent and dependent variables should be identified and the data

should be formed. In accordance with the essence of the research work, the administrative costs, which include digitalization costs, were taken as the independent variable, and the sales of the logistics company were taken as the dependent variable. A regression model was used to determine the form of the relationship between the mentioned variables, and a correlation model was used to measure the density of the relationship. The mentioned models were built using Excell 2019 software. Digital transformation is one of the most urgent issues in the logistics sector, as in all sectors. The emergence of new logistics areas such as robots and software developed with artificial intelligence and the use of drones in transportation are pushing companies to use new software. In addition, IoT applications, where physical objects are interconnected, cloud technology and the like mean that the company designs itself to operate in a completely digital environment. This situation also leads to the digitalization of logistics services that are conventionally provided. Applications such as blockchain, which are not affected by global currency fluctuations, are attracting more attention and forcing companies to think digitally, which allows companies to get acquainted with more modern automation systems in a globally competitive environment. As logistics companies adapt to technology, they can lead the transformation by continuing to innovate in the industry and ensuring rapid change.

Keywords: Logistics, digitalization, regression, profit and loss.

Резюме

Основная цель исследования – выявление существующих проблем в сфере цифровизации логистических услуг в Азербайджане и поиск альтернативных решений. Для этого было изучено текущее состояние логистических услуг и перспективы цифровизации на примере компаний, работающих на азербайджанском рынке логистики. Как известно, расходы компаний на инновации и цифровизацию входят в группу административных расходов. Чтобы проанализировать, как административные расходы, выделяемые компаниями на переход к цифровизации, влияют на их продажи, мы рассмотрели это влияние на примерах ООО «Kristal 2008» и ООО «Foursea Logistics», достаточно известных на азербайджанском рынке логистики. Для этого мы сначала попытались смоделировать взаимосвязи, выявив взаимовлияющие показатели на основе регрессионного анализа. Для построения указанной модели необходимо определить независимые и зависимые переменные, а также сформировать данные. В соответствии с сутью исследования, в качестве независимой переменной были приняты административные расходы, включающие в себя расходы на цифровизацию, а в качестве зависимой – объём продаж логистической компании. Для определения формы связи между указанными переменными использовалась регрессионная модель, а для измерения плотности связи – корреляционная модель. Модели были построены с использованием программного обеспечения Excell 2019. Цифровая трансформация – одна из наиболее актуальных проблем в сфере логистики, как и во всех отраслях. Появление новых направлений в логистике, таких как робототехника и программное обеспечение, разработанное с использованием искусственного интеллекта, а также использование дронов в транспортировке, подталкивает компании к использованию нового программного обеспечения. Кроме того, приложения Интернета вещей, где физические объекты взаимосвязаны, облачные технологии и т.п. позволяют компаниям разрабатывать решения, обеспечивающие управление в полностью цифровой среде. Это также приводит к цифровизации традиционных логистических услуг. Такие приложения, как блокчейн, не подверженные влиянию колебаний мировых валют, привлекают всё больше внимания и побуждают компании мыслить цифровыми методами, что позволяет им осваивать более современные системы автоматизации в условиях глобальной конкуренции. По мере того, как логистические компании адаптируются к технологиям, они могут стать лидерами трансформации, продолжая внедрять инновации в отрасли и обеспечивая быстрые изменения.

Ключевые слова: логистика, цифровизация, регрессия, прибыль и убыток.

GİRİŞ

Logistika sənayesi real vaxt məlumatları əsasında işləyən dinamik bir sektordur. Buna görə də, iş prosesini optimallaşdırmağın yolu texnoloji rahatlıqlardan istifadə etməyə başlamaqdır. Logistikada rəqəmsallaşma, bir növ, süni intellektin birbaşa istifadəsi ilə həyata keçirilir. Logistika sektorunda rəqəmsallaşma məhsulun son istehlakçıya daşınmasında aralıq hissələrin sadələşdirilməsi, məsafələrin qısaldılması, tam və effektiv daşınmanın təmin edilməsi kimi təfərrüatlı şəkildə verilə bilər. Xidmət sektorunun bir qolu olan logistikada rəqəmsallaşma müştəri məmnuniyyətinin mərhələlərindən biri kimi qiymətləndirilə bilər (Androit Market Research, 2018).

Bütün bu avtomatlaşdırma sistemlərinə kompüterlər, smartfonlar və planşetlər kimi ağıllı cihazların daxil olması da aiddir. Bu səbəbdən, logistika şirkətləri təkcə bir platforma vasitəsilə rəqəmsallaşmanı nəzərdən keçirməklə deyil, həm də rəqəmsallaşma prosesinin bütün sahələrini və mərhələlərini qiymətləndirərək müştərilərinə limitsiz xidmət göstərmək inamını verməlidirlər. Logistika şirkətləri robot tətbiqləri ilə xərclərini minimuma endirməklə işçi qüvvəsini daha məhsuldar sahələrə köçürə bilər. Bundan əlavə, logistikada rəqəmsallaşma əşyaların internetini, təchizat zəncirini və keyfiyyətə nəzarət proseslərini effektiv tətbiqlərə bağlayır (DHL and Euromonitor, 2018).

Rəqəmsallaşma, CRM abbreviaturası ilə tanınan "Müştəri Münasibətlərinin İdarə Edilməsi" tətbiqi və digər onlayn tətbiqlər ilə logistika sektorunun ən böyük köməkçiləri arasındadır. Daha konkret misal desək, rəqəmsallaşmanın köməkçi təsirləri arasında yolda olan ağır nəqliyyat vasitəsi sürücüsünün öncədən görə bilməyəcəyi potensial qəzalar və ya yol işləri haqqında məlumatın ötürülməsi də var. Müştəri aldığı məhsulun yükünü e-ticarət vasitəsilə izləyə bilər. Rəqəmsallaşma, müştərinin təkcə xidmət zamanı deyil, həm də xidmətdən sonra öz təcrübəsini paylaşa biləcəyi sosial media kanalları ilə birbaşa əlaqə quraraq müştəri məmnuniyyətini və loyallığını optimallaşdırmaq üçün dizayn edilə bilər (Pfohl, H. C., Yahsi, B., & Kurnaz, T., 2015).

Avtomatlaşdırma sistemləri maşınlarda əməliyyat səmərəliliyini artırmaq, paketlərin etiketlənməsini təkmilləşdirmək və anbar təsnifatını təmin etmək üçün verilənlərə əsaslanan proqram təminatından istifadə edir. Robotik kodlaşdırma logistika sənayesindəki tətbiqləri daha səmərəli və daha sürətli edir, çünki o, eyni vaxtda bir neçə işi yerinə yetirmək üçün nəzərdə tutulub. Böyük alış-veriş saytlarının anbarlarında çalışan robotlar, insan gücü ilə edilə bilməyən bir çox işi avtonom proqramla yerinə yetirə bilir. Üstəlik, robotlar insan əmrlərindən asılı olmayaraq hərəkət edərək bütün tapşırıqları yerinə yetirməyə qadirdir. Eyni şəkildə, texnologiyalar anbar sifarişlərinin seçilməsi proseslərini dəstəkləyərək insan səhvləri riskini minimuma endirir. Bu, müştəri, işəgötürən və işçi məmnuniyyətini artıran bir xidmətdir. Drone tətbiqləri logistika sənayesi üçün bir çox perspektivli xüsusiyyətlərə malikdir. Sıx məskunlaşma olan şəhərlərdə logistika əməliyyatlarının müəyyən vaxtlarda tamamlanmasında mühüm rol oynayan dronlar, logistik xidmətlərində də müştəri məmnuniyyətini maksimum dərəcədə artırır.

Son istehlakçı üçün vacib olan məqam aldığı məhsulun ona qısa zamanda çatıb-çatmayacağıdır. Ümumiyyətlə, hər bir müştəri prioritet olmaq istəyir və öz məhsuluna mümkün qədər tez çatmaq istəyir. Logistika şirkətləri tərəfindən müəyyən edilən daşınma tarixləri bəzən satın alma prosesində həm müştəriyə, həm də iş sahibinə mənfi təsir göstərə bilər. Buna görə də, logistika şirkətləri üçün müştərilərinə ən optimallaşdırılmış xidməti vəd etmələri böyük əhəmiyyət kəsb edir. Yalnız logistikadakı gecikmə onlayn alışa təsir edərsə, bu həm e-ticarət şirkəti, həm də logistika şirkəti üçün mənfi nəticələrə səbəb ola bilər. Buna görə də istifadə olunan hər bir rəqəmsal prosesin idarə edilməsi və avtomatlaşdırılması müştəriyə fayda verəcəkdir (Strategy and Consulting, 2018).

Bazar iqtisadiyyatı şəraitində Azərbaycanda da logistika şirkətlərinin öz xidmətlərinin rəqəmsallaşdırılması yolunda administrativ islahatlar aparması və elmi texniki tərəqqinin gətirdiyi fürsətlərdən istifadə etməsi kifayət qədər aktual məsələdir.

Azərbaycanda nəqliyyat və logistika bazarının mövcud vəziyyətinin təhlili.

Reqressiya modelinin sadə xətti növündən istifadə edərək modelin tənliyini yazaq. Sadə xətti reqressiya üçün formula belədir:

$$y = \beta_0 + \beta_1 x + \varepsilon$$

• y müstəqil dəyişənin (x) hər hansı verilmiş dəyəri üçün asılı dəyişənin (y) proqnozlaşdırılan qiymətidir.

• B_0 kəsişmədir, x = 0 olduqda y-nin proqnozlaşdırılan qiymətidir.

• B_1 reqressiya əmsalıdır – x artdıqca y-nin nə qədər dəyişəcəyini göstərir.

• x müstəqil dəyişəndir.

• e - təxminin xətası və ya reqressiya əmsalı ilə bağlı qiymətləndirməmizdə nə qədər dəyişkənlik olduğunu göstərir.

Fərz edək ki, baxdığımız nümunədə administrativ xərclər sərbəst dəyişən, logistika şirkətinin satışları isə asılı dəyişəndir. Tutaq ki, "Kristal 2008" MMC-də 2020 və 2021-ci illər ərzində **administrativ xərclər** ilə **logistika şirkətinin mənfəətliliyi** arasındakı əlaqənin formasını müəyyən edirik. Bu halda administrativ xərclər x, logistika şirkətinin mənfəətliliyi isə y olacaqdır.

"Kristal 2008" MMC-nin mənfəət və zərər hesabatından şirkətin administrativ xərclərinə və satış göstəricilərinə baxaq:

Cədvəl 1. Kristal 2008 MMC-nin mənfəət və zərər hesabatı

Kristal 2008 MMC		
Mənfəət və Zərər hesabatı/Profit and Loss Statement		
	Müddətə	
	2020	**2021**
Satış/Revenue	**5,292,828**	**5,170,609**
Maya dəyəri/CGS	4,234,334	3,882,330
Digər xərclər/Other costs	85,307	0
Nəqliyyat xərcləri/Transport expenses	2,796,256	3,096,411
Ezamiyyə xərcləri/Business trip cost	1,352,771	785,919
Ümumi gəlir/Gross profit	**1,058,494**	**1,288,279**
Əmək haqqı / Salary	464,249	459,916
İcarə / Rent	42,000	35,000
Administrativ xərclər/ Administration expenses	**8,271**	**7,600**
Satış və marketinq xərcləri/Sales and marketing exp	0	0
Bank komissiyaları/Bank fees	21,188	20,292

Digər əməliyyat xərcləri/Other operating expenses	74,704	140,827
Cəmi əməliyyat xərcləri/OPEX	610,412	663,635
Amortizasiya, faiz və vergi ödənişlərindən qabaq olan gəlir/ EBİTDA	**448,082**	**624,644**
Amortizasiya/Depreciation	36,337	#REF!
Qeyri əməliyyat gəliri və ya xərci/Non operating P-L	0	0
Faiz və vergi ödənişlərindən qabaq olan gəlir/ EBİT	**411,745**	**#REF!**
Faiz xərcləri/İnterest expenses	55,480	86,575
Vergi ödənişlərindən qabaq olan gəlir/ EBT	**356,265**	**#REF!**
Mənfəət vergisi/ Tax expenses	52,489	#REF!
Xalis mənfəət/Net profit	**303,776**	**#REF!**
Bölüşdürülmüş mənfəət / Dividend	0	0
Bölüşdürülməmiş mənfəət/Retained earnings	**303,776**	**#REF!**

Mənbə: Kristal 2008 MMC-nin mühasibatlıq şöbəsindən əldə edilmişdir.

Verilənləri aşağıdakı cədvəldəki kimi qəbul edək və excell 2019 proqram təminatına əlavə edək.

Cədvəl 2. Verilənlər bazası

İllər	**2020**	**2021**
administrativ xərclər (x), AZN ilə	8271	7600
şirkətin satışları (y), AZN ilə	5292828	5170609

Mənbə: Müəllif tərəfindən Cədvəl 1 məlumatları əsasında tərtib edilmişdir.

Excell 2019 proqram təminatında əsas menyudan Data – Data Analysis seçimlərini edək, açılan pəncərədə regression bölməsininin məlumatlarını daxil edək.

Modeldəki göstəricilərlə tanış olaraq alınan nəticələri izah etməyə çalışaq:

Multiple R. İki dəyişən arasındakı xətti əlaqənin gücünü ölçən Korrelyasiya əmsalıdır. Korrelyasiya əmsalı -1 ilə 1 arasında istənilən qiymət ola bilər və onun mütləq dəyəri əlaqənin gücünü göstərir. Mütləq dəyər nə qədər böyükdürsə, əlaqə bir o qədər güclüdür:

1 güclü müsbət münasibət deməkdir

-1 güclü mənfi münasibət deməkdir

0 ümumiyyətlə əlaqənin olmaması deməkdir

Baxdığımız nümunədə Multiple R-in dəyəri 1-ə bərabərdir. Bu o deməkdir ki, "Kristal 2008" MMC nümunəsində araşdırılan illər ərzində administrativ xərclər ilə, şirkətin satışları arasında əlaqə çox güclüdür.

R Square. Uyğunluğun yaxşılığının göstəricisi kimi istifadə olunan Təyinetmə əmsalıdır. Bu, reqressiya xəttində neçə nöqtənin düşdüyünü göstərir. R^2 dəyəri kvadratların ümumi cəmindən hesablanır.

Bizim nümunəmizdə R^2 dəyəri 1-ə bərabərdir. Bu o deməkdir ki, dəyərlərimizin 100 %-i reqressiya analizi modelinə uyğun gəlir. Başqa sözlə, asılı dəyişənlərin (y-qiymətləri) 100 %-i müstəqil dəyişənlər (x-qiymətləri) ilə izah olunur.

Adjusted R Square. Modeldəki müstəqil dəyişənlərin sayına uyğunlaşdırılmış R kvadratıdır.

Standart xəta. Bu, reqressiya analizinizin dəqiqliyini göstərən başqa bir uyğunluq ölçüsüdür - rəqəm nə qədər kiçik olsa, reqressiya tənliyiniz haqqında bir o qədər əmin ola bilərsiniz. R^2 model tərəfindən izah edilən asılı dəyişənlərin dispersiyasının faizini təmsil etdiyi halda, Standart Xəta məlumat nöqtələrinin reqressiya xəttindən düşdüyü orta məsafəni göstərən mütləq ölçüdür.

df dispersiya mənbələri ilə əlaqəli sərbəstlik dərəcələrinin sayıdır.

SS kvadratların cəmidir. Total SS ilə müqayisədə Qalıq SS nə qədər kiçik olsa, modeliniz məlumatlara bir o qədər yaxşı uyğun gəlir.

MS orta kvadratdır.

F F statistikası və ya sıfır fərziyyə üçün F-testidir. Modelin ümumi əhəmiyyətini yoxlamaq üçün istifadə olunur.

Əhəmiyyətlilik F F-nin P-qiymətidir.

ANOVA hissəsi Excel-də sadə xətti reqressiya təhlili üçün nadir hallarda istifadə olunur, lakin siz mütləq sonuncu komponentə yaxından nəzər salmalısınız. Əhəmiyyətlilik F dəyəri nəticələrinizin nə qədər etibarlı (statistik cəhətdən əhəmiyyətli) olduğuna dair fikir yaradır. Əhəmiyyətlilik F 0,05-dən (5%) azdırsa, modeliniz qaydasındadır. Əgər 0,05-dən böyükdürsə, yəqin ki, başqa bir müstəqil dəyişən seçmək daha yaxşıdır.

Hər bir şirkətin rəqəmsal logistikanın tətbiqində əsas rol oynaya biləcək ən perspektivli istiqamətlərdən biri olaraq aşağıdakıları qeyd edə bilərik ki, bunlar rəqəmsal logistikanın iqtisadi yararlarını yaradır:

• Məhsulların mövqeyinin nəzarət olunması, təchizat zincirləri boyunca məhsulların görünürlüyü və nəticədə hərəkətin tam şəffaf olması;

• Yanacaq qazının oğurlanmasının, nəqliyyatın məqsədəuyğun olmayan istifadəsinin qarşısının alınması və hadisələrin araşdırılması üçün məlumatların əlverişli olması;

• Avtomatik dispetcherləşmə və ERP sistemləri ilə inteqrasiya;

• Logistika anbarlarının, mal satış zalının və ya konteynerlərin anında inventarlaşdırılması;

• Robotlar və avtonom yükleyicilərlə təchiz edilmiş tam avtomatik anbar sistemləri;

• Logistika vəziyyətinin dəyişməsinə tez reaksiya göstərmə;

• Sürücü köməkçiləri və yol avtopilotları, perspektivdə isə nəqliyyatın tam avtonom olması (Armengaud, E.,2017).

Rəqəmsal logistika, müxtəlif təşkilatlar arasındakı effektiv modelləşdirmə əsasında optimal logistika şemalarını formalaşdırmaq üçün məlumat axtarışı ilə əlaqəli olan vaxt, əmək və maliyyə

itkilərini azaldır. Nəqliyyat təşkilatının rəqəmsal logistikasının inkişafı, nəqliyyat prosesini optimal hala gətirərək planlamasını və təminatını şiddətlə azaltmağa imkan verir (Brennen, J.S. & Kreiss, D., 2016).

Nəticə

Logistika sistemlərinin iqtisadi effektivliyi onun daxilində tətbiq edilən rəqəmsal texnologiyalarla böyük əlaqəlidir. Bu texnologiyalar yeni logistika həllərini həyata keçirmək və texnologiya prosesini optimal etmək imkanı verir, əvvəlcədən əlverişsiz prosedurların həyata keçirilməsi nəticəsində əmək fəaliyyətinin iqtisadi göstəricilərini yaxşılaşdırır. Beləliklə, rəqəmsal texnologiyalar daxili və beynəlxalq daşıma təşkilatı zamanı əlavə gəlir mənbəyi olaraq xidmət edir. İnformasiya texnologiyaları vasitələri informasiyanın istifadəsi və paylaşılmasında mühüm əhəmiyyət kəsb edir və bunun nəticəsi olaraq verilənlər bazası texnologiyaları sistemi çox geniş bir sahəni özündə birləşdirməyə başlamışdır. Lakin iqtisadiyyatda yeni-yeni platformaların yaranması, onların müxtəlif sahələr üzrə tətbiqi məsələlərinin xüsusiyyətləri dəyişgən olmaqla bərabər, həm də mürəkkəbləşməyə doğru istiqamət almağa başlamışdır.

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SPATIAL SOCIOECONOMIC DEVELOPMENT IN TÜRKİYE: CONVERGENCE ANALYSIS FOR THE PERIOD 1985–2025

Ümit ACAR

Asst. Prof., Ankara Yıldırım Beyazıt University
E-mail: umitacar@aybu.edu.tr
ORCID ID: 0000-0002-2693-3509

Abstract

This study comparatively examines the socioeconomic development levels of provinces and regions in Türkiye for the period 1985-2025. Provincial-level scores obtained from seven separate Socioeconomic Development Index (SEDI) surveys were rearranged within the framework of NUTS at the scales of 12 Level-1 regions, 26 Level-2 regions, 67 provinces (harmonized series for the 1985-2025 comparison), and 81 provinces (2003-2025 period) and made comparable through z-score standardization. The temporal transformation of the spatial structure was examined using the Gatev index, difference-based σ-convergence based on Gatev contributions, and absolute β-convergence estimated with the panel fixed effects model. Descriptive findings show that the level of development is clearly decoupled along the west-east axis throughout the country and that this decoupling has persisted over the past forty years. While the relative rise of some units such as Antalya, Muğla, Tunceli, Çanakkale, and Düzce is remarkable, Significant declines were observed in Hatay, İzmir, Adana, and Şanlıurfa. According to the empirical analysis results, although beta convergence findings indicate partial convergence for underdeveloped regions in Türkiye, sigma convergence and Gatev index findings reveal that structural differences persist among regions. Thus, the study suggests that development policies should be redesigned in a more spatially sensitive manner.

Keywords: Regional Development, SEDI, Socioeconomic Development, Convergence

INTRODUCTION

The word "socioeconomic" is an adjective meaning something like "relating to differences among groups of people based on their social class and financial situation" (Cambridge, 2025). First measured primarily in terms of economic growth and per capita income, development came to be equated with human dimensions, including social welfare, poverty reduction, education, health status, and equality since the 1970s. In the 1990s, sustainable development and human development approaches focused more on environmental and social sustainability. Today, development is being redefined along the axes of sustainability, inclusiveness, human rights, and multidimensionality (Arndt, 2015; Nunn, 2020; Rist, 2019; Tomislav, 2018).

Socioeconomic development is a concept that encompasses structural change and human advancement, in addition to per capita income growth, a central aspect of economic development. What is meant here is an understanding of development that encompasses all (countries and) regions, focusing on economic growth and taking into account changes in social institutions. Regional development is a planned process that aims to reduce disparities in economic, social, and infrastructure development across different regions within a country (OECD, 2009).

The concept of regional development first emerged in Türkiye in the 1960s with the planned development era. Internal migration, the most significant consequence of regional development disparities, has led to economic, social, and spatial problems for both the regions sending and receiving migrants since the 1950s. While the employment and service opportunities offered by large developed cities, in particular, made these areas attractive centers, over time, these cities also experienced serious urban problems, including inadequate infrastructure, environmental pollution, housing problems, and disruptions to social services. At the same time, underdeveloped regions are exposed to an outflow of young and productive populations and capital, leading to insufficient local demand and economic

stagnation. This cycle has reinforced the vicious cycle of underdevelopment (SPO, 1998). Addressing regional development inequalities through policies that address this vicious cycle in development plans has always been a policy priority.

The primary objective of this study is to analyze the long-term spatial and temporal dynamics of regional socioeconomic development inequalities in Türkiye over the period 1985-2025. For this purpose, scores from seven different SEDI surveys were used. Using these scores, β-convergence, σ-convergence, and difference-based measures of structural change were employed to assess the dynamics of regional development inequalities over time. In this context, the study aims both to contribute to the evaluation of the effectiveness of regional development policies in Türkiye and to fill an empirical gap in the literature on long-term comparative regional analyses.

Following the introduction, the study first examines the existing literature. In the second part, the data set description, the scope of the variables, and the applied methodology are presented. The third section presents the findings of descriptive analyses conducted at the 12 and 26 region levels and 67 and 81 province levels, based on SEDI data, using tables and maps. The fourth section presents the results of the empirical analyses conducted in the study. The final section provides general assessments based on the findings and offers recommendations for the future of regional development policies.

LITERATURE REVIEW

In the neoclassical growth model presented by Solow (1956), per capita growth rates tend to converge inversely with the initial level of per capita production. Specifically, assuming countries are similar in terms of preferences and technology, poor countries will tend to grow faster than rich countries, as a result of the law of diminishing returns. Therefore, in the long run, less developed countries will close the gap with their lower-growth developed countries through higher growth rates.

Whether this convergence predicted by Solow (1956) has materialized across countries and regions has been the subject of much research. Numerous studies have investigated whether convergence exists between regions or provinces in Türkiye. For example, Filiztekin (2018) examined income convergence among provinces in Türkiye for the period 1975-1995 using both cross-sectional and panel data. The study's findings imply conditional convergence in Türkiye, rather than unconditional convergence in developed nations. It also finds that the long-run equilibrium levels obtained by the panel fixed-effects model are quite diverse across provinces, and that about 80 percent of these differences can be explained by initial income. The article also analyses sectoral convergence dynamics in more detail, noting a lack of convergence in agriculture and services, and high-speed convergence in the remaining sectors.

Gezici and Hewings (2004) conducted a convergence analysis of the GDP variable across 67 provinces and 16 regions from 1980 to 1997, testing for σ- and β−convergence. Nonetheless, we found no sign of absolute or conditional convergence patterns at the provincial or regional scale. Moran's I tests showed significant spatial clustering in per capita income, with the west mainly clustered in high development and the east in low development. The results also show that the “Priority Regions for Development” policy, launched in 1968, had an ineffective impact on the provinces considered since they were in the low-development cluster at both ends of the studied period.

Karaman and Dogruel (2011) examined the regional convergence process in Türkiye using a panel data approach and accounted for the impacts of universities and airports on regional development. The paper empirically examines the regression periods 1990-2000 and 2004-2008 and shows that university spending and airport investments contribute to income in low-income regions. Air accessibility promotes regional convergence in low-income regions but has no significant impact in developed regions. Consequently, the study suggests that local growth dynamics in less developed regions are dominated by demand-generating public investments.

Zeren and Yilanci (2011) focused on regional income convergence in Türkiye and tested for absolute and conditional convergence using a random-coefficient panel-data model for NUTS-2 regions over the period 1991-2000. In contrast to conventional fixed-coefficient models, the research tests for regional economic diversity with differences in spatial (uneven) convergence rates, whereas a region-specific relationship is assumed to be internal to all regions. A notable finding of the study is strong convergence across the regions for both absolute (17) and conditional (25) convergence. The deposit-to-GDP ratio was also found to have a positive effect on growth.

To address the lack of comparable long-term regional income data in Türkiye, Karaca (2018) created a new regional income dataset covering the period 1960-2010. Provincial and regional national income series compiled from nine sources were harmonized methodologically. Then β-convergence and σ-convergence analyses were conducted for 26 regions over fifty years. The findings, consistent with many studies in the literature, show that long-term absolute interregional convergence did not occur in Türkiye; on the contrary, regional disparities increased between 1960 and 1990.

This study differs from existing literature in many ways. Firstly, the convergence analysis in this study was conducted using SEDI scores rather than using per capita income. Thus, regions and provinces were compared not only in terms of income but also across many factors, including population, employment, health, education, industry, and quality of life. In other words, the convergence analysis was conducted in terms of development, a much more comprehensive concept than per capita income for regions or provinces. This study also distinguishes itself by its diversity of levels and methods. Convergence analysis was conducted using four methods (Gatev index, contribution rates, σ-convergence, and β-convergence) across four levels (12 and 26 regions, and 67 and 81 provinces). Furthermore, this study differs from similar studies by covering 40 years, from 1985 to 2025.

DATA SET AND METHODOLOGY

Data Set

The SEDI survey, conducted by the Ministry of Industry and Technology, is the most comprehensive source revealing socioeconomic development disparities at the provincial level in Türkiye. The SEDI survey was first conducted in 1969 by the State Planning Organization (DPT) using 22 indicators covering the years 1963-1967 (Tolan et al., 1969). The indicators used in the 1980, 1985, 1991, 1996, and 2003 SEDI surveys were categorized as population, employment, health, education, industry, agriculture, construction, finance, infrastructure, capital accumulation, and other welfare (see Table A.1). In the 2011, 2017, and 2025 surveys, they were categorized as population, employment, health, education, competitive and innovative capacity, finance, accessibility, and quality of life (Acar et al., 2019; Doğan et al., 2025; DPT, 1985, 1991, 1998, 2003; Gömleksiz et al., 2017; Kalkınma Bakanlığı, 2013).

The dataset for this study consists of SEDI scores from seven SEDI surveys spanning 1985-2025. This choice was influenced by Türkiye's adoption of an export-based industrialization model rather than an import-substitution model after 1980. The indicators used in SEDI surveys were chosen within this framework, along with this transformation, and the research began to be conducted institutionally with the 1985 SEDI survey.

Methodology

Türkiye is statistically divided into three levels. The first of these levels covers 12 regions, the second 26 regions, and the third 81 provinces. Seven SEDI surveys conducted between 1985 and 2025 were conducted at the provincial level. These surveys are not comparable for two reasons. First, while SEDI surveys were conducted at the provincial level, regional scores were not regularly shared. It hinders the comparison of Level 1 and Level 2 regions. Second, the number of provinces in Türkiye, which was 67 in the 1990s, increased to 81, including the addition of new provinces to the districts. For this reason,

the 1985 SEDI survey was conducted in 67 provinces, the 1991 survey in 73, the 1996 survey in 76, and the surveys after 2003 in 81 provinces. It makes comparisons at the provincial level difficult.

To overcome the two problems mentioned in this study, regional SEDI scores were calculated by weighting each province's SEDI score by its population in the Level 1 and Level 2 regions. Because the indicators used in the SEDI surveys were from before the year the survey was prepared, this was taken into account when weighting them by provincial populations. For example, because indicators from 2014 were used in the 2017 SEDI survey, regional SEDI values were calculated using the provinces' 2014 populations (see Table A.1)

Secondly, to compare the 1985 SEDI scores of provinces with those of subsequent years, the SEDI scores of districts that gained provincial status after 1989 were combined with the scores of the provinces to which they were previously affiliated, weighted by their populations. For example, according to the 2017 SEDI survey, Konya had a score of 0.67, and Karaman had 0.18. The 2014 population weights of these provinces were 0.90 and 0.10, respectively. Multiplying the SEDI scores by these weights yielded 0.60 and 0.02, respectively. When the multiplication results were added, the new SEDI value for Konya, including Karaman, was found to be 0.62.

The new SEDI scores obtained at the regional and 67 provincial levels were then standardized to z-scores. It enabled comparisons of socioeconomic development at three statistical levels over 40 years, from 1985 to 2025. The standardized, comparable changes in SEDI scores across regions were analyzed both descriptively and empirically. Three complementary approaches to measuring regional development disparities over time are prominent in the literature: distribution-based σ-convergence, growth-based β-convergence, and difference-based structural change.

σ-convergence based on the Gatev index indicates the tendency for spatial heterogeneity to narrow or widen over time, based on the distribution of contributions to change, in cases where the classical standard deviation approach cannot be used due to the z-score structure of SEDI. A decreasing σ value indicates that contributions are spread over a wider geographic area, whereas an increasing σ value indicates that contributions are concentrated in specific regions (Dowrick & Nguyen, 1989; Easterlin, 1960).

β-convergence, on the other hand, consistent with the standard approach in the growth literature, tests whether regions with initially lower levels of development tend to grow faster over time. While a negative and significant β coefficient indicates relative convergence, as frequently emphasized in the literature, β-convergence does not always lead to σ-convergence; structural shocks or new imbalances can widen the spatial distribution (Baumol, 1986; De Long, 1988).

Quah (1996) claims that the β and σ measures are complements, but together they do not summarize how the total cross-sectional distribution evolves over time. His “distribution dynamics” framework underscores that regions can develop into long-lasting clusters — so-called “convergence clubs” — that move at different speeds even when there is overall average convergence. In this regard, we note that the Gatev index employed in our study is a different type of indicator, measuring how much (in an inter-period comparison framework) spatial structure differs between two periods on both absolute and direction-neutral bases (Belova 2024; Karpov 2008).

First, this study used the Gatev index to measure spatial structural differentiation between two periods. The index is a difference-based measure that indicates the extent to which changes in SEDI scores are distributed evenly or unevenly (Gatev, 1979). The Gatev index coefficient was calculated using the following equation:

$$Gatev\ Index = \sqrt{\frac{\sum_{i=1}^{k}(SEDI_{i,t_1} - SEDI_{i,t_2})^2}{\sum_{i=1}^{k}(SEDI_{i,t_1}{}^2 + SEDI_{i,t_2}{}^2)}} \quad (1)$$

Since classical σ-convergence cannot be applied due to the z-score standardization of SEDI scores, a difference-based σ-convergence method based on the standard deviations of the Gatev index contribution distributions was preferred to measure regional variation. Provincial contributions to the Gatev index were calculated using the following equation:

$$Gatev\ Index\ Contribution\ Rate = \frac{(SEDI_{i,t_1} - SEDI_{i,t_2})^2}{\sum_{i=1}^{k}(SEDI_{i,t_1} - SEDI_{i,t_2})^2} \times 100 \quad (2)$$

The standard deviation of these contribution rates is defined as the σ coefficient. A high σ indicates that structural change is concentrated in a few units (unbalanced distribution), while a low σ indicates a more even distribution of contributions (widespread or homogeneous change) (Barro, 1994; Barro & Sala-i-Martin, 1992). Therefore, in this study, σ is interpreted not as the "distribution of development levels among provinces" but as the "distribution of contributions to spatial change."

Absolute β-convergence is an approach that tests whether regions with lower initial development have higher growth rates over time (Barro & Sala-i-Martin, 1990; Islam, 1995). The absolute β-convergence coefficient was estimated using a panel fixed-effects model. The model is illustrated as follows:

$$growth_{i,t} = \alpha + \beta SEDI_{i,t-1} + \varepsilon_i \quad (3)$$

The dependent variable of Equation 3, $growth_{i,t}$, is obtained by dividing the difference in SEDI scores for two consecutive years by the period length $(t-(t-1))$, $SEDI_{i,t} - SEDI_{i,t-1}$. $SEDI_{i,t-1}$ in the equation represents the SEDI score for province i in year $t-1$. α is the constant term, and ε_i represents the error term. The β coefficient obtained from the regression equation estimated with these variables represents the β-convergence coefficient. A negative, statistically significant β coefficient indicates that provinces with lower SEDI values exhibit higher growth rates, suggesting a tendency toward convergence among provinces.

DESCRIPTIVE FINDINGS

The descriptive spatial patterns of socioeconomy across different regional levels in Türkiye during 1985-2025 are presented in this section. Changes are summarized through SEDI scores, score differences, and shifts in regional rankings.

Türkiye is subdivided into 12 regions at the NUTS-1 level. Table A.2 highlights changes in SEDI scores, score gaps, and ranking changes for the top five and bottom five regions over the period 1985 to 2025. İstanbul and Western Anatolia were the two leading regions in terms of the oldest pattern, while Central Eastern Anatolia and Northeastern Anatolia achieved the lowest scores in all terms. The maximum and minimum changes in SEDI occurred in the Eastern Black Sea region and Southeastern Anatolia, respectively. Four regions moved up one rank, and another four fell by one rank.

There were two principal patterns based on the SEDI in 1985 and 2025 among the twelve regions. First, the SEDI increased by approximately 0.15 points in Central Anatolia, Western Black Sea, and Eastern Marmara. Second, the SEDI value of Southeastern Anatolia decreased by 0.23 points, bringing it to the same level as Central Eastern Anatolia and Northeastern Anatolia. The last set of trends suggests that sub-national disparities, especially the unremitting relative backwardness of the Eastern and Southeastern regions, are predominantly structural.

At the NUTS 2 level, they were İstanbul, Ankara, and İzmir, retaining their positions as the top 3, followed by Antalya, which came in at fourth place. The provinces of Antalya, Kocaeli, and Kayseri had the highest increases in SEDI scores, and İzmir, Hatay, and Şanlıurfa experienced the lowest decreases. İzmir's decline is particularly striking, as it has long been held in high regard. Regarding rank changes, Antalya increased by four ranks, while Hatay and Adana decreased by 9 and 6 places, respectively (Table A.3).

The spatial disparities in Level 2 areas were generally stable between 1985 and 2025. The Western Anatolia–Marmara–Aegean corridor retained its status as the most developed cluster in Türkiye, whereas the Eastern and Southeastern Anatolia regions remained underdeveloped.

At the provincial level (67 provinces), the top four provinces remained unchanged, while Antalya replaced Bursa as the new number five. The largest growth in SEDI was observed in Antalya, Muğla, and Tunceli; Hatay, İzmir, and Adana recorded the largest decrease. Çanakkale recorded the greatest improvements, and Hatay the sharpest declines in ranking (see Table A.4).

Both the western coastal areas and the interior regions of Central Anatolia were more developed than most Eastern and Southeastern Anatolian provinces, which showed stable low SEDI values. This trend had continued into 2025, with some provinces improving or declining significantly.

Table 1. SEDI Value Changes at the 81 Province Level

Rank	2003 SEDI score	2025 SEDI score	2003-2025 SEDI score difference	2003-2025 SEDI ranking difference
1	İstanbul	İstanbul	Antalya (0.80)	Düzce (+16)
2	Ankara	Ankara	Trabzon (0.61)	Trabzon (+14)
3	İzmir	İzmir	Muğla (0.54)	Erzincan (+12)
4	Kocaeli	Kocaeli	Düzce (0.44)	Konya (+12)
5	Bursa	Antalya	Konya (0.43)	Sakarya (+11)
77	Hakkari	Hakkari	Ankara (-0.48)	Kırklareli (-12)
78	Şırnak	Şırnak	Adana (-0.51)	Adana (-14)
79	Bitlis	Şanlıurfa	Ağrı (-0.54)	Kahramanmaraş (-15)
80	Ağrı	Muş	Şanlıurfa (-0.69)	Zonguldak (-16)
81	Muş	Ağrı	İzmir (-0.72)	Hatay (-21)

Source: Author's own calculations from SEDI reports.

Figure 1. Display of SEDI Values of 81 Provinces for the Years 1985 and 2025 on a Map

Source: Author's own calculations from SEDI reports.

SEDI has been released for all 81 provinces since 2003. Antalya was the province with the highest increase, and Düzce ranked fourth among the provinces with the largest increases during the 2003-2025 period, including 14 newly founded provinces. İzmir had the largest drop, while there were also significant drops in Ankara and Adana. The highest and lowest rank changes were observed in Düzce and Hatay (see Table 1).

Figure 1 maps SEDI values for 81 provinces. The west–east axis of development persists, though some provinces in Central Anatolia and the Black Sea region display substantial improvements. Compared to 2003, several metropolitan provinces and provinces in Southeastern Anatolia show declines. The maximum SEDI score dropped from 4.81 to 4.42, while the minimum score declined from -1.44 to -1.83 over the same period.

EMPIRICAL FINDINGS

This study examines the spatial structure of socioeconomic development in Türkiye over the period 1985-2025 at different regional scales (12 regions, 26 regions, 67 provinces, and 81 provinces) using the Gatev index, σ-convergence, contribution concentration, and panel data-based β-convergence. The findings generally indicate that spatial development disparities in Türkiye are significantly persistent over the long term and have deepened in some periods.

Gatev Index Findings

The Gatev index results reveal that structural differentiation increased between 2003 and 2011, particularly at the provincial scale, and the separation between developed and underdeveloped areas became more pronounced. The Gatev value for the 1985-2025 period across 67 provinces reached 0.248, indicating that structural differences have increased over the long term.

Table 2. Gatev Index Results

Period	12 Regions	26 Regions	67 Provinces	81 Provinces
1985-1991	0.039	0.089	0.109	
1991-1996	0.050	0.068	0.097	
1996-2003	0.035	0.049	0.082	
2003-2011	0.067	0.140	0.178	0.184
2011-2017	0.052	0.064	0.076	0.085
2017-2025	0.038	0.069	0.090	0.105
1985-2025	0.086	0.211	0.248	0.206

Source: Author's own calculations from SEDI reports.

Note: The Gatev index measures the structural difference between two periods. An index value approaching 0 indicates decreasing disparity, while one approaching 1 indicates increasing disparity. Calculations were made separately for 12 regions, 26 regions, 67 provinces, and 81 provinces. Higher index values at smaller geographic scales indicate that spatial heterogeneity is more pronounced at the provincial/subregional level.

σ-Convergence Findings

Table 3. σ-Convergence Results

Period	12 Regions	26 Regions	67 Provinces	81 Provinces
1985-1991	13.84	6.79	3.11	
1991-1996	7.42	5.67	2.79	
1996-2003	9.94	5.69	2.40	
2003-2011	11.85	4.67	1.65	1.33
2011-2017	8.92	6.39	3.01	2.50
2017-2025	9.46	6.24	2.02	1.76
1985-2025	8.67	4.97	2.55	1.76

Source: Author's own calculations from SEDI reports.

Note: The σ coefficient of convergence represents the standard error of provinces' contributions to the Gatev index, not SEDI scores. A high standard deviation indicates that contributions are concentrated in a few provinces and that spatial differences are sharper; a low standard deviation indicates a more even distribution of contributions. Therefore, a decrease in the σ coefficient should be interpreted as "spatial contribution diversification," while an increase should be interpreted as "contribution concentration."

σ-convergence results also support the trend toward spatial differentiation. Standard deviation values were particularly high at the 12th and 26th regions. While the coefficients were lower at the 67th and 81st provinces, they did not exhibit a significant downward trend over time. The resurgence of σ values, particularly in the 2003-2011 and 2011-2017 periods, indicates a periodic exacerbation of spatial inequalities. These findings suggest that development disparities in Türkiye have not narrowed in absolute terms; on the contrary, they have persisted over the long term, albeit with fluctuations.

Contribution Concentration Findings

The contribution analysis also shows that the difference between concentration and dispersion in spatial segregation is concentrated in a few provinces. That is, at the "12 Region" level of aggregation, for example, the combined contribution from the top five regions accounts for more than 80 percent in each period. Even at the provincial level, the percentage of the top five provinces varies between 30 and 55 percent. It indicates the spatial development dynamics in Türkiye are quite "centralized and evidence that regional polarization refuses to go away.

A crucial point here is that contribution values can reflect not only positive increases but also negative changes. A decrease in the SEDI score in a province, i.e., socioeconomic decline, contributes as much to change as an increase in the score, and this is included in the contribution calculations. Therefore, contribution concentration indicates a structural spatial divergence that concentrates not only development but also both progress and regression in specific centers. For example, in the 67-Province analysis, the provinces with the highest Gatev index contribution rates for the period 1985-2025 are Hatay, İzmir, Adana, Antalya, and Şanlıurfa, respectively. Among these provinces, decreases in SEDI scores outside Antalya contributed to the increase in structural diversity.

Table 4. Contribution Concentration Results

Period	12 Regions	26 Regions	67 Provinces	81 Provinces
1985-1991	89.86	72.31	54.79	
1991-1996	79.99	64.13	46.88	
1996-2003	83.97	70.94	42.86	
2003-2011	93.57	55.37	30.43	25.65
2011-2017	82.55	69.85	46.01	44.80
2017-2025	85.71	75.85	36.25	32.44

Source: Author's own calculations from SEDI reports.

Note: The total contribution of the five regions/provinces that contributed the most to the Gatev index shows the extent to which structural change is concentrated in certain locations. High contribution rates indicate that a few units drive changes in development disparities and that spatial polarization is high.

β-Convergence Findings

Table 5. β-Convergence Results

	β-coefficient	t-statistics	p-value	Period	Observation
12 Regions	-0.069***	-4.58	0.001	1985-2025	72
26 Regions	-0.044***	-6.29	0.000	1985-2026	130
67 Provinces	-0.064***	-7.51	0.000	1985-2027	402
81 Provinces	-0.127***	-19.24	0.000	2003-2025	243

Source: Author's own calculations from SEDI reports.

Note: β-convergence measures the effect of the initial level of development on the growth rate. A negative and significant β coefficient indicates that units with lower initial SEDI values have, on average, higher growth rates.

β-convergence analyses conducted with a panel fixed-effects model yielded negative, statistically significant β coefficients at all levels. These results suggest that provinces/regions with lower initial development levels grew slightly faster on average. However, the β coefficient's indication of convergence does not eliminate the spatial differentiation observed in the Gatev and σ analyses. In other words, β-convergence alone does not indicate a narrowing of inequality; it merely indicates that lower-development units have relatively higher growth rates. In this context, in the Turkish case, a negative β coefficient reflects a potential recovery trend. However, this trend has not been sufficient to structurally resolve spatial inequalities.

DISCUSSION AND CONCLUSION

This study examines the long-term dynamics of regional socioeconomic development in Türkiye over the period 1985-2025 at multiple spatial levels (12 regions, 26 regions, 67 provinces, and 81 provinces) using seven SEDI surveys. By generating comparable SEDI scores over time and converting provincial-level scores into regional indices, changes in regional socioeconomic development over the past forty years have been tracked. Methodologically, the study combines descriptive analyses with three complementary approaches to spatial inequality (structural differentiation based on the Gatev index, σ-convergence based on contribution distributions, and β-convergence based on panel data), providing a multidimensional perspective on regional divergence and convergence processes in Türkiye.

Descriptive findings indicate a high degree of continuity in the geography of development. A distinct and persistent west-east divide emerges at all spatial levels. While İstanbul, Western and Central Anatolia, and the coastal regions constitute Türkiye's most developed belt, the central and northern parts of Eastern Anatolia and Southeastern Anatolia continue to rank at the bottom. While some provinces such as Antalya, Muğla, and Düzce, as well as some units in the Black Sea and Central Anatolia regions, significantly improved their positions, provinces such as Hatay, Adana, and, to a lesser extent, İzmir, a long-serving metropolitan area, and to a lesser extent Ankara experienced relatively significant declines. The decline in the highest SEGI scores, accompanied by a further decline in the lowest scores, suggests that despite the relative redistribution at the top quintile, structural disadvantages in the lower quintiles have not been fully addressed.

Gatev index results also reinforce this finding of structural continuity and concentration in some periods. Structural differentiation is particularly pronounced at finer spatial scales; the Gatev coefficients calculated for the 67 and 81 provinces are systematically higher than those for the 12 and 26 regions. These results suggest that while heterogeneity in development is partially masked at higher scales, it becomes much more pronounced at the provincial level. The findings of σ-convergence based on the standard deviation of Gatev contribution rates add an additional dimension to this picture. The results indicate that structural change is driven by a limited number of regions or provinces in most periods. It is particularly striking that, at the 12 and 26 regions, the total contribution of the top five contributing

units exceeds 80 percent in most periods. Even at the provincial level, the top five provinces account for approximately one-third to one-half of the total change in many periods. This "concentration of contribution" suggests that both progress and regression are geographically centralized: positively diverging provinces like Antalya and declining provinces like Hatay, Adana, and Şanlıurfa determine structural differentiation.

The negative and statistically significant β coefficients at all spatial levels indicate that, on average, units with lower initial SEDI levels exhibit higher growth rates. This pattern suggests a "catch-up" trend in growth rates, albeit limited. However, when interpreted alongside the Gatev and σ findings, it is clear that this β-convergence is not sufficient to significantly reduce spatial inequality.

These empirical results have several implications for regional development policies in Türkiye. Primarily, the continuation of the West-East divide and relative underdevelopment in Central Eastern Anatolia, Northeastern Anatolia, and Southeastern Anatolia implies that general rather than region-specific policies, i.e., "same everywhere" policies, are not sufficient. Policies elsewhere should not only address physical infrastructure and basic public services, but also human capital, innovation potential, and institutional quality. Second, the fact that structural change is concentrated in a handful of provinces implies that metropolises and regional hubs can act as both the locomotive of convergence and choke points. Strengthening the functional relationship between dynamic centers-İstanbul, Ankara, İzmir, Antalya, etc., and their hinterlands in terms of transport networks, labor markets, value chains, and governance networks can help to ensure that growth dividends are more evenly spread. Third, the relative decline of some major conurbations shows that there is no firm basis for considering regional policy when addressing these areas as 'redundant'. Changes in industry, services, patterns of internal migration, and environmental restrictions all require that policy tools be adapted on an ongoing basis.

From an institutional point of view, results emphasize the need to preserve and strengthen strong and comparable regional statistics such as SEDI. It is crucial to be able to follow regional development at various levels over long periods for the design of evidence-based policies. This study's approach, population-weighted regional SEDI calculation considering past changes of provincial boundaries, the simultaneous incorporation into one framework of Gatev, σ, and β policy components already tested as single components elsewhere, can be adapted in other countries with structurally distinct spatial settings where composite multidimensional development indicators are used. Also, the inclusion of such quantitative approaches in the regular monitoring and evaluation processes of development agencies may enhance the design, targeting, and evaluation of regional programmes.

Finally, the study's limitations open new avenues for future research. First, although the SEDI is a comprehensive composite index, its indicator set and weights change over time, and the index is sensitive to this choice. Second, although the time period exceeds 40 years, it is based on only seven survey years; this limits the ability to model the effects of specific shocks (major crises, significant policy reforms, etc.) as well as short-term dynamics that require high-frequency series. Third, the analysis focuses primarily on relative positions and structural differentiation, with causal relationships secondary. Future studies could examine in more detail the policies and mechanisms that trigger convergence or divergence in specific periods and locations, using spatial econometric methods, micro-level data, or quasi-experimental designs.

In summary, the findings of this study suggest that Türkiye's regional socioeconomic development over the 1985-2025 period is characterized by partial and unequal convergence within a persistently polarized spatial structure. While some less developed regions and provinces have shown some degree of recovery and convergence, the overall pattern remains one of periodic reshaping of ingrained inequalities, but no structural solution has been achieved. Addressing these long-standing inequalities requires sustainable and place-sensitive regional development policies that focus not only on income growth but also on human development, institutional capacity, and spatial cohesion.

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APPENDIX

Table A.1. SEDI Survey Basic Information and Indicator Groups

SEDI	Data year	Method	Population	Employment	Health	Education	Industry	Agriculture	Building	Competitive and innovative capacity	Finance	Infrastructure and capital accumulation	Accessibility	Quality of life	Other welfare	Total
1985	1980-1985	PCA	6	9	5	3	3	5	3		6	4			8	52
1991	1985-1990	PCA	5	10	5	4	5	4	4		5	4			6	52
1996	1990-1995	PCA	7	7	5	6	6	2	2		15	3			5	58
2003	2000	PCA	6	7	5	6	7	2	2		15	3			5	58
2011	2008-2010	RPCA	5	8	5	6				15	7		6	9		61
2017	2014	RPCA	4	7	5	5				13	6		5	7		52
2025	2024	RPCA	5	8	5	6				12	5		5	6		52

Source: Author's own calculations from SEDI reports.

Table A.2. SEDI Value Changes at 12 Regional Levels

Rank	1985 SEDI score	2025 SEDI score	1985-2025 SEDI score difference	1985-2025 SEDI ranking difference
1	İstanbul	İstanbul	Eastern Black Sea (0.17)	Western Marmara (+1)
2	Western Anatolia	Western Anatolia	Central Anatolia (0.15)	Eastern Marmara (+1)
3	Aegean	Eastern Marmara	Eastern Marmara (0.14)	Central Anatolia (+1)
4	Eastern Marmara	Aegean	Western Black Sea 0.07)	Central Eastern Anatolia (+1)
5	Mediterranean	Western Marmara	Western Marmara (0.06)	
8	Central Anatolia	Western Black Sea	İstanbul (-0.05)	Mediterranean (-1)
9	Eastern Black Sea	Eastern Black Sea	Central Eastern Anatolia (-0.08)	Western Black Sea (-1)

10	Southeastern Anatolia	Southeastern Anatolia	Aegean (-0.11)	Aegean (-1)
11	Central Eastern Anatolia	Northeastern Anatolia	Mediterranean (-0.14)	Southeastern Anatolia (-1)
12	Northeastern Anatolia	Central Eastern Anatolia	Southeastern Anatolia (-0.23)	Western Marmara (+1)

Source: Author's own calculations from SEDI reports.

Table A.3. SEDI Value Changes at 26 Regional Levels

Rank	1985 SEDI score	2025 SEDI score	1985-2025 SEDI score farkı	1985-2025 SEDI ranking difference
1	İstanbul	İstanbul	Antalya (0.62)	Antalya (+4)
2	Ankara	Ankara	Kocaeli (0.36)	Kayseri (+3)
3	İzmir	İzmir	Kayseri 0.30)	Konya (+3)
4	Bursa	Antalya	Kastamonu 0.28)	Samsun (+3)
5	Adana	Bursa	Erzurum (0.26)	Trabzon (+3)
22	Erzurum	Hatay	Adana (-0.40)	Gaziantep (-2)
23	Şanlıurfa	Mardin	Zonguldak (-0.41)	Şanlıurfa (-2)
24	Mardin	Şanlıurfa	Şanlıurfa (-0.45)	Zonguldak (-4)

25	Ağrı	Van	Hatay (-0.49)	Adana (-6)
26	Van	Ağrı	İzmir (-0.68)	Hatay (-9)

Source: Author's own calculations from SEDI reports.

Table A.4. SEDI Value Changes at the 67 Province Level

Rank	1985 SEDI score	2025 SEDI score	1985-2025 SEDI score difference	1985-2025 SEDI ranking difference
1	İstanbul	İstanbul	Antalya (0.79)	Çanakkale (+13)
2	Ankara	Ankara	Muğla (0.73)	Trabzon (+11)
3	İzmir	İzmir	Tunceli (0.66)	Tunceli (+11)
4	Kocaeli	Kocaeli	Çankırı (0.38)	Konya (+10)
5	Bursa	Antalya	Çanakkale (0.36)	Muğla (+10)
63	Bitlis	Bitlis	Ağrı (-0.56)	Aydın (-10)
64	Ağrı	Hakkari	Şanlıurfa (-0.79)	Kahramanmaraş (-11)
65	Bingöl	Şanlıurfa	Adana (-0.84)	Zonguldak (-17)
66	Muş	Muş	İzmir (-0.88)	Adana (-20)
67	Hakkari	Ağrı	Hatay (-1.03)	Hatay (-32)

Source: Author's own calculations from SEDI reports.

Table A.5. 12 Region SEDI Values and Changes Between 1985 and 2025

Region	Level 1 code	1985	1991	1996	2003	2011	2017	2025	1985-1991	1991-1996	1996-2003	2003-2011	2011-2017	2017-2025	1985-2025

İstanbul	TR1	2.66	2.64	2.76	2.69	2.66	2.52	2.61	-0.02	0.11	-0.06	-0.04	-0.14	0.09	-0.05
Western Marmara	TR2	-0.02	0.06	-0.06	0.01	0.03	0.06	0.04	0.08	-0.12	0.07	0.02	0.03	-0.03	0.06
Aegean	TR3	0.42	0.44	0.35	0.34	0.35	0.41	0.31	0.02	-0.08	-0.01	0.01	0.06	-0.10	-0.11
Eastern Marmara	TR4	0.30	0.34	0.31	0.41	0.39	0.50	0.43	0.05	-0.04	0.10	-0.03	0.11	-0.07	0.14
Western Anatolia	TR5	1.03	1.05	0.99	1.03	1.01	1.08	1.06	0.02	-0.06	0.04	-0.02	0.07	-0.02	0.03
Mediterranean	TR6	0.09	-0.04	-0.09	-0.12	-0.09	-0.06	-0.05	-0.14	-0.05	-0.03	0.03	0.03	0.01	-0.14
Central Anatolia	TR7	-0.53	-0.51	-0.49	-0.51	-0.40	-0.37	-0.38	0.02	0.02	-0.02	0.10	0.03	-0.01	0.15
Western Black Sea	TR8	-0.52	-0.58	-0.54	-0.51	-0.42	-0.40	-0.45	-0.06	0.04	0.03	0.09	0.02	-0.05	0.07
Eastern Black Sea	TR9	-0.62	-0.60	-0.63	-0.67	-0.49	-0.48	-0.45	0.03	-0.04	-0.04	0.19	0.01	0.03	0.17
Northeastern Anatolia	TRA	-1.04	-1.00	-0.92	-0.95	-1.00	-1.10	-1.03	0.04	0.08	-0.03	-0.05	-0.09	0.07	0.01
Central Anatolia	TRB	-0.98	-0.98	-0.88	-0.94	-1.04	-1.10	-1.07	0.00	0.10	-0.06	-0.10	-0.06	0.03	-0.08
Southeastern Anatolia	TRC	-0.79	-0.83	-0.79	-0.79	-0.98	-1.07	-1.02	-0.04	0.04	0.00	-0.19	-0.08	0.04	-0.23

Source: Author's own calculations from SEDI reports.

Table A.6. Rankings and Ranking Changes of 12 Regions According to SEDI Values for the Years 1985-2025

Region	Level 1 code	1985	1991	1996	2003	2011	2017	2025	1985-1991	1991-1996	1996-2003	2003-2011	2011-2017	2017-2025	1985-2025
İstanbul	TR1	1	1	1	1	1	1	1	0	0	0	0	0	0	0
Western Marmara	TR2	6	5	5	5	5	5	5	1	0	0	0	0	0	1
Aegean	TR3	3	3	3	4	4	4	4	0	0	-1	0	0	0	-1
Eastern Marmara	TR4	4	4	4	3	3	3	3	0	0	1	0	0	0	1
Western Anatolia	TR5	2	2	2	2	2	2	2	0	0	0	0	0	0	0
Mediterranean	TR6	5	6	6	6	6	6	6	-1	0	0	0	0	0	-1
Central Anatolia	TR7	8	7	7	8	7	7	7	1	0	-1	1	0	0	1
Western Black Sea	TR8	7	8	8	7	8	8	8	-1	0	1	-1	0	0	-1
Eastern Black Sea	TR9	9	9	9	9	9	9	9	0	0	0	0	0	0	0
Northeastern Anatolia	TRA	12	12	12	12	11	11	12	0	0	0	1	0	1	0
Central Anatolia	TRB	11	11	11	11	12	12	10	0	0	0	-1	0	0	1
Southeastern Anatolia	TRC	10	10	10	10	10	10	11	0	0	0	0	0	-1	-1

Source: Author's own calculations from SEDI reports.

Table A.7. 26 Region SEDI Values and Changes Between 1985 and 2025

Region	Level 2 code	1985	1991	1996	2003	2011	2017	2025	1985-1991	1991-1996	1996-2003	2003-2011	2011-2017	2017-2025	1985-2025
İstanbul	TR10	3.14	3.09	3.33	3.27	3.23	2.98	3.17	-0.05	0.24	-0.06	-0.04	-0.25	0.19	0.03
Tekirdağ	TR21	0.17	0.24	0.17	0.33	0.31	0.36	0.27	0.07	-0.07	0.15	-0.01	0.05	-0.09	0.10
Balıkesir	TR22	0.09	0.22	0.06	0.07	0.11	0.11	0.18	0.13	-0.16	0.01	0.04	0.00	0.07	0.09
İzmir	TR31	1.80	1.74	1.71	1.57	1.25	1.26	1.12	-0.06	-0.03	-0.14	-0.32	0.02	-0.14	-0.68
Aydın	TR32	0.25	0.32	0.10	0.14	0.35	0.42	0.37	0.06	-0.21	0.04	0.21	0.07	-0.06	0.11
Manisa	TR33	-0.17	-0.16	-0.23	-0.27	-0.10	-0.06	-0.11	0.01	-0.07	-0.04	0.17	0.04	-0.05	0.05
Bursa	TR41	0.66	0.68	0.69	0.79	0.70	0.74	0.72	0.02	0.01	0.10	-0.09	0.05	-0.03	0.05
Kocaeli	TR42	0.29	0.39	0.33	0.49	0.53	0.70	0.65	0.10	-0.05	0.15	0.05	0.17	-0.05	0.36
Ankara	TR51	2.04	2.25	2.17	2.16	1.93	1.90	1.93	0.21	-0.09	-0.01	-0.23	-0.02	0.02	-0.11
Konya	TR52	-0.04	-0.19	-0.19	-0.15	0.10	0.21	0.19	-0.15	0.00	0.04	0.25	0.11	-0.02	0.23

Antalya	TR61	0.20	0.20	0.23	0.20	0.67	0.81	0.81	0.00	0.03	-0.03	0.47	0.14	0.01	0.62
Adana	TR62	0.54	0.37	0.26	0.25	0.12	0.02	0.14	-0.17	-0.11	-0.01	-0.14	-0.10	0.12	-0.40
Hatay	TR63	-0.11	-0.37	-0.38	-0.37	-0.50	-0.45	-0.60	-0.26	-0.01	0.01	-0.13	0.06	-0.15	-0.49
Kırıkkale	TR71	-0.47	-0.31	-0.43	-0.48	-0.43	-0.40	-0.42	0.15	-0.11	-0.05	0.05	0.03	-0.02	0.05
Kayseri	TR72	-0.43	-0.46	-0.36	-0.37	-0.20	-0.15	-0.13	-0.03	0.10	-0.01	0.16	0.05	0.03	0.30
Zonguldak	TR81	0.12	-0.24	-0.16	-0.13	-0.14	-0.06	-0.30	-0.36	0.09	0.03	-0.01	0.08	-0.24	-0.41
Kastamonu	TR82	-0.79	-0.66	-0.64	-0.64	-0.46	-0.52	-0.51	0.13	0.02	0.00	0.18	-0.06	0.01	0.28
Samsun	TR83	-0.51	-0.51	-0.49	-0.46	-0.33	-0.30	-0.29	0.00	0.02	0.03	0.12	0.03	0.02	0.22
Trabzon	TR90	-0.55	-0.50	-0.55	-0.60	-0.39	-0.37	-0.33	0.05	-0.05	-0.06	0.22	0.02	0.04	0.22
Erzurum	TRA1	-0.81	-0.75	-0.71	-0.72	-0.58	-0.66	-0.55	0.06	0.04	-0.01	0.14	-0.08	0.11	0.26
Ağrı	TRA2	-1.22	-1.16	-1.05	-1.11	-1.35	-1.44	-1.43	0.06	0.11	-0.06	-0.24	-0.09	0.01	-0.21
Malatya	TRB1	-0.72	-0.65	-0.54	-0.56	-0.48	-0.52	-0.54	0.08	0.10	-0.02	0.08	-0.04	-0.02	0.18
Van	TRB2	-1.23	-1.21	-1.11	-1.20	-1.46	-1.50	-1.43	0.02	0.10	-0.09	-0.26	-0.05	0.07	-0.21
Gaziantep	TRC1	-0.33	-0.44	-0.38	-0.27	-0.35	-0.34	-0.38	-0.11	0.06	0.11	-0.08	0.01	-0.04	-0.04
Şanlıurfa	TRC2	-0.82	-0.76	-0.79	-0.87	-1.19	-1.27	-1.27	0.06	-0.03	-0.08	-0.31	-0.09	0.01	-0.45
Mardin	TRC3	-1.09	-1.12	-1.05	-1.06	-1.33	-1.47	-1.25	-0.03	0.07	-0.02	-0.27	-0.15	0.23	-0.16

Source: Author's own calculations from SEDI reports

Table A.8. Rankings and Ranking Changes in 26 Regions According to SEDI Values for the Years 1985-2025

Region	Level code 2	1985	1991	1996	2003	2011	2017	2025	1985-1991	1991-1996	1996-2003	2003-2011	2011-2017	2017-2025	1985-2025
İstanbul	TR10	1	1	1	1	1	1	1	0	0	0	0	0	0	0
Tekirdağ	TR21	9	8	8	6	8	8	8	1	0	2	-2	0	11	1
Balıkesir	TR22	11	9	10	10	10	10	10	2	-1	0	0	0	1	1
İzmir	TR31	3	3	3	3	3	3	3	0	0	0	0	0	0	0
Aydın	TR32	7	7	9	9	7	7	7	0	-2	0	2	0	13	0
Manisa	TR33	14	11	13	13	12	13	12	3	-2	0	1	-1	-1	2
Bursa	TR41	4	4	4	4	4	5	5	0	0	0	0	-1	1	-1
Kocaeli	TR42	6	5	5	5	6	6	6	1	0	0	-1	0	2	0
Ankara	TR51	2	2	2	2	2	2	2	0	0	0	0	0	0	0
Konya	TR52	12	12	12	12	11	9	9	0	0	0	1	2	-2	3
Antalya	TR61	8	10	7	8	5	4	4	-2	3	-1	3	1	11	4
Adana	TR62	5	6	6	7	9	11	11	-1	0	-1	-2	-2	-6	-6
Hatay	TR63	13	15	16	16	21	19	22	-2	-1	0	-5	2	-6	-9
Kırıkkale	TR71	17	14	17	18	18	18	18	3	-3	-1	0	0	7	-1
Kayseri	TR72	16	17	14	15	14	14	13	-1	3	-1	1	0	-4	3
Zonguldak	TR81	10	13	11	11	13	12	14	-3	2	0	-2	1	-8	-4
Kastamonu	TR82	21	21	21	21	19	21	19	0	0	0	2	-2	5	2
Samsun	TR83	18	19	18	17	15	15	15	-1	1	1	2	0	3	3

Trabzon	TR90	19	18	20	20	17	17	16	1	-2	0	3	0	4	3
Erzurum	TRA1	22	23	22	22	22	22	20	-1	1	0	0	0	-8	2
Ağrı	TRA2	25	24	25	25	25	24	24	1	-1	0	0	1	-2	1
Malatya	TRB1	20	20	19	19	20	20	21	0	1	0	-1	0	-4	-1
Van	TRB2	26	25	26	26	26	26	26	1	-1	0	0	0	-2	0
Gaziantep	TRC1	15	16	15	14	16	16	17	-1	1	1	-2	0	-7	-2
Şanlıurfa	TRC2	23	22	23	23	23	23	25	1	-1	0	0	0	-6	-2
Mardin	TRC3	24	26	24	24	24	25	23	-2	2	0	0	-1	-2	1

Source: Author's own calculations from SEDI reports.

Table A.9. SEDI Values and Changes at the Level of 67 Provinces between 1985 and 2025

Province	Province code	1985	1991	1996	2003	2011	2017	2025	1985-2025
Adana	1	1.05	0.86	0.74	0.64	0.33	0.15	0.21	-0.84
Adıyaman	2	-0.95	-0.99	-0.83	-0.82	-1.01	-0.98	-0.99	-0.04
Afyonkarahisar	3	-0.20	-0.28	-0.30	-0.33	-0.15	-0.09	-0.21	-0.01
Ağrı	4	-1.29	-1.28	-1.21	-1.31	-1.67	-1.79	-1.85	-0.56
Amasya	5	-0.30	-0.17	-0.27	-0.24	-0.02	-0.01	-0.13	0.17
Ankara	6	2.89	2.93	2.96	2.95	2.55	2.49	2.58	-0.31
Antalya	7	0.82	0.73	0.90	0.83	1.40	1.55	1.61	0.79
Artvin	8	-0.44	-0.38	-0.44	-0.32	-0.17	-0.30	-0.20	0.24
Aydın	9	0.87	0.86	0.49	0.35	0.48	0.52	0.42	-0.45
Balıkesir	10	0.57	0.68	0.49	0.49	0.39	0.40	0.52	-0.05
Bilecik	11	0.09	0.43	0.40	0.43	0.28	0.48	0.25	0.15
Bingöl	12	-1.31	-1.30	-1.13	-1.16	-1.24	-1.26	-1.03	0.28
Bitlis	13	-1.18	-1.25	-1.13	-1.19	-1.44	-1.47	-1.38	-0.20
Bolu	14	0.06	0.06	0.07	0.07	0.26	0.38	0.29	0.24
Burdur	15	0.20	0.30	0.07	0.08	0.29	0.14	0.01	-0.19
Bursa	16	1.40	1.31	1.48	1.57	1.27	1.25	1.26	-0.14
Çanakkale	17	0.19	0.42	0.27	0.30	0.51	0.47	0.55	0.36
Çankırı	18	-0.72	-0.57	-0.58	-0.57	-0.40	-0.44	-0.34	0.38
Çorum	19	-0.57	-0.55	-0.41	-0.38	-0.31	-0.33	-0.22	0.35
Denizli	20	0.59	0.46	0.42	0.64	0.82	0.84	0.73	0.14
Diyarbakır	21	-0.62	-0.64	-0.69	-0.71	-1.05	-1.13	-0.93	-0.31
Edirne	22	0.49	0.46	0.33	0.49	0.55	0.46	0.48	-0.02
Elazığ	23	-0.27	-0.21	-0.10	-0.16	-0.08	-0.13	-0.24	0.03
Erzincan	24	-0.44	-0.30	-0.44	-0.54	-0.18	-0.21	-0.23	0.22
Erzurum	25	-0.76	-0.74	-0.63	-0.58	-0.49	-0.59	-0.41	0.35
Eskişehir	26	0.94	1.13	0.93	1.01	1.07	1.19	1.20	0.26
Gaziantep	27	0.31	0.09	0.12	0.32	0.13	0.13	0.05	-0.26
Giresun	28	-0.36	-0.35	-0.42	-0.42	-0.32	-0.39	-0.32	0.04

Gümüşhane	29	-1.03	-0.89	-0.86	-0.92	-0.58	-0.68	-0.79	0.24
Hakkari	30	-1.39	-1.24	-1.13	-1.17	-1.73	-1.56	-1.50	-0.12
Hatay	31	0.72	0.20	0.11	0.13	-0.20	-0.05	-0.31	-1.03
Isparta	32	0.31	0.33	0.26	0.14	0.44	0.49	0.34	0.03
Mersin	33	0.94	0.69	0.61	0.44	0.38	0.34	0.61	-0.34
İstanbul	34	4.26	4.29	4.78	4.57	4.29	3.87	4.19	-0.08
İzmir	35	2.58	2.55	2.62	2.40	1.86	1.83	1.70	-0.88
Kars	36	-1.12	-1.10	-0.95	-0.93	-1.16	-1.17	-1.15	-0.03
Kastamonu	37	-0.59	-0.45	-0.41	-0.43	-0.22	-0.29	-0.25	0.34
Kayseri	38	0.42	0.26	0.45	0.40	0.48	0.48	0.53	0.11
Kırklareli	39	0.41	0.45	0.47	0.78	0.51	0.48	0.36	-0.05
Kırşehir	40	-0.24	-0.08	-0.19	-0.28	-0.09	-0.15	-0.19	0.05
Kocaeli	41	1.47	1.71	1.66	1.83	1.55	1.69	1.67	0.20
Konya	42	0.29	0.08	0.09	0.15	0.41	0.54	0.54	0.25
Kütahya	43	0.00	-0.07	0.02	-0.26	-0.05	0.10	0.06	0.05
Malatya	44	-0.38	-0.36	-0.26	-0.28	-0.15	-0.18	-0.22	0.16
Manisa	45	0.43	0.47	0.23	0.27	0.39	0.42	0.43	0.00
Kahramanmaraş	46	-0.42	-0.60	-0.53	-0.40	-0.53	-0.48	-0.63	-0.21
Mardin	47	-1.02	-1.05	-0.99	-1.03	-1.40	-1.44	-1.21	-0.20
Muğla	48	0.42	0.87	0.55	0.63	0.95	1.09	1.16	0.73
Muş	49	-1.33	-1.37	-1.32	-1.46	-1.77	-1.75	-1.82	-0.49
Nevşehir	50	0.03	0.09	-0.07	-0.13	0.03	-0.08	0.04	0.01
Niğde	51	-0.38	-0.37	-0.44	-0.46	-0.44	-0.39	-0.37	0.01
Ordu	52	-0.55	-0.58	-0.61	-0.69	-0.54	-0.55	-0.37	0.18
Rize	53	-0.10	-0.15	-0.20	-0.24	0.08	0.10	0.05	0.15
Sakarya	54	0.34	0.19	0.08	0.33	0.48	0.75	0.65	0.31
Samsun	55	0.06	-0.07	-0.12	0.02	0.08	0.17	0.25	0.18
Siirt	56	-1.02	-1.16	-1.08	-1.05	-1.35	-1.55	-1.27	-0.24
Sinop	57	-0.69	-0.62	-0.59	-0.53	-0.31	-0.38	-0.44	0.25
Sivas	58	-0.54	-0.56	-0.48	-0.46	-0.29	-0.20	-0.22	0.32
Tekirdağ	59	0.72	0.90	0.83	0.97	0.82	0.93	0.79	0.07

Tokat	60	-0.63	-0.65	-0.56	-0.64	-0.45	-0.44	-0.53	0.10
Trabzon	61	0.02	0.03	-0.11	-0.24	0.15	0.32	0.34	0.33
Tunceli	62	-1.10	-0.96	-0.77	-0.45	-0.45	-0.50	-0.44	0.66
Şanlıurfa	63	-0.77	-0.69	-0.73	-0.87	-1.32	-1.40	-1.56	-0.79
Uşak	64	0.07	0.09	0.17	0.10	0.29	0.21	0.04	-0.03
Van	65	-1.05	-1.14	-1.03	-1.13	-1.42	-1.50	-1.38	-0.33
Yozgat	66	-0.67	-0.76	-0.71	-0.76	-0.67	-0.65	-0.65	0.02
Zonguldak	67	0.49	0.01	0.13	0.18	0.12	0.21	-0.06	-0.55

Source: Author's own calculations from SEDI reports.

Table A.10. SEDI Rankings and Ranking Changes at the Level of 67 Provinces for the Years 1985-2025

Province	Province code	1985	1991	1996	2003	2011	2017	2025	1985-2025
Adana	1	6	10	9	10	22	28	26	-20
Adıyaman	2	56	58	57	56	56	56	57	-1
Afyonkarahisar	3	35	38	39	40	38	36	37	-2
Ağrı	4	64	65	66	66	65	67	67	-3
Amasya	5	38	36	38	35	33	33	34	4
Ankara	6	2	2	2	2	2	2	2	0
Antalya	7	10	11	7	8	5	5	5	5
Artvin	8	43	43	43	39	39	43	36	7
Aydın	9	9	9	12	18	16	13	19	-10
Balıkesir	10	14	13	13	13	19	21	16	-2
Bilecik	11	27	18	17	16	25	17	24	3
Bingöl	12	65	66	65	63	59	59	58	7
Bitlis	13	63	64	64	65	64	62	63	0
Bolu	14	30	29	28	29	26	22	23	7
Burdur	15	25	21	29	28	24	29	32	-7
Bursa	16	5	5	5	5	6	6	6	-1
Çanakkale	17	26	19	19	21	12	18	13	13
Çankırı	18	53	47	49	50	47	48	46	7
Çorum	19	47	45	41	41	44	44	38	9
Denizli	20	13	15	16	11	10	10	10	3
Diyarbakır	21	49	51	53	54	57	57	56	-7
Edirne	22	15	16	18	14	11	19	17	-2
Elazığ	23	37	37	32	32	35	37	42	-5
Erzincan	24	44	39	45	49	40	41	41	3

Erzurum	25	54	54	52	51	51	53	49	5
Eskişehir	26	8	6	6	6	7	7	7	1
Gaziantep	27	22	26	24	20	28	30	28	-6
Giresun	28	39	40	42	43	46	46	45	-6
Gümüşhane	29	59	56	58	58	54	55	55	4
Hakkari	30	67	63	63	64	66	65	64	3
Hatay	31	12	23	25	26	41	34	44	-32
Isparta	32	23	20	20	25	17	14	22	1
Mersin	33	7	12	10	15	21	23	12	-5
İstanbul	34	1	1	1	1	1	1	1	0
İzmir	35	3	3	3	3	3	3	3	0
Kars	36	62	60	59	59	58	58	59	3
Kastamonu	37	48	44	40	44	42	42	43	5
Kayseri	38	19	22	15	17	14	15	15	4
Kırklareli	39	20	17	14	9	13	16	20	0
Kırşehir	40	36	34	35	38	36	38	35	1
Kocaeli	41	4	4	4	4	4	4	4	0
Konya	42	24	28	26	24	18	12	14	10
Kütahya	43	33	33	30	36	34	32	27	6
Malatya	44	40	41	37	37	37	39	39	1
Manisa	45	17	14	21	22	20	20	18	-1
Kahramanmaraş	46	42	49	47	42	52	50	53	-11
Mardin	47	57	59	60	60	62	61	60	-3
Muğla	48	18	8	11	12	8	8	8	10
Muş	49	66	67	67	67	67	66	66	0
Nevşehir	50	31	25	31	31	32	35	30	1
Niğde	51	41	42	44	47	48	47	48	-7
Ordu	52	46	48	51	53	53	52	47	-1
Rize	53	34	35	36	33	31	31	29	5
Sakarya	54	21	24	27	19	15	11	11	10
Samsun	55	29	32	34	30	30	27	25	4

Siirt	56	58	62	62	61	61	64	61	-3
Sinop	57	52	50	50	48	45	45	51	1
Sivas	58	45	46	46	46	43	40	40	5
Tekirdağ	59	11	7	8	7	9	9	9	2
Tokat	60	50	52	48	52	49	49	52	-2
Trabzon	61	32	30	33	34	27	24	21	11
Tunceli	62	61	57	56	45	50	51	50	11
Şanlıurfa	63	55	53	55	57	60	60	65	-10
Uşak	64	28	27	22	27	23	26	31	-3
Van	65	60	61	61	62	63	63	62	-2
Yozgat	66	51	55	54	55	55	54	54	-3
Zonguldak	67	16	31	23	23	29	25	33	-17

Source: Author's own calculations from SEDI reports.

Table A.11. SEDI Values, Rankings, and Changes at the Level of 81 Provinces for the Years 2003-2025

İl adı	İl kodu	2003	2011	2017	2025	2003-2025	2003	2011	2017	2025	2003-2025
Adana	1	0.95	0.57	0.35	0.44	-0.51	8	16	27	22	-14
Adıyaman	2	-0.78	-0.96	-0.93	-0.94	-0.17	65	66	66	69	-4
Afyonkarahisar	3	-0.27	-0.08	-0.02	-0.15	0.12	44	43	41	42	2
Ağrı	4	-1.28	-1.64	-1.75	-1.83	-0.54	80	79	80	81	-1
Amasya	5	-0.19	0.05	0.05	-0.07	0.12	39	37	38	39	0
Ankara	6	3.31	2.84	2.72	2.84	-0.48	2	2	2	2	0
Antalya	7	0.91	1.50	1.64	1.72	0.80	10	5	5	5	5
Artvin	8	-0.26	-0.10	-0.24	-0.14	0.13	43	44	49	41	2
Aydın	9	0.42	0.56	0.60	0.50	0.08	22	19	15	21	1
Balıkesir	10	0.57	0.48	0.48	0.60	0.03	15	22	24	18	-3
Bilecik	11	0.50	0.36	0.56	0.32	-0.19	18	27	19	26	-8
Bingöl	12	-1.12	-1.19	-1.21	-0.99	0.14	76	72	71	70	6
Bitlis	13	-1.16	-1.40	-1.43	-1.35	-0.19	79	76	76	75	4
Bolu	14	0.61	0.64	0.76	0.62	0.01	14	11	13	16	-2
Burdur	15	0.14	0.37	0.21	0.08	-0.06	31	26	32	35	-4
Bursa	16	1.68	1.37	1.34	1.36	-0.32	5	6	6	6	-1
Çanakkale	17	0.37	0.60	0.55	0.63	0.26	24	14	20	15	9
Çankırı	18	-0.52	-0.33	-0.38	-0.28	0.24	59	54	55	53	6
Çorum	19	-0.33	-0.24	-0.26	-0.16	0.17	46	50	50	43	3
Denizli	20	0.72	0.91	0.92	0.82	0.10	12	10	10	11	1
Diyarbakır	21	-0.67	-1.00	-1.07	-0.88	-0.21	63	67	68	66	-3
Edirne	22	0.56	0.64	0.53	0.56	-0.01	16	12	21	19	-3
Elazığ	23	-0.10	-0.01	-0.06	-0.17	-0.07	36	39	42	47	-11
Erzincan	24	-0.49	-0.11	-0.15	-0.17	0.33	58	45	47	46	12
Erzurum	25	-0.53	-0.43	-0.53	-0.35	0.19	60	59	61	55	5
Eskişehir	26	1.10	1.17	1.28	1.30	0.19	6	7	7	7	-1
Gaziantep	27	0.46	0.27	0.25	0.15	-0.31	20	30	30	30	-10
Giresun	28	-0.37	-0.26	-0.32	-0.26	0.11	50	52	53	51	-1

Gümüşhane	29	-0.93	-0.48	-0.62	-0.87	0.05	71	62	64	65	6
Hakkari	30	-1.14	-1.70	-1.52	-1.47	-0.33	77	80	78	77	0
Hatay	31	0.20	-0.13	0.02	-0.25	-0.44	29	46	39	50	-21
Isparta	32	0.21	0.53	0.56	0.42	0.21	28	21	16	25	3
Mersin	33	0.52	0.46	0.41	0.69	0.17	17	24	25	13	4
İstanbul	34	4.81	4.52	4.05	4.42	-0.39	1	1	1	1	0
İzmir	35	2.52	1.97	1.93	1.81	-0.72	3	3	3	3	0
Kars	36	-0.82	-1.09	-1.13	-1.12	-0.30	67	68	69	71	-4
Kastamonu	37	-0.38	-0.15	-0.22	-0.19	0.18	51	47	48	49	2
Kayseri	38	0.48	0.57	0.56	0.62	0.14	19	17	17	17	2
Kırklareli	39	0.86	0.59	0.56	0.43	-0.43	11	15	18	23	-12
Kırşehir	40	-0.23	-0.02	-0.09	-0.13	0.10	42	40	43	40	2
Kocaeli	41	1.94	1.66	1.79	1.78	-0.17	4	4	4	4	0
Konya	42	0.25	0.53	0.67	0.68	0.43	26	20	14	14	12
Kütahya	43	-0.21	0.02	0.17	0.13	0.33	40	38	37	31	9
Malatya	44	-0.23	-0.08	-0.11	-0.16	0.07	41	42	44	44	-3
Manisa	45	0.34	0.47	0.49	0.51	0.17	25	23	23	20	5
Kahramanmaraş	46	-0.35	-0.47	-0.42	-0.58	-0.23	48	60	58	63	-15
Mardin	47	-0.99	-1.36	-1.40	-1.17	-0.18	72	74	74	72	0
Muğla	48	0.71	1.05	1.18	1.25	0.54	13	8	8	8	5
Muş	49	-1.44	-1.73	-1.70	-1.80	-0.36	81	81	79	80	1
Nevşehir	50	-0.07	0.10	-0.02	0.11	0.19	34	36	40	33	1
Niğde	51	-0.36	-0.38	-0.40	-0.47	-0.11	49	56	57	60	-11
Ordu	52	-0.64	-0.48	-0.49	-0.31	0.33	62	61	60	54	8
Rize	53	-0.18	0.16	0.17	0.12	0.29	37	34	36	32	5
Sakarya	54	0.40	0.56	0.83	0.73	0.32	23	18	11	12	11
Samsun	55	0.09	0.16	0.24	0.32	0.23	32	33	31	27	5
Siirt	56	-1.01	-1.42	-1.41	-1.35	-0.35	73	77	75	76	-3
Sinop	57	-0.49	-0.25	-0.32	-0.38	0.10	57	51	52	59	-2
Sivas	58	-0.41	-0.22	-0.14	-0.16	0.25	53	49	45	45	8
Tekirdağ	59	1.06	0.92	1.01	0.88	-0.18	7	9	9	10	-3

Tokat	60	-0.59	-0.38	-0.38	-0.48	0.11	61	57	56	61	0
Trabzon	61	-0.19	0.22	0.39	0.42	0.61	38	31	26	24	14
Tunceli	62	-0.40	-0.39	-0.44	-0.38	0.02	52	58	59	58	-6
Şanlıurfa	63	-0.83	-1.28	-1.35	-1.53	-0.69	68	73	73	79	-11
Uşak	64	0.17	0.37	0.28	0.11	-0.06	30	25	29	34	-4
Van	65	-1.09	-1.38	-1.45	-1.35	-0.25	75	75	77	74	1
Yozgat	66	-0.72	-0.61	-0.59	-0.60	0.12	64	65	63	64	0
Zonguldak	67	0.45	0.28	0.33	0.06	-0.39	21	29	28	37	-16
Aksaray	68	-0.45	-0.37	-0.27	-0.18	0.27	56	55	51	48	8
Bayburt	69	-0.80	-0.59	-0.63	-0.52	0.28	66	64	65	62	4
Karaman	70	-0.10	0.19	0.18	0.06	0.16	35	32	35	36	-1
Kırıkkale	71	0.06	-0.07	0.21	-0.03	-0.09	33	41	33	38	-5
Batman	72	-0.90	-1.12	-1.32	-0.93	-0.02	70	70	72	67	3
Şırnak	73	-1.14	-1.46	-1.79	-1.50	-0.36	78	78	81	78	0
Bartın	74	-0.42	-0.20	-0.14	-0.36	0.06	55	48	46	56	-1
Ardahan	75	-1.07	-1.14	-0.98	-0.94	0.14	74	71	67	68	6
Iğdır	76	-0.89	-1.12	-1.18	-1.18	-0.29	69	69	70	73	-4
Yalova	77	0.94	0.63	0.80	0.98	0.05	9	13	12	9	0
Karabük	78	0.21	0.29	0.51	0.18	-0.03	27	28	22	28	-1
Kilis	79	-0.41	-0.57	-0.57	-0.28	0.13	54	63	62	52	2
Osmaniye	80	-0.33	-0.29	-0.37	-0.38	-0.05	47	53	54	57	-10
Düzce	81	-0.28	0.11	0.20	0.17	0.44	45	35	34	29	16

Source: Author's own calculations from SEDI reports.

Azadxan Vəlizadə

Bakı Dövlət Universiteti

Azadxan1616@gmail.com

https://orcid.org/0009-0001-7139-5164

LIDERLIK VƏ PSIXOLOJI TƏDQIQATLAR

Xülasə

Liderlik sadəcə təşkilati idarəetmə aktı deyil, həm də psixoloji proseslərin yekun nəticəsidir. Bu şəxsiyyətlərin qərarvermə üsulu, davranış tərzi, əməkdaşlarla münasibəti onun psixoloji xüsusiyyətləri ilə müəyyən olunur. Buna görə də psixoloji tədqiqatlar liderlik nəzəriyyələrinin davamlı inkişafında mühüm yer tutur. Liderlik və psixoloji tədqiqatlar arasında sıx qarşılıqlı əlaqə mövcuddur. Liderlərin psixoloji xüsusiyyətlərinin araşdırılması onların fəaliyyət tərzini anlamağa, komanda ilə effektiv münasibətlər qurmağa və ümumilikdə idarəetmənin keyfiyyətini yüksəltməyə imkan verir.

Liderlik və onun elmi tədqiqi

Lider kimdir və liderlik nədir? Keçən əsrin əvvəllərində bu anlayışlar dar şəkildə tərif olunmuşdu:

Lider–qrup üzvü, mühüm vəziyyətlərdə digər iştirakçılara əhəmiyyətli təsir göstərmək qabiliyyətinə malikdir.

Liderlik–qrup daxilində hakimiyyət və itaət, təsir və izləmə münasibətləri sistemi.

Bu yanaşmaya görə, lider – elə kiçik qrupun üzvüdür ki, konkret bir tapşırığın həlli zamanı qrup daxilində qarşılıqlı əlaqə nəticəsində önə çıxır və qrup fəaliyyətinin təşkilatçısı funksiyasını öz üzərinə götürür. O, digər üzvlərdən daha yüksək aktivlik, iştirak və təsir səviyyəsi nümayiş etdirir. Digər qrup üzvləri liderliyi qəbul edir, yəni onunla münasibətlər qururlar ki, o, rəhbərlik edəcək, onlar isə ona tabe olacaqlar. Bu kontekstdə liderlik yalnız qrup daxilində bir fenomen kimi qiymətləndirilirdi: lider həmişə təşkilati deyil, yalnız qrup strukturu elementi kimi çıxış edirdi, yəni bu strukturdakı münasibətlər sistemi kimi. Başqa sözlə, liderlik fenomeni kiçik qrupun dinamik proseslərinə endirilirdi. Bu proses tez-tez ziddiyyətli olurdu: liderin iddiaları ilə digər üzvlərin onun rəhbərliyini qəbul etməyə hazır olmamaları arasında fərq ola bilərdi. Liderin real imkanlarını anlamaq, digər qrup üzvlərinin onu necə qəbul etdiyini başa düşmək deməkdir.

Açar sözlər: hakimiyyət və itaət, liderlik fenomeni, yüksək aktivlik, münasibətlər sistemi, real imkanlar.

Azadkhan Velizade

Baku State University

Azadxan1616@gmail.com

https://orcid.org/0009-0001-7139-5164

Leadership and psychological research

Summary

Leadership is not just an act of organizational management, but also the final result of psychological processes. The decision-making style, behavior style, and relationship with employees of these personalities are determined by their psychological characteristics. Therefore, psychological research plays an important role in the continuous development of leadership theories. There is a close interaction between leadership and psychological research. The study of the psychological characteristics of leaders allows us to understand their style of work, build effective relationships with the team, and improve the quality of management in general.

Leadership and its scientific study

Who is a leader and what is leadership? At the beginning of the last century, these concepts were narrowly defined:

A leader is a group member who has the ability to exert a significant influence on other participants in important situations.

Leadership is a system of power and obedience, influence and monitoring relations within a group.

According to this approach, a leader is a member of a small group who, when solving a specific task, comes to the fore as a result of interaction within the group and assumes the function of the organizer of group activities. He demonstrates a higher level of activity, participation and influence than other members. Other group members accept leadership, that is, they establish relationships with him, in which he will lead, and they will obey him. In this context, leadership was assessed only as a phenomenon within the group: the leader always acted not as an organizational, but only as an element of the group structure, that is, as a system of relations in this structure. In other words, the phenomenon of leadership was reduced to the dynamic processes of a small group. This process was often contradictory: there could be a difference between the leader's claims and the unwillingness of other members to accept his leadership. Understanding the real capabilities of the leader means understanding how other group members perceive him.

Keywords: authority and obedience, leadership phenomenon, high activity, system of relationships, real capabilities.

Giriş

Liderlik mövzusu psixologiyanın sərhədlərini çoxdan aşmış, müasir cəmiyyətin və fərdin şüurunda ən populyar mövzulardan birinə çevrilmişdir. Liderlik uğrunda mübarizə, rəqabət və individualizm ruhu, yaşadığımız dövrdə bizə təbii və insan təbiətinə xas görünür. Bu xüsusiyyətlərin köklərini həm uzaq tarixdə, həm də insanlığın mənşəyi olan heyvanlar aləmində də görmək mümkündür. Ancaq insan psixikasının sürətlə dəyişən dünyada sabit qalması anlayışı, görünür, həddindən artıq sadələşdirilmiş və hətta onun inkişafının real mənzərəsini təhrif edir. Son bir neçə onillikdə biz insanı və bütün planeti dəyişdirən böyük dəyişikliklərin şahidi olmuşuq. Ancaq ən dramatik dəyişikliklər son dövrlərdə insanların psixikasında baş vermir. Bu dəyişikliklər, keçmiş əsrlərdə insanlıq tərəfindən əldə edilən heyrətamiz elmi-texniki tərəqqi və xüsusilə sosial təşkilatçılığın yeni prinsiplərinin formalaşması ilə əlaqədardır ki, bu da yalnız xarici deyil, həm də insanın daxili aləmini köklü şəkildə dəyişmişdir. Bu zaman liderlik anlayışı, bizim fikrimizcə, şüurumuzun psixoloji transformasiyasına birbaşa təsir göstərir.

Dünyanın tarixi şəxsiyyətləri-psixoloji liderlər

Liderlik fenomenini anlamağa ilk cəhdlər insanların, bəzi fərdlərin insan tarixinə o qədər əhəmiyyətli töhfələr verdiyini başa düşmək istəyindən irəli gəlir ki, onların xatirəsi və təsiri əsrlər boyu qalır. Üzvi kütlə ilə lider qəhrəmanlar arasındakı qarşıdurma, hələ qədim dövrlərdən bəri düşünülür və alimlərin diqqətini cəlb edir. Böyük şəxsiyyətlərin tarixdəki rolunu düşünərkən, hələ antik filosoflar və tarixçilər sual verirdilər ki, niyə bəzi insanlar "lider" olur və ölümündən sonra belə insanlıq taleyinə təsir göstərə bilir?

Antik dövrün düşüncə sahibləri, "lider-qəhrəmanların" yalnız özlərinin müstəsna şəxsi keyfiyyətləri sayəsində belə olduqları müddüasını irəli sürürlər. Onlar hesab edirdilər ki, bu insanlar hər hansı şəraitdə qəhrəman olmaları, onların uğuru xarici şərtlərindən asılı deyildi. Bu ənənəni XIX–XX əsrlərdə T.Karley, F.Nitşe, F.Qalton, F.Vuds, A.Uigan, C.Daud kimi səxsiyyətlər inkişaf etdirmişlər. Bu filosofların baxışları birbaşa və ya dolayı yolla liderləri digər insanlardan fərqləndirən xüsusiyyətlərin müəyyənləşdirilməsi və tədqiqi ideyasına gətirib çıxarmışdır. Bu nəticə, liderlik keyfiyyətləri nəzəriyyəsinin əsasını qoymuşdur ki, müəlliflər liderlik prosesini xüsusi şəxsi keyfiyyətlərin təzahürü kimi izah edirlər. Bu qeyri-adi şəxslərə maraq orta əsrlərdə və müasir dövrdə də azalmamışdır, lakin elmin liderlik fenomeninə ciddi və davamlı marağı XX əsrin 30-cu illərinin sonu – 40-cı illərinin əvvəllərində yaranmışdır. O dövrdə ilk dəfə olaraq idarəetmə personalının effektivliyinin artırılması məsələsi kəskin şəkildə ortaya çıxmışdır. Məhz bu andan etibarən liderlik məsələsi sosial psixologiyanın tanınmış və aktual tədqiqat sahəsinə çevrilmişdir. Bunula bağlı çoxsaylı liderlik nəzəriyyələri yaradılmış, təşkilatların idarəetmə personalı üçün liderlik bacarıqlarının formalaşdırılması üçün metodlar, yanaşmalar və bütöv texnologiyalar hazırlanmışdır.

Liderlik tədqiqatına struktur yanaşma

Liderləri ümumi xüsusiyyətlərə görə təsvir etməyə çalışırıqsa, şübhəsiz ki, zəka, xarizma, qətiyyət, həvəs, cəsarət, güc, xarakter bütövlüyü, özünə inam və s. kimi keyfiyyətlərdən bəhs etməliyik. Əlbəttə, belə bir birləşmələr yalnız müsbət şəxsi keyfiyyətlərin göstəricisidir. Bəşəriyyətin tarixindən bu günümüzədək, iqtisadiyyat, mədəniyyət, idman və əlbəttə ki, müasir liderlərin siyasətdə mənzərəsi olduqca qarışıq görünür. Təəssüf doguran lakin real olan isə "iri" Pyotr, "kiçik" Napoleon, "xəstə" Ruzvelt, "diktator" Stalin, "balanssız" Hitler "tələşlı" Qorbaçov "tərəfindən illərlə idarə olunmadır. Bu insanların hamısını, şübhəsiz ki, lider adlandırmaq olar, lakin onların tarixdəki rolları nə qədər bir-birindən fərqlidir bunu hamımız bilirik. Şəxsi, sosial, konstitusiya və ya intellektual xüsusiyyətləri onları digər insanlardan fərqləndirir.

"İşçi meneceri psixoloji müqaviləni qurmaq və qorumaq üzrə əsas nümayəndə kimi qəbul etməyə daha çox meyllidir" (Shore və Tetrick belə iddia edirlər). Liderin bu rolunu daha yaxşı başa düşmək üçün psixoloji müqavilə nəzəriyyəsinə qısa bir izahat faydalı ola bilər. **Psixoloji müqavilə** termini ilk dəfə **Argyris** tərəfindən 1960-cı ildə istifadə olunmuş və işəgötürənlərlə işçilər arasında yazılmamış, qeyri-rəsmi normaların anlaşılması kimi təsvir edilmişdir. Bu anlayışın mahiyyəti qorunub saxlanılsa da, müasir anlamda psixoloji müqavilə fərdin qarşılıqlı mübadilə razılaşması çərçivəsində ortaya çıxan şərtləri və əsasları necə qavradığını ifadə edir. Bir sıra tədqiqatlar liderlik və psixoloji müqavilələr arasında müsbət əlaqələrin olduğunu göstərir (Cassar, Bezzina və Buttigieg Sandra, Qoodvin, Megheirkouni, Kasekende və digərləri). Bu tədqiqatlar müxtəlif liderlik üslublarını araşdırsa da, oxşar bir nümunəyə işarə edir: **İşçilərlə liderləri arasında müsbət münasibətləri təşviq edən liderin davranışları eyni zamanda müsbət və güclü psixoloji müqavilələri də təşviq edir**.

Liderliyin tədqiqatına struktur yanaşma adından da göründüyü kimi konseptual çərçivədir və liderlin davranışına, effektivliyinə və onun ortaya çıxmasına təsir edən sosial şəbəkələr, təşkilati iyerarxiyalar və institusional sistemlər kimi əsas strukturları araşdıraraq liderliyin təhlilinə yönəlmiş konseptual çərçivəni təşkil edir. Bu yanaşmalar hər iki tərəfə fərqli olaraq vurğulanır ki, hadisələr liderlikdə

psixoloji fenomen kimi görünür, liderlik sosial fenomen kimi və əslində tənzimlənən bir hadisə kimi cəmiyyətin hüquqi prosesidir.

Liderlərin psixologiyasında fərqliliklər

Sovet dövrü Rusiyasında liderlik xarakterik bir fenomen kimi başa düşüldüyündən "qrup tədqiqatçıları"n elmi baxışları ilə elə də çox müəyyən edilməmişdir. İdeoloji təzyiqdən və eksperimental işlərdə də kollektiv yolverilməzliyi haqqında mülahizələr partiya və dövlət rəhbərlərinin olmadığına işarə edir. Sözün tam mənasında lider olmaq, kollektivə yalnız kiçik qruplar səviyyəsində siyasət məsələlərində rəhbərlikləri nəzərə alınması olduğundan təşkilati liderlik heç də yüksəlməmişdir ***(Abaşkina, Kosolapova, 1993).*** Təbii ki, obyektiv araşdırma həmişə birbaşa və ya dolayı təsirləri nəzərə almalıdır. Psixologiya və davranış elmlərində dominant ideologiya, eyni zamanda, fenomenin əsassız məhdudlaşdırılmasına baxmayaraq qrup sərhədləri daxilində liderlik haqqında, liderliyin özünün demarkasiyası və idarəetmə məqsədlərinə doğru mühüm addımıdır. Qərb, xüsusilə Amerika ənənələri əvvəllər və bu günə qədər də ifrat xarakterik olaraq liderlik tez-tez olur. Bu menecerin formal öhdəlikləri ilə həyata keçirilir.

"Lider" həm rəhbər, həm də idarəçi deməkdir. Bununla belə, təbii ki, bu əsas səbəb deyil. Ən nüfuzlu tədqiqatçılardan biri olan F.Fidlerin fikrincə Lider müəyyən bir sahədə "qarşısında olan qrupdakı bir fərddir". Ona fəaliyyəti və ya təyin edilmiş şəxs olmadıqda qrupa rəhbərlik etmək və koordinasiya etmək tapşırığı verilmişdir.

O isə bu "rəhbərliyi həyata keçirilmək üçün əsas məsuliyyəti daşıyır". Burdan da görünür ki, lider və menecer lider - demək olar ki, tam sinonimdir. Menecerin (liderin) fəaliyyəti nə etməlidir, yəni müəyyən funksiyaları necə yerinə yetirməlidir onun vəzifə öhdəlikləri nədir onu müəyyən edilir.

Liderlər daha doğrusu idarəetmə prosesinin keyfiyyətini, vurğunu əks etdirir yəni vəzifələrin özlərinə deyil, bu vəzifələrin necə yerinə yetirildiyinə diqqət yetirirlər. Bu kontekstdə liderlik insanları işlərə cəlb etmək bacarığıdır. İstəmədiklərini belə, heç kimə nifrət etmədən nə də gördükləri iş bildirmədən həyata keçirmək deyil. Müasir liderlik tədqiqatlarını əsas üç kateqoriyaya ayırd etmək olar:

Birinci yanaşma situasiya kimi təsvir edilə bilər. O, qarşısına universalı müəyyən etmək vəzifəsini qoyur. Bu effektiv menecer üçün xarakterik olan sanballı şəxsiyyət xüsusiyyətləri, onların strukturudur.

İkinci yanaşma davranışdır, burada liderliyin xüsusiyyətləri nəzərə alınır. Llider tərəfindən kontekst halda həyata keçirilir ki, universal davranış ölçülərini də tapmaq cəhdini təmin edəcək bir lider uğuru qazanır.

Üçüncü yanaşmanın tərəfdarları spesifik kontekstdə universal yanaşmaları birləşdirir. Buna görə də biz onu situasiya dəyişəmələri, milli vəziyyət kimi işarə edirik. Nəzəriyyələrin daha ətraflı təsnifatları da təklif olunur. Lakin, bu cür liderlik parçalanmanın etibarlılığı həmişə uzunmüddətli, inandırıcı deyil**.**

Nəticə

Liderlik tədqiqatına struktur yanaşma obyektivləri fərdi xüsusiyyətlərdən və davranışlardan kənara çıxarır. Şəbəkələri, iyerarxiyaları və institutları təhlil edərək, bu perspektiv liderlərin necə ortaya çıxması, təsir qazanması və nəticələrin formalaşması haqqında daha incə bir anlayış təklif edir. Bu, alimlərə və təcrübəçilərə təkcə "kimin rəhbərlik etdiyini" deyil, həm də daha böyük sistemlərdə liderliyin niyə və necə fəaliyyət göstərdiyini düşünməyə imkan verir. Liderlərin psixologiyasında fərqliliklər onların fəaliyyət tərzinə, komanda ilə münasibətlərinə və idarəetmə effektivliyinə birbaşa

təsir göstərir. Bu fərqlilikləri öyrənmək liderlərin inkişafında, düzgün idarəetmə strategiyasının seçilməsində mühüm rol oynayır.

Liderlik psixoloji tədqiqatların mərkəzində duran kompleks və çoxşaxəli bir fenomen kimi çıxış edir. Şəxsiyyətin xüsusiyyətləri, emosional zəka, motivasiya və sosial idrak liderliyin yalnız "nə etdiyini" deyil, həm də "necə və niyə etdiyini" izah etməyə kömək edir. Bu baxımdan, liderlik tədqiqatlarında psixoloji yanaşmaların rolu danılmazdır və gələcək tədqiqatlar daha çox interdisiplinar modellərə əsaslanmalıdır. Ənənəvi yanaşmalardan fərqli olaraq, müasir liderlik araşdırmaları liderlərin yalnız formal vəzifə sahibləri deyil, həm də psixoloji təsir gücünə malik fərdlər olduğunu vurğulayır. Bu səbəbdən psixoloji faktorlar – şəxsiyyət, emosional zəka, motivasiya və sosial idrak – liderlik davranışlarının və effektivliyinin əsas tənzimləyicisi kimi qəbul olunur.

Liderlik motivasiya nəzəriyyələri ilə də sıx bağlıdır. Onlar ücün hazırlanmış ehtiyaclar nəzəriyyəsi liderlərdə xüsusilə nailiyyət ehtiyacının yüksək olduğunu vurğulayır. Bu ehtiyac onları daha çox risk almasına və məqsədyönlü fəaliyyət göstərməyə sövq edir. Bundan başqa, özünü həyata keçirmə motivasiyası liderlərin şəxsi və ictimai məqsədlər üçün hərəkətə keçməsində vacib psixoloji amildir. Psixoloji baxış bucağından liderlik təkcə nəticələrə yönəlmiş fəaliyyət deyil, həm də davranış nümunələrinin təşkilati mədəniyyətə və işçilərin rifahına təsiri kimi öyrənilir**.**

Müasir şəraitdə liderlik psixologiyası təkcə strateji idarəetmə bacarıqları deyil, həm də yüksək səviyyədə özünü əks etdirmə və emosional sabitlik tələb edir. Bu isə dəstək olmaq, ilk növbədə, özünə güvənmək deməkdir.

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YENİ DÜNYA DÜZƏNİNDƏ SİYASİ HAKİMİYYƏTİN TRANSFORMASİYASI VƏ GÜCÜN MƏNBƏLƏRİNİN DƏYİŞƏN TƏBİƏTİ

Nadir MİRZƏLİZADƏ
Bakı Dövlət Universiteti, Beynəlxalq münasibətlər və iqtisadiyyat fakültəsi,
Politologiya və sosiologiya kafedrasının "siyasi nəzəriyyə" ixtisası üzrə doktorantı
nadirmirzalizade@gmail.com
ORCID ID: 0009-0008-5622-2151
Xatirə ƏFƏNDİYEVA
Bakı Dövlət Universiteti, Beynəlxalq münasibətlər və iqtisadiyyat fakültəsi,
Politologiya və sosiologiya kafedrasının dosenti, fəlsəfə üzrə fəlsəfə doktoru
xatirabdu@hotmail.com
ORCID ID: 0009-0008-6360-7156

Xülasə
Bu tədqiqatda mən "Yeni dünya düzənində siyasi hakimiyyətin transformasiyası və gücün mənbələrinin dəyişən təbiəti" mövzusunu təqdim edirəm. Müasir dövrdə qloballaşma, informasiya texnologiyaları və süni intellekt siyasi hakimiyyətin mahiyyətini köklü şəkildə dəyişmişdir ki, ənənəvi güc anlayışı iqtisadi və hərbi resurslara əsaslanan hakimiyyət modeli artıq müasir qlobal siyasət üçün kifayət etmir. Qeyd edək ki, siyasi hakimiyyət indi çoxsəviyyəli, adaptiv və informasiya əsasında formalaşır.
Tədqiqatın əsas məqsədi indiki dövrdə siyasi hakimiyyətin transformasiya mexanizmlərini, gücün dəyişən mənbələrini araşdırmaqdır. Bu çərçivədə əsas vəzifələrimiz qloballaşmanın və çoxqütblü beynəlxalq sistemin siyasi hakimiyyətə təsirini təhlil etməkdir. Bundan savayı informasiya və texnologiyanın güc mənbələri kimi rolunu göstərmək, həmçinin süni intellekt və rəqəmsal idarəetmənin siyasi proseslərə gətirdiyi yenilikləri qiymətləndirməkdir.
Məqalənin əsas nəticələri göstərir ki, gücün mənbələri artıq təkcə iqtisadi və hərbi resurslarla ölçülmür, o, həmdə informasiya, texnoloji innovasiya və rəqəmsal təsir vasitələri siyasi hakimiyyətin əsas elementlərinə çevrilmişdir. Məqalə göstərir ki, gələcək zamanlarda effektiv idarəetmə texnoloji çeviklik, informasiya təhlükəsizliyi və ictimai etimad üzərində qurulacaq ki, dövlətlər, beynəlxalq aktorlar bu prosesdə etik idarəetmə və rəqəmsal diplomatiya sahəsində strateji adaptasiya aparmalıdırlar.
Bu tədqiqatın əhəmiyyəti ondan ibarətdir ki, o, 21-ci əsr siyasi nəzəriyyəsi və praktikası üçün aktual konseptual çərçivə yaradır. Güc və hakimiyyət anlayışının müasir reallıqlara uyğun yenidən formalaşmasını izah edir və gələcək idarəetmə strategiyalarına elmi əsas təqdim edir.
Bu tədqiqat bu əsrin ən əhəmiyyətli siyasi idarəetməsini, gücün dəyişən mənbələrini və texnoloji transformasiyaları izah edir, gələcək strategiyalar üçün vacib konseptual əsas yaradır.

Açar sözlər: Siyasi hakimiyyət, qloballaşma, süni intellekt, informasiya texnologiyaları, yumşaq güc

GİRİŞ

Qlobal siyasətdə son illər ərzində baş verən proseslər siyasi hakimiyyətin mahiyyətində və həyata keçirilmə formalarında köklü dəyişikliklərə səbəb olmuşdur. Soyuq müharibənin başa çatması, qloballaşma dalğasının sürətlənməsi, İT-in inkişafı, beynəlxalq güc mərkəzlərinin formalaşması mövcud dünya düzənini köklü şəkildə yenidən formalaşdırmışdır. Burada siyasi hakimiyyət anlayışı artıq ənənəvi milli sərhədlərlə məhdudlaşmır. Transmilli aktorlar, beynəlxalq təşkilatlar və qlobal iqtisadi güclər tərəfindən yenidən müəyyənləşdirilir.
Yeni dünya düzəni dedikdə, təkcə dövlətlərarası münasibətlərin strukturundakı dəyişikliklər nəzərdə tutulmur. Burada həm də gücün mənbələrinin transformasiyası nəzərdə tutulur. Əgər 20-ci əsrdə güc əsasən hərbi potensial və iqtisadi resurslarla ölçülürdüsə, artıq 21-ci əsrdə informasiya, texnoloji innovasiya, kommunikasiya imkanları və "yumşaq güc" kimi amillər ön plana çıxmışdır. Bu amillər siyasi hakimiyyətin legitimliyinə, idarəetmə mexanizmlərinə və dövlət-vətəndaş münasibətlərinə ciddi təsir göstərmişdir.

Müasir dövrdə siyasi hakimiyyətin transformasiyası həm daxili, həm də beynəlxalq səviyyədə müşahidə olunur. Daxildə vətəndaş cəmiyyətinin genişlənməsi, sosial medianın təsiri və ictimai şüurun artması nəticəsində hakimiyyətin klassik modelləri ön plana çıxır. Beynəlxalq miqyasa gəldikdə, regional inteqrasiya prosesləri, qlobal korporasiyaların rolu və beynəlxalq hüququn yeni formaları dövlətlərin suveren qərarvermə imkanlarını məhdudlaşdırır. Yeni dünya düzənində güc anlayışı artıq tək bir mərkəzdə cəmlənmir. O, çoxqütblü və çoxsəviyyəli xarakter daşıyır. Bu isə həm siyasi nəzəriyyə, həm də praktika baxımından hakimiyyətin mahiyyətinə yenidən baxmağı zəruri edir.

MATERİALLAR VƏ METODLAR

Tədqiqatın materialları qlobal siyasətdə son illərdə baş verən proseslər, beynəlxalq təşkilatlar, transmilli aktorlar, iqtisadi və texnoloji göstəricilər, həmçinin sosial media və rəqəmsal informasiya mənbələrindən ibarətdir.

Araşdırmada müqayisəli təhlil, analiz və sintez, tarixi-müqayisəli və.s kimi metodlarından istifadə edilmişdir. İnformasiya əsrində gücün yenilənən mənbələri və süni intellektin təsiri hadisələrin analizi ilə qiymətləndirilmişdir.Tezisdə dövlətlər, beynəlxalq təşkilatlar və texnoloji aktorların güc və təsir imkanları müqayisəli şəkildə təhlil edilmişdir.

Məlumatlar tematik və kontekstual şəkildə təhlil edilmiş, dövlətlər, beynəlxalq təşkilatlar, transmilli korporasiyalar və vətəndaş cəmiyyəti institutlarının qarşılıqlı təsirləri araşdırılmışdır. Əldə olunan nəticələr sistemləşdirilmiş və gələcək tədqiqatlar üçün replikasiya imkanları təmin edilmişdir.

NƏTİCƏLƏR

Tədqiqat göstərir ki, qlobal siyasətdə son illər baş verən dəyişikliklər siyasi hakimiyyətin mahiyyətini və idarəetmə mexanizmlərini köklü şəkildə transformasiya etmişdir. Müasir dövrdə güc artıq yalnız hərbi və iqtisadi resurslarla ölçülmür, informasiya, texnologiya, kommunikasiya imkanları və "yumşaq güc" kimi amillər siyasi təsirin əsas mənbələrinə çevrilmişdir.

Araşdırma həmçinin göstərir ki, qlobal və regional səviyyədə hakimiyyət çoxmərkəzli və çoxsəviyyəli xarakter daşıyır. Dövlətlər, beynəlxalq təşkilatlar, transmilli korporasiyalar və vətəndaş cəmiyyəti institutları siyasi proseslərdə qarşılıqlı təsir göstərir və gücün paylanmasına təsir edir. Sosial media, rəqəmsal platformalar və süni intellekt siyasi qərarvermə, ictimai rəyin formalaşdırılması və legitimliyin təmin olunmasında yeni alətlər kimi çıxış edir.

Nəticələr göstərir ki, müasir dövrdə siyasi hakimiyyətin davamlılığı zor və məcburiyyət vasitələrinə deyil, etibar, şəffaflıq və informasiya məkanında təsir imkanlarına əsaslanır. Qloballaşma və texnoloji innovasiyalar nəticəsində dövlətlərin və liderlərin uğuru texnoloji çeviklik, informasiya idarəetmə bacarığı və etik məsuliyyətlə sıx bağlıdır.

Yeni geosiyasi reallıqlar fonunda siyasi hakimiyyətin çevrilən siması

21-ci əsrin əvvəlindən etibarən dünya siyasətində müşahidə olunan əsas tendensiya geosiyasi strukturun dərin transformasiyasıdır. Nəticə etibarilə bu siyasi hakimiyyətin mahiyyətinin dəyişməsinə səbəb olmuşdur. Soyuq müharibədən sonrakı dövrdə dünyada birqütblü sistemin hökm sürəcəyi ehtimal olunurdu. Lakin çox keçmədən bu modelin dayanıqsız olduğu üzə çıxdı. Qlobal iqtisadi inteqrasiyanın dərinləşməsi, regional güc mərkəzlərinin formalaşması və texnoloji inkişaf dünya düzənində yeni siyasi reallıqlar yaratdı ki, bu klassik hakimiyyət konsepsiyalarını yenidən nəzərdən keçirməyi zəruri etdi.

Ənənəvi siyasi hakimiyyət anlayışı əsasən dövlətin sərhədləri daxilindəki nəzarət, hüquqi legitimlik və güc tətbiqi üzərində qurulmuşdu amma qlobal miqyasda yaranan yeni qarşılıqlı asılılıqlar bu modeli sarsıtdı. Başqa sözlə hakimiyyət təkcə dövlətin əlində cəmlənmir, həm də beynəlxalq təşkilatlar, transmilli şirkətlər, qlobal media platformaları və vətəndaş cəmiyyəti institutları arasında bölüşdürülür. Bu kimi amillər hakimiyyətin mərkəzləşdirilmiş formasından çoxsəviyyəli, paylanmış idarəetmə modelinə keçidi göstərir. Yeni geosiyasi reallıqlar həm regional, həm də qlobal miqyasda siyasi gücün təbiətinə təsir edir, misal üçün, Çin, Hindistan, Türkiyə və Braziliya kimi yüksələn iqtisadi güclər beynəlxalq sistemdə qərb dövlətlərinin dominantlığını tədricən azaldır. Bu "çoxqütblü dünya" anlayışını reallığa çevirir. Beynəlxalq

qərarvermə mexanizmləri bir mərkəzdən idarə olunmur. Bir-birinə rəqib və eyni zamanda əməkdaşlığa məcbur olan aktorların qarşılıqlı təsiri ilə formalaşır.
Geosiyasi dəyişikliklər yalnız dövlətlərarası münasibətlərdə deyil, həmçinin daxili siyasi proseslərdə özünü göstərir. İT-in genişlənməsi, sosial medianın ictimai rəyə təsiri, siyasi kommunikasiya formalarının dəyişməsi nəticəsində vətəndaşların siyasi proseslərdə iştirak imkanları artmışdır. Buda öz növbəsində siyasi legitimliyin yalnız hüquqi deyil, həmçinin ictimai qəbul və etimad üzərində qurulmasını şərtləndirir. Hakimiyyət artıq sadəcə idarəetmə gücü deyil, o həmçinin sosial inandırıcılıq qabiliyyəti kimi dəyərləndirilir.
Yeni dünya nizamında iqtisadi amillərin siyasi qərarverməyə təsiri də artmaqdadır. Qlobal kapital axınları, beynəlxalq ticarət şəbəkələri və enerji siyasəti dövlətlərin daxili və xarici siyasətlərinə birbaşa təsir göstərir ki, bu anlamda siyasi hakimiyyət iqtisadi asılılıqların idarə edilmə qabiliyyəti ilə ölçülür. İqtisadi güc diplomatik, hərbi alətlərdən fərqli olaraq daha elastik, davamlı təsir vasitəsinə çevrilmişdir. Qeyd edək ki, müasir dövrdə təhlükəsizlik anlayışı daha da dəyişmişdir. Əvvəllər təhlükəsizlik daha çox hərbi müdafiə ilə əlaqələndirilirdi. İndi kibertəhlükəsizlik, informasiya manipulyasiyası, enerji və ərzaq təminatı kimi sahələr siyasi hakimiyyətin ayrılmaz komponentinə çevrilmişdir. Başqa sözlə desək artıq dövlətlər yalnız sərhədlərini deyil öz informasiya məkanlarını, iqtisadi infrastrukturunu qorumaq məcburiyyətindədirlər.
Yeni geosiyasi reallıqlara nəzər saldıqda biz siyasi hakimiyyətin çevrilən simasını həm də beynəlxalq hüququn və beynəlxalq institutların dəyişən rolunda əks olunduğunu görürük. Ənənəvi beynəlxalq nizamın ən əsas sütunları sayılan Birləşmiş Millətlər Təşkilatı, Beynəlxalq Valyuta Fondu və.s kimi təşkilatlar artıq qlobal problemləri tənzimləməkdə əvvəlki qədər effektiv görünmür. Bu isə öz növbəsində alternativ ittifaqların eləcədə qeyri-rəsmi diplomatik platformaların yaranmasına gətirib çıxarır. Hakimiyyətin bu çoxmərkəzli forması qlobal idarəetməni çətinləşdirir. Eyni zamanda, daha çox iştirakçılıq və çoxsəsli qərarvermə mühiti yaradır.
Bu proseslərin nəticəsində siyasi hakimiyyətin mahiyyəti -mülkiyyət- formasından -funksiya- formasına keçmişdir yəni hakimiyyət kiminsə əlində olan sabit status deyil, davamlı olaraq dəyişən və müxtəlif sahələr arasında paylanan dinamik prosesdir və dövlətlər, təşkilatlar, fərdlər bu prosesdə öz təsir imkanlarını qorumaq üçün strateji adaptasiyaya məcburdurlar.

İnformasiya əsrində gücün yenilənən mənbələri və siyasi təsirin rəqəmsal formaları

21-ci əsr dünya tarixində informasiya və texnologiya inqilabının müəyyən etdiyi yeni bir mərhələ kimi dəyərləndirilir. Başqa sözlə desək artıq yalnız sənaye və iqtisadi güc deyil, bilik, informasiya və texnoloji innovasiyalar üzərində qurulmuş güc münasibətləri ilə səciyyələnir. Artıq kim informasiya üzərində nəzarətə sahibdirsə, o həm siyasi, həm iqtisadi, həm də mədəni sferalarda güclü təsir imkanlarına malik olur. Bu kimi faktlar güc anlayışının mahiyyətini dəyişmişdir. Onun mənbələrini ənənəvi hərbi və iqtisadi alətlərdən informasiya və rəqəmsal təsir mexanizmlərinə yönəltmişdir.
İnformasiya əsrinin əsas xüsusiyyəti məlumatın strateji resursa çevrilməsidir, yəni, əvvəllər hakimiyyət daha çox fiziki mənbələr torpaq, enerji və hərbi potensial üzərində qurulurdusa, indi bu funksiyanı bilik, məlumat və informasiya axınlarının idarə olunması daşıyır. Dövlətlər, beynəlxalq təşkilatlar, transmilli korporasiyalar və hətta fərdi şəxslər informasiya vasitəsilə böyük təsir gücünə sahib ola bilirlər ki, bu amillər hakimiyyətin təbiətində dərin dəyişiklik yaradır. Artıq güc fiziki təzyiqdən daha çox informasiya manipulyasiyası, ictimai rəyin formalaşdırılması, rəqəmsal alətlər və.s kimi vasitəsilə idarə olunur.
İnformasiya əsrinin ən əhəmiyyətli yeniliklərdən biri Soft Power anlayışının reallaşmasıdır. Bu anlayış dövlətin zor və məcburiyyət deyil, əvəzində mədəniyyət, ideya, media və informasiya kimi vasitələrlə təsir göstərmə bacarığını ifadə edir. Bu gün sosial media, xəbər agentlikləri, rəqəmsal platformalar və film kimi vasitələr bu gücün əsas alətlərinə çevrilmişdir yəni artıq dövlətlər silah gücü ilə deyil, informasiya hegemonluğu ilə qlobal təsir dairələrini genişləndirirlər.
Rəqəmsal texnologiyaların inkişaf etməsi siyasi qərarların formalaşmasına, ictimai davranışın istiqamətlənməsinə bilvasitə təsir göstərir. Algoritmik idarəetmə, “big data” analizi və süni

intellektin tətbiqi nəticəsində siyasi aktorlar cəmiyyətin davranış modellərini dəqiq öyrənə bilir. Bu öz növbəsində seçkilər, ictimai kampaniyalarda yeni bir təsir forması yaradır. Bu gün informasiya yalnız məlumat ötürmək vasitəsi deyil. O, həm də ictimai şüurun strukturlaşdırılmasına xidmət edən strateji alətə çevrilmişdir.
İnformasiya dövründə rəqəmsal asılılıq adlı yeni sosial və siyasi fenomen yaranmışdır. Cəmiyyətlər texnologiyaya inteqrasiya olunduqca, onların informasiya məkanına müdaxilə imkanları da eyni miqdarda artır. Kiberhücumlar, dezinformasiya, -fake news- kampaniyaları və manipulyativ sosial media fəaliyyəti dövlətlərin daxili sabitliyinə ciddi təsir göstərir. Artıq informasiya artıq həm güc mənbəyi, həm də təhlükə faktoru kimi çıxış edir.
İnformasiya üzərində nəzarət müasir siyasi sistemlərdə artıq strateji prioritetə çevrilmişdir. Dövlətlərin əsas vəzifələrindən biri informasiya axınlarını tənzimləmək, dezinformasiyaya qarşı müdafiə mexanizmləri qurmaq və rəqəmsal suverenliyi qorumaqdır. Burada rəqəmsal suverenlik amili milli təhlükəsizliyin ən mühüm komponentinə çevrilmişdir. 21-ci əsrdə dövlətlər yalnız ərazi bütövlüyü ilə yanaşı, həm də öz informasiya infrastrukturunu qorumağa məcburdur.
Rəqəmsal platformalar vasitəsilə siyasi təsirin müxtəlif formaları yaranmışdır. Sosial şəbəkələr (X, Facebook, İnstagram) seçki kampaniyalarının aparılmasında, ictimai fikrin yönləndirilməsində mühüm rol oynayır. Bir tvit, bir video paylaşım qısa zamanda milyonlarla insana çata bilir. Bunlar siyasi qərarların istiqamətinə təsir göstərə bilir. İnformasiya şəraitdə informasiya liderlik anlayışını da dəyişir yəni liderin təsir gücü təkcə dövlət aparatına deyil, həm də rəqəmsal auditoriyaya bağlanır.
21-ci əsrdə gücün yenilənən mənbələri öz növbəsində etik və hüquqi problemlər doğurur. Bu gün siyasi diskussiyaların əsasını məlumatın toplanması, şəxsi həyatın gizliliyi, sosial mediada senzura və məlumat manipulyasiyası kimi məsələlər təşkil edir. Demokratik cəmiyyətlər üçün ən önəmli amil informasiya azadlığı ilə milli təhlükəsizlik arasında balansı qorumaqdır. əksinə olaraq avtoritar rejimlər isə rəqəmsal nəzarət vasitələrindən istifadə edərək cəmiyyət üzərində daha ciddi idarəetmə sistemi qururlar. Yuxarıda qeyd etdiyimiz amillər informasiya dövründə siyasi rejimlərin fərqlərini daha da kəskinləşdirir.
Eyni zamanda, informasiya əsrində yeni formalaşan istiqamətlərdən biri beynəlxalq münasibətlərdə "rəqəmsal diplomatiya"dır. Dövlətlər sosial media və rəqəmsal platformalar vasitəsilə xarici ictimaiyyətlə birbaşa ünsiyyət qururlar. Həmçinin öz milli imicini formalaşdırır və informasiya müharibəsində üstünlük qazanmağa çalışır. Burada klassik diplomatiya tamamlanır. Eyni zamanda onu çevik, sürətli və dinamik bir formaya salır. İnformasiya zəmanəsində gücün mənbələrinin yenilənməsi eyni miqdarda insan faktorunun önəmini artırır. Dövlətlər üçün təkcə maddi resurslara malik olmaq kifayət etmir. İnnovativ düşüncə, analitik bacarıq, texnoloji savad və media mədəniyyəti siyasi və iqtisadi uğurun ən önəmli göstəricilərinə çevrilmişdir.
Nəticə etibarilə, informasiya dövründə güc amili çoxşaxəli, çevik məzmun qazanmışdır. Güc indi yalnız fiziki və iqtisadi üstünlük demək deyil. Bu gün güc informasiya istehsalı, paylaşımı və idarəedilməsi üzərində qurulur. Bu kimi dəyişiklik siyasi hakimiyyətin legitimlik özəyinidə yenidən müəyyənləşdirir başqa sözlə siyasi hakimiyyətin davamlılığı artıq zor tətbiqinə deyil, informasiya məkanında etibar, şəffaflıq və inandırıcılıq qabiliyyətinə əsaslanır. Beləliklə, texnologiya dövründə gücün yenilənən mənbələri dövlətlərə, təşkilatlara həmçinin fərdlərə yeni imkanlar qazandırmışdır. Müasir dövrdə bir sıra amillər strateji prioritetə çevrilmişdir; rəqəmsal təsirin idarə olunması, informasiya təhlükəsizliyinin təmin edilməsi və ictimai rəyin manipulyasiyadan qorunması. Bu şəraitdə dövlətlər üçün əsas məqsəd informasiya əsrinin imkanlarından səmərəli istifadə etməklə yanaşı, onun doğurduğu riskləri də idarə edə bilməkdir.

Qloballaşma və süni intellekt dövründə siyasi hakimiyyətin gələcək istiqamətləri

21-ci əsrin ikinci yarısına doğru dünya siyasəti fərqli bir mərhələyə qədəm qoyur. Burada texnoloji innovasiyalar, süni intellekt və qloballaşma prosesləri siyasi hakimiyyətin strukturunu və idarəetmə mexanizmlərini köklü şəkildə dəyişdirir. Müasir dövrdə gücün dayaqlarının sırasına rəqəmsal idarəetmə, texnoloji suverenlik və informasiya təhlükəsizliyi əlavə olunur. Siyasi

hakimiyyət artıq yalnız idarəetmə səlahiyyəti daşımır. O, həm də innovasiyanı yönləndirmə, məlumatı nəzarətdə saxlama və texnoloji üstünlüyü qoruma bacarığı kimi dəyərləndirilir.
Qloballaşma siyasi hakimiyyətin ənənəvi sərhədlərini zəiflədir və dövlətlərin qarşılıqlı asılılığını artırır ki, bunun nəticəsində qərarvermə mexanizmləri təkcə milli çərçivədə deyil, həmçinin beynəlxalq səviyyədə formalaşır. Bu gün iqtisadi, ekoloji, təhlükəsizlik problemləri bir dövlətin sərhədləri daxilində həll edilə bilmir. Misal üçün, iqlim dəyişikliyi, kibertəhlükəsizlik, Aİ kimi məsələlər qlobal əməkdaşlıq tələb edir. Bu isə siyasi hakimiyyətin mahiyyətini "mərkəzləşdirilmiş" idarəetmədən "kollektiv və şəbəkə əsaslı" idarəetməyə doğru yönəldir.
Süni intellektin inkişafı hakimiyyət münasibətlərində tamamilə yeni mərhələ açır. Məlumat toplanması, analiz edilməsi və qərarların avtomatlaşdırılmış şəkildə formalaşdırılması siyasi prosesləri daha səmərəli, eyni zamanda potensial olaraq daha da təhlükəli vəziyyətə gətirir. Süni intellekt vasitəsilə bir çox işlər görülür ki, cəmiyyətin davranış modelləri proqnozlaşdırılması, ictimai rəyin formalaşdırılması, idarəetmə qərarları sürətlə qəbul edilməsi və.s bura aiddir. Lakin bu proses şəffaflıq və etik məsuliyyət kimi bir sira problemləri də gündəmə gətirir.
Qeyd edək ki, yaxın gələcəkdə siyasi hakimiyyətin mühüm komponentlərindən biri texnoloji legitimlik amili olacaq. Daha dəqiq desək, vətəndaşlar dövlətin yaxud liderin effektivliyini onun texnoloji imkanları, rəqəmsal idarəetmə bacarığı ilə qiymətləndirəcəklər. Elektron hökumət, rəqəmsal iştirak platformaları, süni intellekt əsaslı xidmətlər vətəndaşların gündəlik həyatına birbaşa və ciddi təsir göstərəcək. Bu isə demokratik hesabatlılığı gücləndirə eyni zamanda da yanlış istifadə halında total nəzarət mexanizminə çevrilə bilər.
Gələcəkdə süni intellektin bu qədər inkişafı beynəlxalq güc tarazlıqlarını da dəyişdirəcək. Texnoloji innovasiyaya rəhbərlik edən ölkələr yəni, ABŞ, Çin, Yaponiya və Aİ dövlətləri qlobal siyasətdə strateji üstünlük əldə edəcəklər. Siyasi gücün əsas göstəricisinə texnologiyanın istehsalı, məlumat bazalarının həcmi və süni intellektin tətbiq sahələri və.s kimi amillər çevrilir. Rəqabət yeni növ olan bu forma texnoloji geosiyasət anlayışını formalaşdırır. Süni intellekt dövrü siyasi hakimiyyətin sosial ölçüsünü də dəyişdirir yəni insan və maşın əməkdaşlığı idarəetmənin təməl prinsipinə çevrilir. Misal üçün, qərarların qəbulunda süni intellektin dəstəkləyici rolunun artması siyasi liderlik anlayışını təkamülə uğradır. Lider yalnız ideya və vizyon sahibi olmaqla yanaşı, texnoloji savadlı, informasiya axınlarını analiz edə bilən şəxs olmalıdır. Bu öz növbəsində gələcəyin siyasi elitalarının formalaşmasında təzə meyarlar yaradır.
Qloballaşma süni intellekt ilə birlikdə siyasi idarəetmədə iki istiqamətli təsir göstərir. Bunlar bir tərəfdən dövlətlər arasında əməkdaşlıq və resurs paylaşımını zəruri edir. Digər tərəfdən isə milli kimliyin qorunması və informasiya təhlükəsizliyi ilə bağlı yeni risklər doğurur. Qlobal rəqəmsal məkanda informasiya sərhədlərin itməsi ideoloji təsirlərin daha asan yayılmasına gətirib çıxarır. Bu səbəblərdən gələcəkdə siyasi hakimiyyətin ən ümdə vəzifələrindən biri milli suverenliklə qlobal inteqrasiyanı balanslaşdırmaq olacaq. Siyasi hakimiyyətin sonrakı cərəyanlarında biri də etik idarəetmə modelinin qurulmasıdır. Aİ texnologiyalarının qərarvermə proseslərində iştirak etməsi məsuliyyət bölgüsünü çətinləşdirəcək. Bu situasiyada insan foktoru yenidən mərkəzi mövqeyə çıxır. Etik prinsiplərə əsaslanmayan texnoloji idarəetmə gələcəkdə cəmiyyət-hakimiyyət arasında güvən böhranı yarada bilər. Elə bu səbəbdən gələcək dövlət modelləri təkcə texnoloji səmərəliliyə deyil, eləcədə etik şəffaflığa əsaslanmalıdır.
Qloballaşma, süni intellekt dövrü həm də vətəndaş iştirakçılığının yeni formalarını yaradır ki, rəqəmsal platformalar insanların qərarvermə proseslərinə real vaxtda qoşulmasına imkan verir. Buradakı amillər demokratiyanın təkmilləşdirilməsinə töhfə verə bilər amma populizm, manipulyasiya və informasiya saxtakarlığı kimi təhlükələri də bərabərində gətirir. Qeyd etdiyimiz səbəblərdən gələcəyin siyasi sistemləri həm açıq iştirakçılıq eyni zamanda dezinformasiyaya qarşı effektiv qorunma mexanizmləri qurmaq məcburiyyətində qalacaqlar.
Son olaraq, qloballaşma və süni intellekt zəmanəsində siyasi hakimiyyətin gələcəyi çoxölçülü, çevik xarakter daşıyacaq. Hakimiyyətin əsası idarəetmə bacarığından çox adaptasiya qabiliyyəti, texnoloji yönümlülük etik məsuliyyətlə ölçüləcək. Dövlətlər, liderlər bu yeni reallıqda o zaman

uğurlu ola biləcəklər ki, texnologiyanın imkanlarını humanist dəyərlərlə düzgün uzlaşdıra bilsinlər.

YEKUN NƏTİCƏ VƏ TƏKLİFLƏR

Ötən əsirdən fəqli olaraq 21-ci əsrdə siyasi hakimiyyətin mahiyyəti və strukturu köklü şəkildə dəyişməkdədir. Bu tip dəyişikliklər qloballaşma, İT, süni intellekt kimi faktorların qarşılıqlı təsiri nəticəsində formalaşır. Dövlətin fiziki və iqtisadi resurslara əsaslanan hakimiyyət modeli artıq qlobal siyasətin mürəkkəb reallıqlarını izah etmək üçün bəs etmir. Müasir dünyada güc çoxşaxəli xarakter daşıyır. O, həm iqtisadi, həm texnoloji, həm də informasiya sahəsində özünü göstərir. Yeni geosiyasi reallıqlar dünya düzənində çoxqütblülüyü artırmışdır. O, həmçinin beynəlxalq münasibətlərdə qeyri-dövlət aktorlarının rolunu genişləndirmişdir ki, informasiya əsrinin yüksəlişi gücün təbiətini kökündən dəyişdirərək, onu fiziki məcburiyyətdən informasiya və təsir siyasətinə yönəltmişdir. Bu prosesin fonunda "yumşaq güc", "rəqəmsal diplomatiya", "informasiya hegemonluğu" kimi amillər siyasi nəzəriyyənin əsas komponentlərindən birinə çevrilmişdir.

Bu gün süni intellekt həmçinin texnoloji innovasiyalar siyasi hakimiyyətin gələcək istiqamətlərini müəyyənləşdirən əsas amillərdir. Hakimiyyət yalnız idarəetmə funksiyası deyildir. O, həmçinin texnoloji çeviklik, etik məsuliyyət və məlumat üzərində nəzarət bacarığı kimi dəyərləndirilir. Yuxarıda qeyd etdiyim kimi, dövlətlər və liderlər müasir zamanda uğurlu olmaq üçün texnologiyanın imkanlarını humanist və demokratik dəyərlərlə uzlaşdırmaq məcburiyyətindədirlər. Son olaraq, 21-ci əsrdə siyasi hakimiyyət sabit, stabil sistem deyil. Siyasi hakimiyyət dinamik, dəyişkən və çoxsəviyyəli bir prosesdir. Onun davamlılığı və legitimliyi artıq zor və məcburiyyət mexanizmlərinə əsaslanmamalıdır. O, etibar, şəffaflıq və informasiyaya əsaslanan idarəetmə üzərində qurulmalıdır.

TƏŞƏKKÜRLƏR

Bu tədqiqatın hazırlanmasında əlavə dəstək göstərilməmişdir.

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THE HUMAN RIGHT TO THE ENVIRONMENT, A RECOGNIZED FUNDAMENTAL RIGHT

Dr. Liliana NICULESCU*
* Lecturer PhD -"Dunărea de Jos" University – Galati – Romania

ABSTRACT

If environmental protection necessarily interferes with the exercise of fundamental freedoms, for example, the right to freedom of movement or the prohibition of the right to travel in certain protected areas, then this also means that more problems will arise.
The right to the environment is primarily linked to the right to health and the right to life; ultimately, it means establishing the right to a decent life and work, i.e. health and safety at work and the right to rest and leisure.
In contrast, environmental law encompasses fundamental principles of justice, such as the right to freedom and participation, the right to freedom of expression, the right to collective action and therefore supports the social and collective use of existing rights.
Law is a set of obligations towards the state and government, as well as towards individuals. It is clear that environmental sustainability can be a catalyst for greater participation in public life and democracy in all its forms.

Keywords: rights, health, interference, work, information

Introduction

International environmental instruments are often used as simple recommendations rather than as binding standards. For example, the Rio Declaration on Principles for Environment and Development (Rio Declaration) is a good example. Although not legally binding, the declaration resulted in a compromise between developed countries and the Group of 77 (G77). It affirms the rights and obligations of States in the field of environmental protection and establishes Principle 27. Despite their normative nature, the principles presented as simple recommendations in international environmental instruments are not part of domestic law. This should not diminish their importance in relation to the essential requirements of international environmental law (Prier, 1991).

Principles of international environmental law.

Therefore, when discussing international legal principles that are included in international law, it is not necessary to emphasize their relative legal validity, that is, the nature of the law included. Moreover, with the development of international cooperation and collaboration in the field of environmental protection, the growth of the economic power of developing countries, and the advancement of cooperation and science, international law has evolved and will continue to evolve in a way that broadens the scope of cooperation among developing countries. In a very reduced reality, what constitutes law or a situation today may not have the corresponding legal force, but in the form of recommendations, it will become an important issue in international law in the future and, according to the Rome Charter, may even become part of international security law (Ulies, 1994).
However, the difficulty in legally interpreting these guidelines stems from the fact that many secular treaties simply state a set of general rules without detailed interpretation.
We will not limit ourselves to the semantic aspects of the issues addressed here. We will examine the concept of "principle" in relation to what can be inferred from a legal and regulatory perspective. Sometimes, even in the context of a declaration containing the concept of "principle", the situation can

be ambiguous. Thus, while the "principles" of the Dublin Declaration on Water (January 1992) and the Rio Declaration (June 1992) are largely legally structured (although not fully formalized in legal terms), the "Action 21" program will guide you. Although the program may refer to "principles of action" several times in each chapter and may provide guidance, this is a very different interpretation from what is discussed in this chapter. It should also be noted that the economic and political integration of Europe has been accompanied by an aggressive form of environmental struggle. In addition to its extensive legislative powers, the EEC also has the power to control the way laws are drafted and implemented (Lamar, 1975). In recent years, especially since the entry into force of the Single European Directive (1987), international cooperation on the continent has advanced significantly. However, the public policy framework remains inadequate and therefore requires significant improvements, including in the controversial area of environmental protection.

The Single European Protocol amends the existing agreements of the European Community and provides a clear solution to the problem of the legal basis of the Community's competence in the field of environmental protection.

Customary law also gives legal (and binding) effect to the principle of subsidiarity, allowing individual Member States to adopt or establish stricter environmental protection measures. This document, which is particularly important in the field of environmental protection, clearly defines the principles of action of the regional Community, which are essentially procedural rules rather than legal principles. The document contains eleven principles, four of which take into account the international dimension of EU environmental policy (Cans, 1995).

The Maastricht Treaty, signed on 7 February 1992 and entered into force on 1 November 1993, under the Single European Act, led to significant changes in political, economic and monetary integration. As regards the environment, the principles underlying the framework have evolved, developed and progressed over time, with the subsidiarity principle prevailing. We must pursue balanced and sustainable economic and social development, making this a primary objective and respecting the environment.

Through the Treaty of Amsterdam, signed on 2 October 1997, the European Union established that environmental actions require ratification at national level, which is a condition and component of "harmonious, balanced and sustainable development" and therefore protects the environment. This agreement has become a de facto reference for environmental protection. (Proceedings of the 2019 United Nations Conference on Environment and Development, including the Declaration of Principles)

In this context, we will first examine the principles of environmental law, that is, the principles of domestic law (or principles of a common nature), followed by the principles of international environmental law, in whatever order they are considered.

The general principles of domestic environmental law are as follows (Klemm et al., 1989):

Public Ecological Order

(a) The principle that environmental protection should be legally recognized as a substantial public interest. The Revised Environmental Protection Act defines environmental protection as a substantial public interest in Article 1. This document analyzes the legal norms on environmental protection from a legal perspective and clarifies the direction and direction of the legislative provisions. Environmental protection should be based on strategic principles and factors that lead to sustainable social development. The importance of environmental protection is not new in Korea. It was defined as a "matter of national interest" in Act No. 9 of 1973 (Article 1). The 1991 Constitution did not explicitly state this principle, but stipulated that the state's obligation to develop natural resources should be stipulated as serving the "national interest" (Article 134, Paragraph 2, Subparagraph d). However, the 1991 Constitution was amended by a National Referendum, deleting Article 2, No. 7 and No. 7, No. 2. Article 135, No. 135(a) supports a substantial conceptual change in environmental protection, in particular the human right to a healthy environment. Where environmental legislation recognizes that the subject of legal protection is one of substantial public interest, the established principle applies to the various parts of the relevant

article and to the environmental elements requiring protection. Therefore, Law on Environmental Protection No. 137/1995 and subsequent amendments clearly have the character of a fundamental law, emphasizing not only the protection of general environmental values directly addressed by the law, but also the essential nature of public interest issues requiring legislative action (Dutu, 2000).
Of course, Article 89 of the repealed Law on Environmental Protection provides for the establishment of special rules, amended or newly established, to ensure the effective implementation of environmental protection measures. The 17 articles of the General Fundamental Law cover issues such as the management of hazardous substances and waste, the management of pesticides, the protection of shores and coastal areas, aquaculture and fishing, as well as liability for environmental damage. It is clear that any special law that needs to be drafted and adopted must respect the principle that environmental protection is a public good. Of course, the theoretical and practical implications of the application of this principle will undoubtedly be influenced by both fundamental and special laws, i.e. complementary legislation (Prieur, 2003).
Beyond the first consequence of the principle in question, there are other consequences.
As noted by Dr. A.S. Mircea Duțu, "These general provisions demonstrate the particular socio-legal importance given to maintaining the ecological balance and preserving the state of environmental elements and substances and provide an important framework for legal norms in this area." (Duțu, 2000)

The public recognition of the ecosystem

The public recognition of the ecosystem as both a barrier and a target for management actions is a controversial issue. This point refers to the difficulty of recognizing the existence of multiple governmental mandates, each specific to a branch of law, as well as to the fact that, in our country, the meaning and implications of this concept have not been clearly articulated.
However, while we recognize the existence, in the field of environmental protection, of a public system, we would not agree with the above point of view, according to which, since there are legislative provisions that are of public order, deductions from them are not allowed. In fact, these effects do not depend on the public policy form of the legal norms, but on the fact that they are mandatory norms; However, most laws consist of mandatory provisions, but only a few refer to public policy. (Lascoumes, 1995).
Among other implications of the legal declaration of public interest classifying environmental protection activities, Michel Prieur refers to the regulation of the legitimacy of environmental activities, using the theory of proportionality to assess legitimacy as being publicly useful for a task. The author also envisages the creation of state environmental protection services; Thus, according to him, "since environmental protection is considered a general interest, there is no obstacle to the creation, by the public authority, of a public function responsible for its management". This type of public service also existed in the early 1970s, caused by environmental protection, partly (for example, decentralized public services such as departmental agricultural services) or entirely (specialized public units such as national parks or river basin financing agencies); Other private state organizations, including environmental protection organizations, which are strictly regulated by the state and exercise attributes of state power (management of nature reserves), may be recognized by the courts as public administrative management for environmental protection. (Prieur, 1991).
b) The principle of priority, prevention and remediation in the field of ecological risks and threats is provided for in Article 18 of the preamble to the Rio Convention (June 1992) on biodiversity, which stresses the increasing importance of considering and preventing the causes of the decline or loss of biodiversity. It is clear, however, that the application of this principle extends beyond the field of biodiversity and can and should be applied in all areas of environmental protection - such as, for example, climate, pollution, protection of the ozone layer, etc. (Lepage, 1995).
This principle, like the Law on Environmental Protection, is not legislated. It was included in Law No. 137/1995 with subsequent amendments (Article 3), formulated in a simplified form, without mentioning the concept of risk, which, however, does not change the content of the principle. However, it should be

emphasized that the entire concept underlying environmental policy in the new policy begins with the recognition of the importance of actions to prevent the occurrence of ecological disasters. Accordingly, all regulations of economic and human activities with an impact on the environment are included in Chapter II of the Code - on authorization procedures, regulation of hazardous chemicals and their preparation, regulation of equipment and installations for biosanitary purposes, as well as regulation of nuclear waste and hazardous waste management processes (1944) - especially when considering design and risk prevention.

Elements of the Law on Environmental Protection.

According to the formulation of the content of this principle in other international documents, the consideration and prevention of risks go hand in hand with the idea that these objectives must be achieved by the best available means; this explanation is integrated into certain legal provisions and doctrine in France. In this regard, it cites the Paris Convention of 22 September 1992 for the Protection of the North-East Atlantic Coastal Zone (Article 2 and Article 3 notes a and b), according to which “The Parties to this Treaty... shall continue to take into account the use of existing and emerging technologies in the current situation of “implementation of good practice parameters and implementation” 1995). According to French Regulation No. 95-101 of 2 February 1995, the formulation of this principle is as follows: “the principle of preventing and remedying, as a priority at source, the impact on the environment, using the best available methods at an acceptable cost” (Article 1 paragraph 2, our source can be found in our correction). However, it would not be wrong to imagine what such a situation would mean, at the cost of unjustly abandoning environmental protection. Obviously, it is only a question of limiting conservation efforts to this end and not of promoting economic development and conservation on the long-term environmental. about which, as mentioned, there was a fear that research from the beginning could sometimes be more expensive and less productive than an a posteriori one (Col, 1989), and in section 3 of Law no. 137/1995 it was emphasized that "the principle of control, reduction and control will be collected using the most effective methods available". in highly polluting activities, whose formulations essentially determine the integration of Romanian legislation, and the legislation cannot be implemented without the meaning of "laws and policy" which refers to "a positive stage of development marked by a positive condition and implementation of the project, reflecting the efficiency of the functioning of the precedent that can be achieved if the economy cannot implement the same environment" (Dușca, 2014).

Although, from a purely psychological or sentimental point of view, it may seem difficult to admit that sometimes it is better to repair damage to nature than to prevent it, such an environmental policy should be considered in all countries and, therefore, in Romania as well. Environmental protection, as an economic activity, is also subject to the rules of the market economy. And sometimes, in this area, where scientific and technical knowledge still has its limits, repairing seemingly improbable damage can cost less than taking complex and difficult measures to prevent potential performance damage.

We would like to emphasize that the environmental protection law does not condition this activity on preventing damage to nature at economically acceptable costs. We believe that only one additional clarification is necessary: the choice between the use of preventive measures and those that repair damage will only follow the principles of environmental protection as long as the potential damage is reversible and the repair of damage guarantees the restoration of full participation in the state of the environment.

However, such a discussion is of a theoretical nature for us. Indeed, art. 9 and 10 of OUG 91/2002 seem to fulfill the principle of precautionary action, which states that “environmental authorizations are not granted if the conditions provided for by the applicable standards and technical regulations are not met and are reviewed if new elements appear”.

The precautionary principle, which is closely linked to the principle of anticipation, prevention and correction of risks and their assessment, is enshrined as a code of conduct in the field of environmental

protection, where, before making decisions, the likelihood and probability of ecological damage occurring are taken into account.
The Rio Declaration seems to be principle no. 15, which states: "In order to protect the environment, States should take precautionary measures on a large scale, commensurate with their capacity." In cases of risk of serious and irreversible damage, the lack of absolute scientific certainty should not be a pretext for resorting to destructive measures aimed at affecting the environment" (Nangan 2002).
This principle is specifically reiterated in the Convention on Biological Diversity (Rio de Janeiro, 1992), the preamble of which states that "where there is a threat of substantial reduction or loss of biological diversity, the lack of absolute certainty shall not be invoked as a reason for postponing measures or for avoiding any of their consequences".
The definition of the precautionary principle emphasizes, as we have shown, that in the absence of certainty, according to current scientific and technical knowledge, the adoption of effective and proportionate measures designed to reduce the risk of serious and irreversible damage to the environment environment, at an economically acceptable cost, should not be postponed. However, this is a definition that has been strongly criticized in French literature. Thus, Corinne Lepage observes that "the precautionary principle ultimately means that an action or activity should not be undertaken if its consequences cannot be known"; however, the author notes, this does not follow from the words of the text. Similarly, Pierre Lascoumes states that "the precautionary principle, which, in the absence of scientific and technical certainty, provides for the adoption of effective preventive measures, cannot be applied in French law". "...only at an economically acceptable cost (Lascoumes, 1995), due to the possibility of evaluating each industry".
Finally, Article 3, no. 3, of the Convention on Climate Change (Rio, 1992, ratified by Romania by Law no. 24/1994), although it confirms the principle to which we refer, uses the term precautionary in a sense close to the idea of prevention.
We are faced with a principle which, in prescribing standards of conduct in the field of environmental protection, expresses the obligation to accompany any operation carried out in the field of environmental protection with adequate insurance or to avoid measures that have unpredictable consequences. Therefore, obligations of interruption or suspension cannot be imposed. As a principle of general application, the duty of diligence is easily fulfilled in any field of environmental protection. Undoubtedly, there are fields of science which, in direct relation to environmental protection, assume a greater degree of uncertainty regarding the - sometimes far-reaching - effects of human actions on the natural environment, such as biotechnology and basic activities. However, it cannot be argued, for example, that, given the current state of scientific knowledge, the risks of dumping nuclear or radioactive waste on future generations cannot be assessed on the basis of the natural circulation of such waste. From this perspective, it becomes clear that current practices, based on limiting the methods of disposal of waste from the immediate human environment, maintaining it in the same state, especially in the ground, in no way eliminate the real dangers for future generations.
In addition to its theoretical importance, the precautionary principle can have numerous practical consequences regarding liability for damage to the environment. In fact, the duty of diligence in the organization and conduct of certain activities is used to establish the culpability of the person who will be liable for acts that cause damage, such as the simple failure to comply with certain obligations to which he is subject (Anthony, 2014).
However, if we refer to extra-contractual civil liability, in the presence of the provisions of article 81 of Law no. 137/1995, according to which "liability for damages is objective, independent of fault", the reference to an obligation of diligence is unnecessary. However, in the case of other forms of liability - criminal, extra-contractual, labor - where the existence of fault is essential for the occurrence of liability, the reference to the precautionary principle may be crucial. Depending on the obligations assumed by the parties, the principle to which we refer may have important implications for clarifying the relationships arising from insurance contracts.

We consider it useful to recall the role envisaged in the Convention on Biological Diversity of 1992 in the Protocol on Biosafety, the Cartagena Protocol on the Prevention of Biotechnological Risks, signed in 2000 and ratified by Romania.
Given that the precautionary principle is present in numerous international agreements, in particular in conventions that provide a legal framework for activities likely to present potential environmental risks, and considering that biotechnologies can not only have positive impacts on the environment, but also cause them (Agenda 21), the risks presented by organizations will be considered moderate (GMOs) and, in particular, with regard to human and plant biodiversity, the application of the precautionary principle seems indispensable and justified.
In a strict legal context, the precautionary principle implies that a possible risk or a certain risk, without scientific evidence of its occurrence, cannot constitute a reason for not implementing a system to prevent such a risk. Thus, as we have shown, foresight is a forward-looking perspective, open to the future.
There is no doubt that the precautionary principle, introduced in the Protocol on Biological Diversity, has been introduced, albeit implicitly, into international environmental law and international food safety law. From the economy of the Protocol, it follows that the precautionary principle, in its scope, has multiple uses: the spirit of solidarity in terms of risk policy, the universal spirit which it embodies; the cooperation mechanisms it has established, particularly in the scientific, technical and legal fields. (Cans, 1995).
We will allow ourselves, synthetically, to make a comparison between the principle of prevention, which involves the management of a known risk, and the precautionary principle, which requires the control or anticipation of an unknown risk.
The principle "polluter pays", enshrined in the Law on Environmental Protection in art. 3 letter d, is found in a series of international documents, among which we will cite the Rio Declaration (principle no. 16).
As Professor Michel Prieur rightly writes, this principle raises complex economic and legal problems and, I would add, political and scientific problems. I have already indicated that, if this principle is to establish the simple obligation of the person who causes concrete damage to the environment to repair it, then we will be faced with an axiom, without its own legal value; this is not the meaning of the principle in question. In a broad sense, this principle aims to involve pollution in the social cost of the pollution it causes, implying the effects of pollution not only on goods and people, but also on nature itself. (Prieur, 1991).
In a narrower sense, the "polluter pays" principle aims to oblige politics to pay the costs of combating pollution; thus, there are specific levels of relationships, such as partial "internalization", which allow the imposition of taxes or pollution charges on the polluter, so as not to oblige the community to bear the costs of pollution.
A correct understanding of the content of the principle in question requires clarification; that in such an organizational system, the granting of state subsidies to help finance anti-pollution investments through pollution is contrary to the "polluter pays" principle.
In France, the extension of the "polluter pays" principle and the fiscal system to combat noise and agricultural pollution. The adoption by Parliament of art. Article 421-8 of the Urban Planning Code, which provides for non-compensatory easements on classified installations, represents a violation of the "polluter pays" principle, since the texts initially provided that polluting industries were responsible for paying for neighborhood easements. In this situation, the conclusion that the "pollution pays" principle often represents the recognition of the taxpayer's right to pollute and therefore legitimizes more questionable environmental behaviors.
The French legislator - interestingly - does not align itself with this principle in the sense of the Rio Declaration, according to which, as we have shown, politicians must bear not only the costs of pollution, but also the costs of the Paris Convention for the Protection of the Marine Environment of the North Atlantic - contained in Article 2 b. It provides that "the Contracting Parties shall apply the principle of pollution payments, according to which the costs resulting from measures to prevent, reduce and combat

pollution are borne by the polluter". This definition means that the Paris Convention system, adopted by law in France, no longer imposes the acceptability of costs. (Giroud, 2002).
The regulations contained in Law No. 137/1995 seem to be in complete conflict with the requirements of the principle of pollution at source, which can be deduced from the precedents. The unification of the financial efforts of all existing real and virtual "polluters", for the prevention and reduction of pollution, as well as its combat, remains in the Environmental Fund, in accordance with the law; such a fund also exists in the regulation of Law no. 18/1991, on land improvements. However, it is no less true that, by virtue of the various provisions of the law, natural and legal persons who own pollution sources are obliged to equip themselves with anti-pollution means, to bear the necessary expenses for this purpose; this is the case, for example, for art. 34, Art. 47 letters b, c, d, e of Law 137/1995. Public information and participation in environmental decisions are included in the provisions of the Law on Environmental Protection which provides, in art. 3 letter i), the development of a framework for the participation of non-governmental and private organizations in the formulation and implementation of objectives. In our opinion, we consider that participation cannot be provided without accurate and complete information, so that both parties should be considered based on the same principles.
Participatory democracy, of course, does not explicitly provide for environmental protection policies. However, at this point, state action can only succeed if it shares its responsibility with all citizens, not with their religion. As mentioned in the specialized literature, the need for citizen participation in environmental protection is associated with the challenging characteristics of the field: universality, duration, interdependence and irreversibility.
The right to information is certainly the same as the right to information. It is, again, the way in which this right is incorporated in art. 31 of the Romanian Constitution, according to which "the individual's right to "public and personal well-being".
Including specific texts and its normative scope, Law no. 137/1995 means that the state recognizes the right of each person to have a safe environment, guaranteed, among other things, by access to information on environmental quality. (Uliescu, 1993).
We specify that, due to the amendment and completion brought by OUG 91/2002, the draft article 5 was also amended, its content being "access to environmental information under the confidentiality conditions provided for by the applicable laws".
Current norms, including Law 86/2000 for the ratification of the Aarhus Convention on access to information, public participation in decision-making and access to justice in environmental matters, followed by GD 1115/2002 on access to environmental information, represent, in our opinion, our way of ensuring access to the population and the authorities that have been requested. The birth of the right to information on environmental issues occurred with the Stockholm Declaration. (Articles 19 and 20), which stimulated, in addition to the way in which individuals can exercise their responsibility towards the environment in full knowledge of the facts, the expansion of freedom of information. The Final Act of the Helsinki Conference (1975), although it required a group of political decision-makers to be held accountable and responsible for protecting and improving the environment. It is also important to mention the EU Directive 90/313 of June 1990 and the new EC Directive 2003/4 (which will of course also amend GD 115/2002) on the freedom of information in environmental matters, guaranteeing freedom of access to information available to public authorities, as well as obtaining the basis on which it is available. (Cans, 1995); On the other hand, the principle of participation, which is not defined by such a law, is based on the recommendation of the European Committee of Ministers according to which, when a competent authority proposes an administrative decision, the affected parties should be notified. Principle 10 of the Rio Declaration specifically refers to this aspect, in the following terms: "the most appropriate way to emphasize that "The main objective for solving environmental problems is to ensure the participation of all citizens concerned, at the most appropriate level l". We note that principles 20-22 of the same declaration specifically refer to the participation of women, youth and indigenous peoples and communities.
At a specific level, the Declaration on Sustainable Forest Management (Rio, 1992) also highlights aspects of participation, indicating, on the one hand, that adequate conditions should be created for

indigenous peoples, their communities and other communities, as well as forest dwellers, to enjoy, in a sustainable way of life, a substantial management system and encouraging specific ecological management of forests; On the other hand, the full participation of women in all aspects of the management, conservation and economically viable exploitation of forests should be encouraged. The involvement of local communities and the provisions of the texts 87 of the Law on Environmental Protection refer to Currently, in our legislation, the fact that non-governmental organizations are granted active procedural legitimacy, being referred to the courts for the purpose of environmental conservation, regardless of who is harmed. Very important from a theoretical point of view and, undoubtedly, from a practical point of view, art. 87 of the Law, which was introduced into the draft law during parliamentary debates, was unfortunately marked by the consequences of the excessive speed with which it was discussed and adopted; The text is, in our opinion, at least incomplete, if not outright false.

Indeed, art. 87 of the Law refers to non-governmental organizations, without any other specification, which would mean that any non-governmental organization, regardless of its activities and the purpose for which it is created, is subject to the provisions of this section. However, such a solution is difficult to conceive, even from the perspective of the principle of the specialty of the capacity of legal persons to use. We are talking, we believe, only about non-governmental organizations whose object of activity is environmental protection.

Moreover, the intervention of organizational privileges - exercised in judicial cases - does not occur only in case of damage, but, perhaps above all, to prevent its occurrence.

Thirdly, if the actual damage was caused by a natural or legal person, a conservation organization cannot be replaced by a compensation process.

Finally, art. 87 seems to create a privilege in favor of the NGO, which is covered by art. 5 letter c) guaranteed to all persons in the general sense of the present law. It is - it should be mentioned here - the only case in which our legislation recognizes the real possibility of "popular action"; Or, even in comparative law, legislators everywhere vehemently oppose such a rule.

The principle of universal recognition implies a framework and a collective and systematic solution to the problem of the environment, starting from the premise that its protection is a complex problem, composed of closely related, interdependent and yet unified aspects and elements. At the same time, the main issue of environmental protection is closely linked to the economic and social development of the country, while the use of nature to meet current needs, through rational policies, is closely linked to sustainable development that leaves room for development opportunities for future generations.

We believe that the provisions of the Fundamental Law on Environmental Protection adequately reflect these concerns; However, the sector-specific legislative guidelines, implemented mainly through legislative harmonization during the EU accession process, need to be supplemented or revised.

The affirmation of this principle raises certain questions, which are related, at least at the international level, to the principle of interdependence between environment and development, or, in other words, to the connection between environmental protection measures and development conditions. In the language of some authors, it has been expressed in the form of two principles; the first highlights an important vision for developing countries, while the second supports the opinion of developed countries that sustainable development cannot be achieved without taking the environment into account in the formulation and implementation of development policies. In this regard, Principle 2(a) of the Declaration on Forests recognizes that States have the sovereign and inalienable right to use, manage and exploit their forests in accordance with their development needs and their level of economic and social development.

The development of environmental law as a new instrument for protecting the environment, essential for human health and well-being, undoubtedly embraces the fundamental values enshrined in public declarations of rights and freedoms.

The laws of nature have led to long debates about whether people have adequate environmental rights.

At the international level, several declarations affirm the recognition of the human right to the environment, underlining the fundamental importance of the environment for human beings. In this context, the Stockholm Declaration (1972) states that “people have the fundamental right to freedom,

equality and adequate conditions of life, in which the quality of the environment allows them to live in dignity and well-being".
The African Charter on Human and Peoples' Rights (Nairobi - 28 June 1981) was promulgated in art. 24: "All peoples have the right to an adequate environment, conducive to their development" (Kamto, 1996).
In Western democracies, several constitutions revised after 1972 introduced new human rights in the field of the environment, such as: the Constitution of Greece (1975) - in art. 24; the Constitution of Portugal (1976) - in art. 66; the Constitution of Brazil (1988), in art. 285.
In its advisory opinion of 8 June 1996, the International Court of Justice stated: "The environment is not an abstraction, but, of course, the space in which people live and on which the reality of their lives, their health and that of future generations depend." Consequently, the environment, a reality universally expressed over the last thirty years, has been transformed into a set of international and national rules which, in fact, form the basis of a new fundamental human right. The values related to the protection and good management of the environment are closely linked to the satisfaction of essential needs (water, air, food). September Inside, Essential Needs People are conditioned by the wider natural balances of the biosphere and, implicitly, by the impact of human activities on the natural environment and natural resources. Therefore, protecting the environment and respecting ecological rules have become a vital imperative, linked to the fundamental right to life.
Biological balance, biodiversity, awareness of the role that species of flora and fauna play in maintaining this natural balance are essential for the survival of humanity.
The environment, its protection, also acquires the status of a fundamental right, because it becomes an expression of public policy of collective interest, of solidarity not only within the state, but also at the international level (protection of the human environment, coastal zone, protection of the ozone layer).
Thus, the environment reflects a social value, an ethics, a collective responsibility imposed not only on states, but also on all economic and social actors. Environmental movements, moreover, are supported and influenced by a strong popular movement accompanied by NGOs, and in some countries by the environmental party. For both scientific and social reasons, the environment, legally organized through a series of international conventions and (largely similar) national laws, has acquired political legitimacy, while at the same time being enshrined in the highest rule of the hierarchy of law, namely in the constitution, as a fundamental right.
This enshrining is done at the constitutional level in many countries, something that I mentioned earlier, perhaps especially in connection with the French Constitution.
The French government, at the initiative of the President of the Republic, decided to include environmental protection in the Constitution. Any approach to the content of the Constitution is a solemn act, but the experience of the Fifth Republic has shown that it is possible to carry out a series of constitutional reforms regarding the organization of constitutional power or other fundamental issues of society.
In 2002, the French President proposed that the French include environmental rights in a "constitutionally approved" charter, alongside human rights, economic and social rights, noting that great progress would be made.
Of course, the charter that enshrines this right is a "legislative guest" until the revision of the Constitution. We consider it important to note that this path of constitutional enshrinement demonstrates an urgency that does not allow waiting for the opportunity to revise the Constitution, as happened in Romania.
Similarly, we emphasize that the draft European Charter on General Principles for Environmental Protection and Sustainable Development contains "principles of integration and interdependence, in particular with regard to human rights and social, economic and environmental objectives". Similarly, the human right to the environment, enshrined in the document prepared by Professor M. Prieur, is recognized and guaranteed by the international community, by the Council of Europe through cases of the European Court of Human Rights, as well as by the constitutions of many of its member states (Prieur, 1993).

If environmental protection inevitably leads to the acquisition of fundamental freedoms, such as, for example, property rights or the restriction of certain easements or the restriction of movement rights in certain protected areas, this ends up, as we have shown, consolidating already recognized fundamental rights or expanding other concerns (Guudiro, 1974).
Environmental rights were initially linked e of the rights to health and life; This has ultimately led to better living and working conditions (health and safety at work) and to the development of the right to rest and leisure.
However, environmental law acts as a "carrier" of fundamental rights, such as the right to information and communication, to decision-making and rights related to the right of association, thus strengthening the social and collective function of existing rights.
Law is a set of assets that bind both the state and public authorities, and individuals. Of course, environmental protection can be a justification for greater popular participation in public life and for the democratization of all procedures.
The realization of this new fundamental right can be complicated. When we talk about human rights, we have an anthropocentric vision, but environmental law refers not only to humans, but to all other forms of life and the biosphere. In a broader sense, however, we can recognize that environmental law applies to humans and all the natural elements that surround them, which constitute an inseparable ecological whole. It is, without a doubt, a healthy, high-quality environment, suitable for human development, ecologically balanced and conducive to the development of life. It is not a human right in the strict sense, but a right that can simultaneously protect the individual and the environment in which he wants to be.
Romanian legislation provides for the following guarantees:
(a) Access to information on environmental quality, which, after the finalization of the amendments to the Law on Environmental Guarantee Ordinance no. 91/2002, means “access to information relating to the environment under conditions of confidentiality established by applicable legislation”.
(b) The right to associate with environmental quality control organizations.
(c) The right to be consulted in the decision-making process regarding policies, laws and regulations in the field of mental health and the environment, as well as in the decision-making process regarding mental health and the environment. holding environmental agreements and powers, including in the fields of land use and urban planning. (d) The right to seek compensation or redress from administrative or judicial authorities, directly or through associations, in the event of direct or indirect damage, (e) The right to compensation for the damage suffered (Prier, 2003).

Conclusions

Although all these legal guarantees are more or less natural and anchored in civil law, administrative law, constitutional law or other legal provisions, it seems important to note that any person, directly or through an association, has the right to remedy or prevent such damages from becoming natural and present, and such damages are not usually considered direct damages.
This makes our legislation the main law for compensating for environmental damages caused by “positive environmental elements”, which are generally unfair in nature and therefore cannot be considered direct damages. As regards the legalization of procedural property, Article 5 refers to the idea of “actions of the people” for individuals – on behalf of a common interest – but this category of actions can only be brought against general actions affecting the legal position of an individual. On the other hand, it is noteworthy that the law has broadened the meaning of “legal matters”, recognizing that some “ideal interests” can be justified in court.
The Fundamental Law on Environmental Protection provides for broad access to environmental justice through this rule of active procedural law, while at the same time providing a real guarantee for the protection of the right previously recognized by constitutional provisions to an "ecologically healthy and balanced environment".

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REFORMING FROM WITHIN: ALIGNING THE HELLENIC COURT OF AUDIT WITH INTERNATIONAL STANDARDS AND PUBLIC SECTOR GOVERNANCE REFORMS

Nikoletta Nteka[1,2,3]*, Elisabeth Zalimidou [4,5,6]*

[1] Nikoletta Nteka Dr.; ndeka@ihu.gr , nikolettanteka@gmail.com, Serres Greece

[2] Orchid ID: 0000-0003-0606-1624

[3]Web of Science Researcher ID: NOE-8612-2025

*International Hellenic University, Department of Organization Management, Marketing and Tourism, Sindos Thessaloniki

[4] Elissavet Zalimidou M.Sc.; elzalimidou@gmail.com Serres Greece

[5] Orchid ID: 0009-0004-6914-4843

[6]Web of Science Researcher ID: NQE-9619-2025

*International Hellenic University, Department of Organization Management, Marketing and Tourism, Sindos Thessaloniki

Abstract

This case study examines the modernization of internal auditing within the Hellenic Court of Audit, with a particular emphasis on its harmonization with the International Standards on Auditing (ISA) and its response to contemporary public sector governance reforms. By analyzing the institution's strategic initiatives and organizational changes, the study highlights the multifaceted transformation process shaped by regulatory alignment, professionalization trends, and external accountability demands. Key findings underscore three critical dimensions of change: the formal adoption of international auditing standards, the internal cultural and operational adjustments required for implementation, and the influence of external actors in reinforcing transparency and trust. Evidence gathered demonstrates that legal frameworks and best practices serve as a necessary foundation but are not sufficient in isolation. The effective modernization of internal audit functions depends largely on institutional commitment, strategic foresight, and the integration of digital tools to streamline processes and enhance audit reliability. This case contributes to the discourse on public sector audit reform by advocating for a context-sensitive, institutionally grounded, and technologically supported approach to internal audit modernization.

Key Words: Internal Auditing, International Standards on Auditing (ISA), Public Sector Governance, Institutional Reform, Organizational Culture, Transparency

JEL Classification : H83 – Public Administration; Public Sector Accounting and Audits , **H11** – Structure, Scope, and Performance of Government, **M42** – Auditing, **O33 –** Technological Change: Choices and Consequences; Diffusion Processes**, D73 –** Bureaucracy**;** Administrative Processes in Public Organizations; Corruption, **P48 –** Political Economy; Legal Institutions; Property Rights; Natural Resources, **L38 –** Public Policy

Declarations

Ethics approval and consent to participate
The authors have received and archived written informed consent from all subjects involved in the study" in the **Informed Consent Statement** section.

Consent for publication
Both authors have given their consent for publication of the manuscript.

Availability of data and materials
The datasets generated and/or analyzed during the current study are available from the corresponding author on reasonable request.

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Authors' contributions
Nikoleta Nteka: Conceptualization, Methodology, Writing – original draft.
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Chapter 1: Introduction

In contemporary public administration, the concepts of transparency, accountability, and efficiency have gained unprecedented significance, particularly in the aftermath of financial crises that exposed systemic weaknesses in public sector management. Internal auditing, as a core mechanism of control and assurance, has evolved substantially to meet these new demands (Mekar , 2023). No longer limited to mere compliance checks, internal audit functions today are expected to contribute actively to good governance, risk management, and performance improvement (Arena & Azzone, 2009; Mihret & Grant, 2017). In this context, the role of supreme audit institutions, such as the Hellenic Court of Audit, has been redefined to align more closely with internationally recognized frameworks, particularly the International Standards on Auditing (ISA) issued by the International Federation of Accountants (IFAC).

Historically, internal auditing in the public sector had a predominantly legalistic and procedural character, focusing primarily on the regularity and legality of public expenditures (Pollitt & Summa, 1997). However, public values creation, stakeholder relationship, and comparability of the audit practices all over the world has called for change in audit methods and improvement of audit quality in conformity to the global standards (Lonsdale et al., 2011). The International Standards on Audits originally used for external audits in the private sector have gradually been applied to the public sector in order to give the structure and direction on how to approach the assessments of risks, planning of audits, gathering evidence and reporting (IFAC, 2020). They increase the reliability, independence and professionalism of the public sector audits.

The Hellenic Court of Audit (Synedrio), enshrined in the Greek Constitution, is entrusted not only with ex-post financial control but also with advisory functions and jurisdictional powers over public accounts. Since the latest reforms especially during and after the economic adjustment programs in Greece between 2010 and 2018, there has been a considerable focus on the reforms that aimed at modifying the public administration in a way that would enhance accountability efficiency, and transparency. According to Nikitas and Vasilopoulou (2022), the reforms undertaken throughout the three programmes—and subsequently during post-programme surveillance—addressed chronic deficiencies in Greece's public sector, including fragmented structures, weak coordination, excessive politicisation, and outdated human resource practices. In addition to these positive advancements such as the simplification of organizational structures, the enhancement of human resource management, policy planning and coordination, the authors assert that there is still work to be done in order to eliminate the gap and achieve EU standards in public administration performance in Greece. Law 4700/2020 marked a significant step toward introducing performance auditing practices and reinforced the Court's commitment to following the principles embedded in ISAs and related guidelines from the International Organization of Supreme Audit Institutions (INTOSAI).

However, when it comes to the practical implementation of ISAs in relation to the Hellenic Court of Audit there are certain certain factors which are legal, cultural and resource based. Furthermore, the standards give specificity to the guidelines that has to be followed, but adopting the actual procedures successfully depends on the auditors' experience, constant improvement, and the Court's capacity to tailor the processes to the Greek public sector context (Lenz & Hahn, 2015). Thus, the need to critically

assess how internal auditing functions at the Court operate in relation to ISAs is both timely and essential.

This study adopts a qualitative approach to investigate the perceptions and experiences of key actors within and around the Hellenic Court of Audit regarding the internal audit function's alignment with International Standards on Auditing. The study aims at identifying the current state, strengths and weaknesses of the internal auditing practices in the Greek public administration through interviews with auditors, compliance officers, academics, and other external observers of the Greek public administration.

Chapter 2: Theoretical Framework

Recent literature has increasingly recognized the critical role that public sector auditing plays in promoting transparency, accountability, and good governance (Bisogno et al., 2022; Degeling et al., 1996; Hay & Cordery, 2018; Lapsley & Miller, 2019; Mattei et al., 2021). Despite the expansion of scholarly interest, public sector auditing remains a relatively underexplored field, with numerous research gaps still evident, particularly regarding the international standardization and harmonization of auditing practices (Bisogno et al., 2022; Mattei et al., 2021).

The transformation of public sector auditing can be traced back to the advent of New Public Management (NPM) reforms during the 1980s and 1990s, which sought to import private sector management principles into public administration (Hay & Cordery, 2018; Manes Rossi et al., 2021). One significant outcome of NPM was the shift toward accrual accounting systems in public organizations, fostering an environment in which auditing practices became more closely aligned with corporate auditing models (Manes Rossi et al., 2021). In this context, the adoption of internationally recognized audit standards, particularly the International Standards on Auditing (ISA), gained momentum within public sector institutions.

The drive toward harmonization through the adoption of common auditing standards across different national administrations offers numerous advantages, including enhanced comparability, improved transparency, and strengthened international credibility (Manes Rossi et al., 2021). Nevertheless, the phenomenon of public sector audit standardization remains relatively understudied in the academic literature. Mattei et al. (2021) observe that while the diversity of research in public sector auditing has grown, the specific issue of standard adoption and adaptation has received insufficient scholarly attention. This gap highlights the need for further investigation into the ways public sector auditing bodies integrate private-sector-driven standards, such as the ISAs, into their frameworks.

Moreover, institutional theory provides a valuable lens through which to understand the dynamics driving the adoption of international standards in public auditing. As Mattei et al. (2021) suggest, public sector auditors face various institutional pressures—such as normative expectations from professional bodies, coercive pressures from international organizations, and mimetic tendencies to adopt practices perceived as successful—that shape their willingness to align with international auditing norms. Understanding these dynamics is crucial to analyzing how and why supreme audit institutions, including the Hellenic Court of Audit, seek to modernize their practices in accordance with global standards.

Thus, the movement toward international standardization in public sector auditing, though beneficial, is complex and multifaceted. It involves not only technical adaptation but also deeper institutional and organizational transformations. In examining the internal audit functions of the Hellenic Court of Audit through the prism of International Standards on Auditing, this study contributes to the ongoing discourse on public sector audit harmonization and offers insights into how global norms are locally interpreted and applied within specific national contexts.

Institutional theory offers a robust foundation for understanding variations in the adoption of accounting and auditing standards across different national contexts (Brusca et al., 2015). According to DiMaggio

and Powell (1983), organizational practices, including those in auditing, are shaped by three types of institutional pressures: coercive, mimetic, and normative. These forces exert a profound influence on accounting and auditing choices in both private and public sectors (Christiaens et al., 2015; Collin et al., 2009; Dacin & Dacin, 2008; Manes Rossi et al., 2016; Oulasvirta, 2014).

In the context of public sector auditing, institutional factors have been shown to significantly affect the adoption of International Standards on Auditing (Boolaky & Soobaroyen, 2017). Coercive pressures may arise from governmental bodies or supranational organizations, such as the European Union, that promote or mandate the adoption of uniform auditing standards. Although no binding EU directive currently requires the use of ISAs across member states' public sector audits, strong political interests at the national level can lead to voluntary reforms encouraging such adoption.

Mimetic pressures emerge when organizations imitate others perceived as successful or legitimate. In the sphere of public auditing, supreme audit institutions may seek to align with practices from other countries or professional models recognized for their quality and credibility. The desire to enhance audit quality, particularly when deficiencies are perceived in existing systems, strengthens the mimetic adoption of international standards.

Normative pressures are generated through the influence of professional bodies and educational institutions that establish expectations about appropriate auditing practices. National and international auditing associations, by promoting the adoption of ISAs, play a critical role in shaping public sector auditors' methodologies. The increasing professionalization of public sector auditing reinforces normative tendencies towards international harmonization (Carpenter & Feroz, 2001).

These institutional forces often interact with existing national traditions and organizational cultures. In countries with deeply entrenched public sector auditing practices, efforts to introduce ISAs may encounter resistance due to path dependence and institutional inertia (Vakkuri et al., 2006). Nevertheless, as international oversight mechanisms become stronger and public expectations for transparency rise, institutional pressures favoring standardization gain greater momentum.

In the Greek context, the modernization of the Hellenic Court of Audit's practices in line with ISAs can be understood through the lens of institutional theory. Coercive pressures from European and national public administration reforms, mimetic influences from best practices across the European Union, and normative shifts within the auditing profession collectively contribute to shaping the Court's strategic choices. Analyzing the Court's internal audit functions within this theoretical framework provides deeper insight into both the drivers of change and the challenges of embedding international auditing standards in national public sector institutions.

Chapter 3: Methodology

3.1. Research Design

This case study draws on a small-scale, interview-based investigation to explore the perceptions and experiences of key stakeholders involved in the internal auditing practices of the Hellenic Court of Audit, particularly in relation to its alignment with the International Standards on Auditing (ISA). Given the focus on individual insights and institutional dynamics, the research was designed to capture the complexity and depth of issues surrounding public sector auditing reform, the adoption of professional standards, and processes of organizational change. By engaging with five participants who hold relevant roles within or in connection to the Court of Audit, the study offers a focused yet meaningful exploration of how modernization efforts are understood and enacted in practice. Emphasizing the subjective experiences of these individuals, the research adopts an interpretive orientation, aiming not at statistical generalization, but at shedding light on the nuanced ways in which professionalization and reform unfold within a specific institutional setting.

3.2. Data Collection Method

Data collection was conducted through semi-structured interviews, a widely used method in qualitative research that combines the flexibility of open-ended inquiry with a systematic thematic structure. A research guide included eight open-ended questions for the study (Appendix A). The research questions were specifically designed to help participants think deeply about their encounters and thoughts concerning internal audit reforms and the Court's progress with ISA adoption. Each interview took place alone to protect participant freedom during self-expression without outside interference. The participants provided consent to recording sessions which lasted between 45 to 60 minutes. Field notes were also maintained to record non-verbal cues and contextual factors.

3.3. Sampling Strategy

The case study employed purposive sampling, selecting participants based on their knowledge, expertise, and direct involvement in public sector auditing and governance. The sample consisted of five individuals representing different but complementary perspectives:

- A senior auditor currently employed at the Hellenic Court of Audit,
- An official responsible for compliance and quality assurance,
- An academic specializing in public administration,
- A senior official from the Ministry of Finance,
- A representative of an independent oversight body.

3.4. Data Analysis

The data collected through the interviews were analyzed using thematic analysis, following the six-phase model proposed by Braun and Clarke (2006). Multiple readings of the interviewed transcripts led to achieving immersion in the data. Researchers manually produced initial codes through identification of significant phrases and concepts and research objective-related ideas. Codes were then organized into broader themes, and thematic patterns were identified across the dataset.

Three main analytical axes emerged from the thematic synthesis: (1) Institutional Frameworks, Professionalization, and Standardization Pressures; (2) Challenges, Adaptation Processes, and Organizational Culture; and (3) External Engagement, Transparency, and Future Strategic Directions. The analytical axes group selected themes obtained from participant responses to create a unified and complete data representation.

3.5. Ethical Considerations

Ethical principles guided the entire research process. The study explained its research objectives to participants who were free to withdraw without negative impacts throughout the research process. The study design protected participants through absolute confidentiality together with anonymity because researcher reports omitted any personal information. All participants signed the informed consent documents before interview sessions began (Appendix B). The gathered data received proper secure storage treatment and existed exclusively for research within this study.

Chapter 4: Findings from the Interviews

4.1 Institutional Frameworks, Professionalization, and Standardization Pressures

The first major thematic axis emerging from the interviews concerns the critical influence of institutional frameworks, professionalization efforts, and external standardization pressures on the evolution of internal auditing within the Hellenic Court of Audit. Participants observed that Court modernization resulted from three main factors which included national legal elements alongside international standards together with evolving stakeholder requirements.

A key factor highlighted by multiple respondents was the importance of legal and regulatory frameworks in directing the Court's internal audit transformation. As the senior official from the Ministry of Finance noted, *"Internal auditing reforms work best when auditors have operational autonomy and are protected from political or administrative interference."* The statement embodies the shared understanding among participants about how an effective internal audit system demands technical enhancements in addition to strong institutional protection for independence along with objectivity. Most participants noted legislative evolutions in Greece which followed European directives and international governance standards as fundamental elements to improve the Court's operational context.

Another strong current across the interviews was the recognition of the decisive role played by professional standards in shaping internal audit practices. The compliance officer reflected that, *"We now have internal reviews, quality control checklists, and occasional peer reviews,"* illustrating the formal adoption of standardized procedures. Multiple respondents pointed out that the existing formal systems exist but implementing them across daily operations happens slowly and it proves difficult. The academic participant succinctly captured this tension, emphasizing that, *"Formal procedures exist, but real quality assurance requires more than checklists; it requires fostering a critical mindset among auditors about their own work."* The observer points out professionalization extends beyond procedural compliance to involve the development of reflective critical auditing methods which identify risks for the professionals.

Every participant recognized international auditing standards and particularly the ISAs as primary factors driving court-based internal transformation. As the senior auditor stated, *"Other government bodies are more willing to collaborate with us because they recognize that our methods are internationally recognized and rigorous."* The Hellenic Court of Audit's implementation of ISAs improved its domestic and international reputation which enhanced its ability to work smoothly with external partners. Similarly, the oversight body representative asserted that, *"Aligning with ISAs has raised the profile of the Hellenic Court of Audit considerably,"* pointing to the reputational benefits associated with adopting globally accepted audit frameworks.

The research participants noted that proper integration of international standards demanded an equilibrium between global expectations and home institution demands. The compliance officer warned that, *"It's important to adapt standards thoughtfully to the institution's particular legal and operational context — blind imitation doesn't work."* The Court's experience reveals a fundamental lesson that adapting international frameworks requires institutions to customize them according to their historical, legal and operational features for successful implementation.

The interviews show that internal audit activity changes at Hellenic Court of Audit have developed through the merging of institutional changes with professional enhancement efforts and global auditing requirements. The process of embedding sustainable changes continues to need internal cultural changes and operational independence as well as context-specialized adaptations.

4.2 Challenges, Adaptation Processes, and Organizational Culture

Interview results show that Hellenic Court of Audit faced internal obstacles throughout its transformation to international standards alongside necessary cultural changes for successful modernization. Research participants shared different hurdles and inconsistent elements alongside shifting operational patterns through which the Court of Audit progressed.

The study participants frequently noted that internal auditing standards receive inconsistent implementation between organizational departments. As the senior auditor observed, *"Some audit teams apply the standards rigorously, while others could benefit from further support and supervision."* The variable application indicates a need to establish organizational-wide quality and compliance culture.

The majority of respondents pointed out challenges in establishing cultural metamorphosis that extended past basic procedural requirements. The established quality assurance methods receive criticism because they are primarily seen as bureaucratic systems instead of growth-oriented instruments. The compliance officer noted, *"There is sometimes a tendency to treat quality assurance as a procedural obligation rather than an opportunity to learn and enhance our effectiveness."* The statement shows a fundamental conflict between following official requirements versus truly adopting the ongoing development philosophy which international standards intend to promote.

Participants emphasized that building organizational capacity plays a vital role in resolving the limitations participants face during adaptation processes. As the academic highlighted, *"Embedding a culture of critical self-assessment is an area where further progress would strengthen the Court's internal audit function even more."* The findings indicate professional advancement needs more than basic training because auditors need to deeply investigate their methods and maintain continuous development of their techniques.

The answers of the interviews focused on the significance of auditors along with their leadership roles in producing adaptation results. The representative of the independent oversight body remarked that, *"In practice, the effectiveness sometimes depends heavily on the individuals involved."* This underlines the vulnerability of reforms to variations in personal commitment, skill levels, and attitudes toward change, further reinforcing the need for systematic organizational strategies to embed reforms institutionally rather than personally.

Furthermore, interviewees discussed the need to institutionalize independent, systematic quality assurance practices to ensure that adaptation efforts are sustained over time. The oversight body representative stated that, *"Building a stronger system where quality assurance is independent, systematic, and fully embedded into the audit cycle would elevate the Court's internal audit performance even further."* This comment illustrates that adaptation is not a one-time achievement but requires continuous vigilance, investment, and integration into routine organizational operations.

The Hellenic Court of Audit's international standards transition was primarily influenced by both external requirements and multiple internal operational influences. The transformation of organizational cultural norms requires overcoming obstacles due to varied implementation approaches as well as procedural rigidity alongside insufficient capacity development and unique employee behaviors combined with a necessity to establish system-wide quality assurance systems. While significant progress has been made, the interviews show that the internalization of international best practices remains an ongoing, evolving process that demands sustained effort, leadership commitment, and organizational resilience.

4.3 External Engagement, Transparency, and Future Strategic Directions

The third thematic axis arising from the analysis highlights the growing significance of external engagement, transparency, and the strategic orientation of the Hellenic Court of Audit in shaping its internal auditing modernization efforts. Participants emphasized how external relationships, public trust, technological modernization, and future governance challenges increasingly influence the Court's internal processes and priorities.

A dominant theme was the positive impact that alignment with international standards had on strengthening external relationships. The senior auditor noted that, *"Other government bodies are more willing to collaborate with us because they recognize that our methods are internationally recognized and rigorous."* The Court's acceptance of international standards marks a wider change in how institutional stakeholders view it while enabling a common basis for dialogue and administrative cooperation among stakeholders.

The compliance officer similarly observed that *"Ministries, regulatory authorities, and even European institutions now speak the same 'audit language' with us,"* pointing to how shared standards have enhanced communication and fostered smoother interactions. The respondents emphasized that the resulting mutual comprehension between judges and government officials resulted in strengthened respect toward Court recommendations that reinforces the Court's place in governing systems.

Public trust, although slower to build, was also identified as an area influenced by these reforms. The academic participant highlighted that, *"Citizens may not know the details of ISA alignment, but they do notice when public reporting becomes clearer, more professional, and more transparent."* The direct influence of professional auditing on public views about government transparency emerges indirectly through its audit practices.

The survey participants equally supported continuing strategic modernization by implementing technology systems and joining governance platforms in the future. The senior official from the Ministry of Finance emphasized that, *"We also need to see more investment in technology — including audit analytics and automated risk assessments — to improve efficiency and depth."* The modern public sector demands internal audits to depend on digital tools which become fundamental features that boost audit quality and strategic meaningfulness while promoting full transparency.

Moreover, the oversight body representative stressed the importance of external validation mechanisms, noting that, *"Early and consistent engagement with external stakeholders helps build credibility and ensures that standardization is not just an internal effort but also recognized externally."* The Court necessary public interaction to achieve both internal reform success and external visibility that strengthens its position as an authority in governance activities.

Participants understood future strategic directions need to consider developing predictions about governing trends especially regarding digital resilience and ESG reporting and public-sector modernization initiatives. As the Ministry of Finance official stated, *"Aligning internal audit more closely with emerging EU governance frameworks would future-proof the Court's relevance."* This indicates a forward-looking awareness that internal auditing modernization must be dynamic and responsive to evolving societal and regulatory expectations.

The interviews show that modernization work at the Court links closely to institutional credibility and public transparency and technological progress as well as international governance trends. To maintain and increase these progress indicators the implementation of internal audit reforms needs proactive strategic methods which actively engage external parties.

Chapter 5: Discussion

The findings of this study provide valuable insights into the internal auditing transformation at the Hellenic Court of Audit, particularly its efforts to align with the International Standards on Auditing (ISA) and to modernize its internal practices. These results are broadly consistent with the trends, tensions, and opportunities identified in the contemporary literature on public sector auditing, institutional change, and governance reforms.

Firstly, the study confirms the critical role that institutional frameworks and professionalization efforts play in supporting internal auditing modernization. In line with the participants of the focus group, it was suggested that legal requirements and external standardization pressures as the reasons for the Court's development – a conclusion consistent with the Mattei et al. (2021) argument that the legal reforms and the process of standardization have played a significant role in shaping the changes in the auditing sector of the European public sphere. It also shows that regulation and the integration of International Auditing Standards have had a major influence on the process of modernisation of public sector auditing, as stated and described by the interviewed participants in this study. Similar to the conclusion that was made by the official of the Ministry of Finance, Cordery and Hay (2024) argue that

ecosystem-driven reforms significantly impact the quality of audit in the public sector and that it is necessary to preserve auditor independence in the contemporary setting of the public accountability.

Moreover, the emphasis placed by participants on the challenges of cultural change and internal adaptation resonates with findings in the literature on New Public Management (NPM) and its influence on auditing practices. Thus as Hay and Cordery (2018) indicate there were reform of accrual accounting and auditing standards under the NPM reforms but reforms of professional culture were slower and more profound. It was also observed that the implementation of quality assurance mechanisms often hindered by the employees view it more as compliance requirements and not as developmental tools This is in line with the view of Mihret and Grant (2017) who noted that internal audit reforms are resisted where they are perceived to be stemming from external authority rather than internal organizational changes. In the same way, Otto-Mentz et al. (2022) pointed out that internal audit must transition from a compliance model to a transformational and developmental one to be relevant to organizational governance and sustainability.

An important contribution of this study lies in its documentation of the gradual but positive influence of international standards on external relationships and public trust. The Court obtained better communication capabilities with governmental bodies and international organizations through their alignment with ISAs according to observations made by Boolaky and Soobaroyen (2017). Public confidence has steadily grown because reporting methods have become both clearer and more transparent according to the survey responses. This perception matches the democratic accountability arguments presented by Cordery and Hay (2024) about standardization techniques.

Another dimension worth highlighting is the role of technology and future strategic orientation in sustaining modernization efforts. As pointed out by Stein and Cunha (2024), the participants of the study stressed that cultivating a professional skepticism and risk perception before an event is the key to increasing the efficiency of internal audits. While technology and digital audit tools were shown to be enablers, participants claimed that embracing these tools without adopting a proper critical outlook on new risks impedes audit functions from being proactive and turning them into more of a mere issue responding activity for governance issues.

However, this study also identified certain gaps and tensions that remain underexplored in the existing literature. In contrast to other researches where it is assumed that political pressure from the EU level is the main driving force for reform, this study aims to state that internal commitment and cultural marketing are as important for the real and permanent introduction of IS. This observation resonates and builds upon the findings of Nerantzidis et al. (2020) where he or she posited that the future studies on auditing in the public sector should consider how institutional forces and internal organizational processes play out in enhancing the efficacy of auditing reforms.

Thus, the results of this study support and develop the existing theories on modernization of public sector auditing. These concepts include regulation, professionalization, culture, external relations, and anticyclical visioning. This work not only reports on empirical data gathered from interviewees' experience but also supports the findings with advanced conceptual knowledge about the process of internationalization and modernization of auditing institutions in the public sector, including practical recommendations on how the Hellenic Court of Audit can follow this path without losing its legitimacy, effectiveness, and public support.

Chapter 6: Conclusions and Recommendations

This case study explored the evolution of internal auditing practices at the Hellenic Court of Audit, focusing particularly on its alignment with the International Standards on Auditing (ISA) and the broader challenges of modernization in public administration. This study therefore involved the analysis of semi structured interviews with auditors, officials of compliance, policy makers, academics, and

representatives of oversight that made up the primary data collection method; thus offered a rich and multi perspective comprehension of institutional transformation.

The analysis shows that the internal auditing reforms of the Court were influenced by legal factors and requirements, professional codes and external demands for conformity. As in similar studies carried out in other countries, it was thus realized that regulations, political support for institutions' autonomy, and compliance with international best practices are key factors that contribute to credibility and professionalism.

However, the case study also revealed that the process of adaptation was neither linear nor uncontested. Challenges related to cultural change, uneven application of standards, and initial resistance to internal quality mechanisms were recurrent themes. The transition to international standards demanded not only technical compliance but also significant investment in organizational culture, professional development, and strategic leadership.

Moreover, the Court's alignment with ISAs significantly enhanced its interactions with external stakeholders, improving transparency, collaboration, and public trust. However, the participants warned that the future success would only be achievable through sustained strategic progression which is characterized by investments in audit technologies, risk-based approaches, and compliance with the new and advancing European governance models.

Overall, the Hellenic Court of Audit demonstrates that the process of internal audit improvement in the context of the public sector's environment should involve both external directions and internal initiatives. Technical changes on their own will not suffice; they need to be linked into a developing organisational culture where learning, professionalism and strategic interaction with the other components of governance is cherished.

Based on the conclusions drawn from this study, the following general recommendations can be made for the further enhancement of internal audit function in the Hellenic Court of Audit and some suggestions for the improvements of practice of other similar institutions of the public sector that are in the process of modernization.

First and foremost, the Court should deepen the professionalization of its internal auditors. There is a pressing need to expand continuous training programs that move beyond technical compliance and emphasize the development of critical thinking, strategic risk assessment, and evaluative judgment. Cultivating a more analytical and reflective auditor mindset will contribute to fostering a culture of excellence and innovation within the organization.

Equally important is the institutionalization of independent quality assurance mechanisms. Quality control processes should be embedded structurally within the audit cycle, ensuring that audits undergo systematic and impartial evaluations. These mechanisms should not only be conceived and disseminated as deterrent measures and tools, as is commonly done, but rather as enriching educational processes and frameworks for constant learning within the organization. Enhancing the and additional checks and verifications of peer reviews along with post audits would add more strength and reliability to other internal audits.

Another priority is the promotion of organizational cultural change. Procedural reforms alone are insufficient unless accompanied by efforts to embed a mindset of critical self-assessment, accountability, and commitment to ongoing development. The leadership in the Court should ensure that they are keen and support the modeling, encouragement, and reinforcement of reflexivity that is in congruence with these findings and the best practices entailing strategic goals.

Also, the Court should spend a considerable amount of money on information technology and related solutions. The application of audit analytics, data-based risk assessment tools and integrated information

system will improve the effectiveness, accuracy and credibility of audit work. This means that technology has to be seen and used as an enabler as opposed to a mere add-on when pursuing modernization, so that the resulting solutions will be sound and scalable.

In addition, external engagement and communication should be strengthened. Transparent and open communication channels with citizens, oversight bodies, and international organizations are vital for reinforcing the Court's public legitimacy. By participating actively in international auditing networks and enhancing the visibility of its reports and outcomes, the Court can further align itself with contemporary standards of transparency and accountability.

Finally, it is needed to mention that the Court should respond to the existing trends in the sphere of corporate governance by adapting its practices accordingly. The Court will be able to remain relevant and deliver on its role and functions within the changing European and global governance frameworks when it incorporates priorities such as digital resilience, ESG reporting, and sustainability auditing into its strategic planning.

Thus, following these directions, the Hellenic Court of Audit can continue and expand its successes and build a model of internal audit for the public sector and to serve as a source of experience to other institutions that are traveling the same path of reform.

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STRATEGIC IMPORTANCE OF THE ORGANIZATION OF TURKISH STATES IN THE MULTIPOLAR WORLD ORDER

Leyla Nabiyeva

E-mail: leyla.turqay1115@mail.ru

ORCID: 0009-0002-8121-2269

Abstract

The article analyzes the growing strategic importance of the Organization of Turkic States (OTS) in the contemporary multipolar international system. The changing global balance of power, the intensification of competition between the US, China and Russia, as well as global challenges such as energy security, climate change and regional conflicts have increased the importance of regional alliances. In this context, the OTS has become a functional organization that is not limited to cultural and symbolic ties, but also achieves real results in the fields of energy, transport, digital economy and diaspora policy. Azerbaijan's geopolitical initiatives, Turkey's activism and the increasingly open policies of Central Asian countries have increased the OTS's flexible and practical influence. The article also emphasizes the organization's important role in terms of regional stability and global visibility, based on specific examples such as energy projects, the Trans-Caspian Corridor, the Turkish Investment Fund and the OTS's activities on international platforms. As a result, the OTS, while protecting the national interests of its member states, is gaining the status of an emerging actor as an alternative integration model in the multipolar order.

Keywords: Organization of Turkic States, multipolar world, energy security, regional cooperation, strategic integration.

INTRODUCTION

Rising power in a multipolar world order: OTS

– the export volume, which was 8.2 billion cubic meters in 2021, has already increased to 11.4 billion cubic meters in 2023. Azerbaijani gas is mainly transported to the European market through the Southern Gas Corridor – the TANAP and TAP pipeline networks [1].

Moreover, Central Asia is distinguished by its rich hydrocarbon reserves, especially the natural gas and oil reserves of Kazakhstan, Turkmenistan and Uzbekistan. Kazakhstan is one of the world's leading oil and transport. In this context, the Trans-Caspian route – the organization of energy and cargo transportation across the Caspian Sea – comes to the fore as an alternative energy route for Europe. At

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OTS member countries and heads of related institutions in Baku in January 2013 [7]. The "Turkic-

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er countries are noteworthy. Speaking at the International Turkic World Symposium, Binali Yıldırım share defense capabilities and skills." Yıldırım also emphasized that the OTS, which aims to constantly and green energy showed that the TCT has strengthened as a platform for regional stability and practical cooperation. At the "Azerbaijan-Central Asia" summit held in Baku in September 2023, the integration meeting of the Organization of Islamic Cooperation in 2022, presented the joint "Turkic World Green Future" concept at the COP28 conference in 2023, and made a statement of support for COP29 held in organization's global recognition and political influence.

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BEHAVIORAL DYNAMICS IN GLOBAL PROJECT MANAGEMENT: A GLOBE-BASED STUDY OF AZERBAIJAN

Khayala AHMADOVA

Department of Business Administration, Azerbaijan University of Architecture and Construction

E-mail: ahmadovakhayala81@gmail.

ORCID ID: 0009-0006-5207-7941

Abstract

This study examines the behavioral dynamics of global project management through the perspective of national culture, focusing on Azerbaijan as a case study. Using the nine-dimensional GLOBE framework, it explores how cultural values and practices influence leadership, communication, and team interaction in international project settings. The findings reveal a hybrid cultural profile characterized by high In-Group Collectivism and Power Distance, moderate levels of Uncertainty Avoidance, Future Orientation, and Performance Orientation, and relatively low Gender Egalitarianism and Humane Orientation. These cultural tendencies shape collaboration patterns, decision-making styles, and leadership preferences within project teams. The results indicate that national cultural dimensions present both opportunities and constraints for effective project collaboration. High collectivism enhances mutual trust, loyalty, and social cohesion, facilitating integrative teamwork and communication. At the same time, deeply rooted cultural norms may limit spontaneity and open dialogue in diverse project settings. Moderate uncertainty avoidance and future orientation support adaptability, goal alignment, and structured coordination. Overall, the study highlights that cultural characteristics function as a double-edged factor—enabling cooperation and shared understanding while occasionally constraining flexibility and innovation. It contributes to cross-cultural project management research by clarifying how cultural opportunities and limitations jointly shape behavioral integration in global project environments.

Keywords: Global project management, cultural dimensions, GLOBE framework, Azerbaijan, behavioral dynamics, cross-cultural communication, team integration

INTRODUCTION

The economic liberalization of the 1980s greatly accelerated globalization, intensifying the interdependence among international enterprises and management systems. As a result, employees from diverse cultural backgrounds increasingly collaborated within heterogeneous teams. This required managers to consider not only linguistic differences but also distinct business practices, perceptions of time, behaviors, and traditions (Rothlauf, 2015). Consequently, awareness of cultural "diversity" and readiness for "cross-cultural transformation" became essential prerequisites for effective global management. In this context, intercultural management came to be understood as the integration of relevant knowledge and competencies across regional, national, and organizational boundaries (Karlshaus & Mochmann, 2019).

Managing global projects represents a multifaceted process involving individuals who possess different mindsets and working methods. Project managers, therefore, must formulate strategies that effectively address cultural diversity within restricted time frames (Huang, 2016). In other words, successful global management depends not only on technical coordination but also on intercultural competence (Pant & Baruodi, 2008). Hofstede defines culture as a system of shared mental codes that distinguish one community from another, emphasizing that "culture is learned, not inherited; it originates from one's social environment rather than one's genes" (Hofstede, 2001). Cultural distinctions become particularly visible when multinational teams interact. According to Rothlauf (2015) and Becker (2016), effective diversity management requires establishing an environment where every individual can contribute their potential meaningfully toward organizational objectives, while maintaining flexible and adaptive communication practices. Hence, achieving successful outcomes depends on leaders' ability to recognize and manage culturally diverse behaviors in all their complexity (El-Sabaa, 2001). The GLOBE (Global Leadership and Organizational Behavior Effectiveness) framework offers a valuable theoretical foundation for anticipating cultural mismatches and shaping appropriate leadership approaches. Initiated in the 1990s, the GLOBE project sought to systematically examine the ways in which cultural values influence leadership effectiveness, organizational performance, and societal competitiveness. Drawing on a comprehensive, cross-national study involving more than 200 scholars and incorporating theoretical, statistical, and qualitative insights, the GLOBE research conceptualized culture through nine primary dimensions (Dorfman et al., 2012), including Power Distance, Collectivism, and Future Orientation. Based on these dimensions, Gupta et al. (2002) identified ten major cultural clusters—Anglo, Latin Europe, Nordic Europe, Germanic Europe, Eastern Europe, Latin America, Sub-Saharan Africa, Arab, Southern Asia, and Confucian Asia—formed according to factors

such as geographic proximity, migration-related social capital, and shared cultural or religious traditions (Furnham et al., 1994; Portes & Zhou, 1994; Cattell, 1950). These clusters were subsequently refined with additional variables such as social relations, values, work practices, and levels of economic and socio-political development (Haire et al., 1966; Ronen & Shenkar, 1985; Chemers et al., 2001). Altogether, the framework provides both theoretical and empirical underpinnings for the comparative study of cross-cultural management and global leadership models.

Formulating an effective international strategy and harmonizing global management values with local corporate visions remain critical challenges for Azerbaijan today (Reibstein, 2016). Historically, Azerbaijani management practices were shaped by centralized administrative traditions that emphasized collectivism and hierarchical power distance. Following the dissolution of the Soviet

Union, however, Azerbaijan embarked on a transformative phase marked by significant changes in team management, organizational governance, and individual leadership approaches (Crosby & Bryson, 2005). The signing of the "Contract of the Century" in 1995 marked a turning point, dramatically increasing the inflow of foreign investment and attracting numerous transnational corporations to the local market (Aliyev, 2020). This historical milestone reshaped the foundations of Azerbaijan's management culture. The forces of globalization further accelerated these transformations, revealing the strategic importance of cross-cultural management competencies within organizations. Consequently, strategic foresight in management has become an essential driver of social and economic development across all sectors (Daft, 2017). Local enterprises newly integrated into the global economy now find themselves in direct competition with international firms (Watrin, 1998). In this environment, Azerbaijani professionals engaged in global projects must cultivate adaptive strategies that enable effective collaboration with colleagues operating under diverse cultural paradigms. Achieving competitiveness in the international arena therefore depends on developing well-calibrated international strategies and ensuring the alignment of global management principles with local corporate values and visions (Reibstein, 2016). Against this backdrop, the present study seeks to address both theoretical and practical gaps by examining cross-cultural leadership strategies within the framework of the GLOBE model, specifically as they apply to the Azerbaijani context.

Most research on Azerbaijani culture to date has centered on ethnographic, historical, or folkloric dimensions. Yet within the fields of modern management and organizational behavior, empirical studies exploring cultural dimensions remain scarce. This gap poses significant challenges for contemporary corporate leadership and management in the country. Global experience suggests that unplanned and unsystematic efforts to integrate different cultures seldom foster cohesive social structures or facilitate effective mechanisms of interaction among members (Pfeffer, 2015). In this respect, the GLOBE (Global Leadership and Organizational Behavior Effectiveness) framework offers particular relevance to Azerbaijan. Since Azerbaijan was not included in the original GLOBE research sample, its cultural profile has yet to be empirically classified within that model. Neighboring countries such as Georgia, Russia, and Kazakhstan have been placed within the Eastern Europe cluster, while Turkey, Egypt, Qatar, Morocco, and Kuwait have been classified within the Middle East cluster. Azerbaijan, however, remains unassigned to any cluster, underscoring a significant research gap. Therefore, the present study aims to apply the nine cultural dimensions of the GLOBE model to (1) identify Azerbaijan's national cultural profile, (2) assess its potential participation in international projects, and (3) analyze areas of compatibility and possible risks within the broader context of global cooperation.

MATERIALS AND METHODS

Ethics

The study was carried out in full accordance with the ethical standards outlined in the Declaration of Helsinki (1975, revised 2013). Ethical approval was granted by the Ethics Committee of the Psychology Research Institute in Baku. Participation in the study was entirely voluntary, and all respondents were informed in advance about the objectives, procedures, and content of the research.

Design / Method / Approach

This study employed a mixed-methods design to examine the nine cultural dimensions of the GLOBE model within the Azerbaijani context. The theoretical foundation of the research was informed by existing scholarship on cultural dimensions and leadership within the GLOBE framework. Quantitative

data were gathered from Azerbaijani respondents through GLOBE-based cultural surveys that incorporated self-report measures of multilingual proficiency, international exposure (such as study, work, or training abroad), and adaptation to multicultural environments. The dataset was analyzed using correlation and regression techniques to identify key relationships and moderating effects among the variables. Accordingly, the methodological design integrates empirical data analysis with a strong theoretical grounding, generating meaningful insights into how individuals and groups in Azerbaijan engage in cultural integration within global project environments.

Data Analysis

In this study, Pearson correlation analyses were employed to explore the relationships among respondents' levels of comfort in cross-cultural communication, foreign language proficiency, multicultural experience, and the cultural dimensions measured by the GLOBE questionnaire (Northouse, 2013). The internal consistency and reliability of the scales were evaluated through Cronbach's alpha (α) coefficients. All statistical procedures were conducted using IBM SPSS Statistics, Version 27.

Participants

A total of 443 respondents participated in the study. Among them, 35.9% (n = 159) were residents of the capital city, Baku, while 64.1% (n = 284) were from various economic regions across Azerbaijan. The mean age of participants was 32.6 years (SD = 10.4). The sample comprised 81.3% women (n = 360) and 18.7% men (n = 83).

Regarding to language proficiency, 2.7% (n = 12) of respondents reported speaking only their native language, 33.4% (n = 144) reported proficiency in one foreign language, 46.9% (n = 202) in two foreign languages, and 19.7% (n = 85) in three or more. In terms of multicultural experience—including education, training, or work abroad—41.5% (n = 184) indicated having such experience, whereas 58.5% (n = 259) did not.

Regarding adaptation to different cultures, 5.6% (n = 25) of participants reported feeling completely alien in new cultural environments, 7.2% (n = 32) reported experiencing significant adjustment difficulties, 60.7% (n = 269) indicated some challenges but eventual adaptation, and 26.4% (n = 117) described feeling very comfortable in multicultural contexts.

Measure

The GLOBE (Global Leadership and Organizational Behavior Effectiveness) project was initiated by Robert J. House in 1991 and subsequently expanded to include empirical data from 62 societies (House et al., 2004). The project aimed to elucidate how cultural norms shape leadership behaviors and organizational outcomes by systematically examining the interrelationships among culture, leadership, and organizational behavior. Within the GLOBE framework, cultural variability is captured through nine fundamental dimensions, such as Power Distance, Collectivism, and Future Orientation, among others (House et al., 2004). Unlike earlier cultural frameworks proposed by Hofstede (1980) and Trompenaars (1993), the GLOBE model distinguishes between cultural practices ("as is") and cultural values ("should be"), thereby offering a dynamic and multidimensional approach to understanding cultural diversity (House et al., 2002; Javidan & House, 2001).

In the present study, the Dimensions of Culture Questionnaire (Northouse, 2013)—an adaptation of the GLOBE framework—was employed to assess participants' perceptions of existing cultural practices. In contrast to the original GLOBE study, this instrument measured only perceptions of current practices ("as is"), without assessing normative expectations ("should be"). Each cultural dimension was operationalized through two items rated on a seven-point Likert scale (1 = strongly disagree to 7 = strongly agree), and mean scores were computed to represent participants' evaluations. This simplified format maintained theoretical consistency with the GLOBE framework while improving methodological efficiency. It is important to note that only the cultural dimensions were analyzed; the Culturally Endorsed Leadership Theories (CLTs) component of the original GLOBE project was intentionally excluded. Accordingly, this study concentrated on exploring perceptions of Azerbaijan's cultural dimensions as reflected in respondents' lived social experiences.

RESULTS

1. The analysis of the survey data revealed a distinctive cultural configuration for Azerbaijan across the nine GLOBE dimensions, reflecting both regional similarities and context-specific characteristics. The results supported the expected multidimensional structure of the instrument, with several dimensions demonstrating satisfactory internal consistency.

Table 1: Descriptive Statistics. The results of the Azerbaijani sample revealed the following indicators

Reliability analyses indicated that In-Group Collectivism (α = .788), Humane Orientation (α = .859), Performance Orientation (α = .710), and Future Orientation (α = .686) achieved acceptable levels of internal consistency. In contrast, Power Distance (α = .594) and Uncertainty Avoidance (α = .507) fell slightly below the conventional reliability threshold. Cronbach's alpha coefficients were interpreted in accordance with the recommendations of Nunnally (1978) and Hair et al. (2010).

Meanwhile, Assertiveness (α = .499), Institutional Collectivism (α = .441), and Gender Egalitarianism (α = .268) exhibited relatively low reliability, suggesting that interpretations for these dimensions should be approached with caution. Such reduced reliability may reflect the semantic complexity of certain items or difficulties in interpreting abstract and reverse-worded statements within the Azerbaijani sociocultural context. (See Table 1 for detailed results.)

Table 2: GLOBE study culture dimensions (House et al., 2004) examined in Correlations Foreign language skills

Table 3: GLOBE study culture dimensions (House et al., 2004) examined in correlations International (Work, Education, and Other) Experience

Table 4: GLOBE study culture dimensions (House et al., 2004) examined in correlations adaptation to Different Cultures

FINDINGS

The findings indicate that Azerbaijan exhibits a hybrid and transitional cultural profile, integrating features of both the Middle Eastern and Eastern European clusters. This hybridity suggests that regional cultural patterns within the GLOBE framework are more fluid and context-dependent than traditionally assumed. The observed social capital–innovation paradox further illustrates that while strong interpersonal networks enhance collaboration and trust, they may at times constrain the adoption of

innovative practices. This dynamic underscores the multifaceted role of social and cultural capital in shaping organizational behavior.

Furthermore, Azerbaijan's transitional environment—shaped by ongoing economic transformation and expanding global cooperation—emphasizes the evolving nature of cultural values. These developments reinforce the perspective that culture should be understood as a living, adaptive system within the GLOBE approach, continuously reshaped by socioeconomic and institutional change.

Variables	Levels
Hybrid Cluster Profile	Azerbaijan exhibits cultural characteristics that align with both the Middle East and Eastern Europe clusters identified in the GLOBE framework. This hybrid positioning suggests that Azerbaijan occupies a transitional cultural zone, reflecting the historical, geopolitical, and socio-economic linkages connecting these regions. Such hybridity underscores the need for a more nuanced and configurational interpretation of the GLOBE model when applied to regional and cross-border contexts.
Social Capital–Innovation Paradox	Personal social networks can serve as a powerful mechanism for strengthening teamwork and collaboration; however, they may simultaneously impede the adoption of innovative practices. This paradox illustrates the dual function of cultural and social capital within organizational behavior—acting both as a facilitator of cohesion and as a potential constraint on change and creativity.

Transitional Culture	Socioeconomic transformations—most notably those driven by the oil-based economy and expanding global cooperation—have generated dynamic shifts in Azerbaijan's cultural indicators. These developments highlight the importance of viewing culture as a flexible and evolving system within the GLOBE framework, rather than as a static set of values or practices.

Table 5: The findings

DISCUSSION AND CONCLUSION

1.The results of this study indicate that Azerbaijan's cultural configuration embodies both parallels and divergences when compared with the Middle East and Eastern Europe clusters of the GLOBE framework. While certain value orientations align with those regional profiles, Azerbaijan's distinctive historical trajectory and socio-political transformation have contributed to the emergence of a unique cultural pattern. This distinctiveness underscores the importance of situating Azerbaijan within a broader yet context-sensitive interpretation of regional cultural dynamics.

High In-Group Collectivism (M = 5.27) emerged as one of the strongest dimensions of Azerbaijani culture, suggesting that collectivist values remain deeply rooted in social behavior (Earley & Gibson, 2002). In-group collectivism represents a cultural orientation that prioritizes group interests over individual goals and promotes consensus and harmony in decision-making processes (Earley & Gibson, 2002; Hofstede, 2001). Within the context of global project teams, the influence of this dimension exhibits a dual character. On one hand, strong collectivist orientation fosters cohesion and loyalty, ensuring continuity and stability during project implementation. On the other hand, it may constrain individual initiative and risk-taking, as consensus-oriented pressure can discourage innovative or unconventional approaches. Evidence from start-up projects in the Caucasus region indicates that intra-team consensus can sometimes slow the pace of innovation (Aliyev, 2023; Mammadov & Huseynov, 2021). Similarly, during the COVID-19 pandemic, high collectivism among Azerbaijani companies transitioning to remote work environments extended the duration of group decision-making processes but simultaneously enhanced coordination and commitment in project execution (Huseynova, 2022).

The second highest indicator, **Power Distance (M = 4.61)**, was found to be at a medium-to-high level (Hofstede, 2001; House et al., 2004). This score is slightly lower than those observed in the Middle East (M = 5.43) and Eastern Europe (M = 5.21) clusters, yet considerably higher than the Anglo cluster (M = 3.42) (House et al., 2004). In societies characterized by high power distance, respect for authority and deference to leaders' decisions are culturally expected norms (Hofstede, 2001; House et al., 2004). A moderately high level of power distance in Azerbaijan suggests that hierarchical relationships are generally accepted, though the organizational structure is not entirely authoritarian. Within Azerbaijani project teams, such hierarchical dynamics may facilitate faster decision-making by empowering leaders

to act decisively. However, in international project environments, formal hierarchies and top-down decision-making processes can sometimes delay the acceptance of innovative proposals or reduce participatory dialogue between leaders and team members (Rzayeva, 2021).

Uncertainty Avoidance (M = 4.18) reflects the extent to which individuals in a society feel uncomfortable with ambiguity and risk (Hofstede, 2001). Azerbaijani society demonstrates a moderate inclination toward adhering to planned procedures and formal rules, reflecting both a respect for structure and a degree of pragmatic flexibility. The moderately high value of this dimension suggests that Azerbaijani organizations tend to emphasize careful planning and risk management in project implementation. The relatively limited tolerance for uncertainty continues to constrain risk-taking, thereby slowing the acceptance of innovative solutions—particularly in the adoption of new technologies (Jafarova, 2022). While this tendency supports consistency and structured project management, it may also hinder agile decision-making and reduce organizational responsiveness in rapidly changing global environments (Jafarova, 2022).

Performance Orientation (M = 3.95) was found to be slightly above the mid-range level, suggesting that while achievement is valued, a fully developed high-performance culture has not yet been firmly established in Azerbaijan. This moderate score indicates that organizational structures generally prioritize results, yet certain procedural limitations continue to constrain the pursuit of higher performance standards. In international project contexts, Azerbaijani teams tend to set ambitious performance goals; however, the cultivation of individual initiative within teams remains comparatively weak (Aliyev, 2023). A strong performance-oriented culture typically characterizes societies that value education and continuous learning, emphasize measurable outcomes, establish clear performance targets, reward initiative, and encourage open and direct communication. In global practice, countries such as the United States, Germany, and Singapore are known for high levels of performance orientation, whereas Greece and Pakistan demonstrate relatively lower scores in this dimension.

Future Orientation (M = 3.84) reflects the extent to which a society emphasizes long-term planning and strategic decision-making (House et al., 2004). The near-average score suggests that while there is some attention to long-term objectives and planning in Azerbaijan, short-term decisions and adaptive responses continue to dominate organizational behavior. In this regard, Azerbaijani companies entering international markets often develop long-term strategies but are simultaneously compelled to make rapid, flexible decisions in response to changing market conditions (Mammadova & Huseynov, 2021). Globally, countries such as Japan and Singapore exhibit high levels of future orientation, characterized by sustained commitment to long-term planning, whereas nations like the United States and Mexico tend to favor short-term approaches and immediate adaptability.

Assertiveness (M = 4.17) was found to be relatively high, indicating that competitiveness, assertive expression of power, and initiative are noticeable cultural values within Azerbaijani society. According to the GLOBE framework (House et al., 2004), cultures with high assertiveness tend to emphasize competition, direct communication, and a strong defense of personal or organizational positions, often accompanied by a results-oriented mindset. Research by Den Hartog et al. (1999) further supports that assertive leadership behaviors can enhance decisiveness and initiative but may also increase the risk of interpersonal tension and conflict within teams. In the Azerbaijani context, this dimension demonstrates a dual effect: on one hand, assertiveness contributes to stronger leadership positions and more decisive

strategic choices; on the other hand, in global project environments that require consensus and compromise, it may lead to coordination challenges and reduced group harmony.

Institutional Collectivism (M = 3.90) indicates that, within the Azerbaijani context, collective interests are partially considered at the organizational and institutional levels, though this tendency is not dominant. This finding suggests that collectivism in Azerbaijan is pronounced at the in-group level but relatively weaker at the institutional level. Azerbaijan's score is broadly comparable to those of the Middle East (M = 4.24) and Eastern Europe (M = 4.05) clusters (House et al., 2004). According to the GLOBE study (House et al., 2004), cultures with high institutional collectivism emphasize cooperation, shared goals, and social welfare within organizations. In Azerbaijan, however, the moderate score reflects the simultaneous importance of both social obligations and personal relationships in organizational life. This partially aligns with broader GLOBE findings, which note that in post-Soviet and transition economies, collectivist values tend to coexist with emerging individualistic elements. In practical terms, this configuration may introduce certain challenges in global project teams, where excessive reliance on personal networks can limit institutional transparency and hinder the development of formalized collaborative mechanisms.

Gender Egalitarianism (M = 3.29) was found to be below the mid-range level, indicating that women remain underrepresented in both social and professional spheres. According to the GLOBE findings (House et al., 2004), cultures with lower gender egalitarianism tend to maintain predominantly male-oriented leadership structures, thereby limiting women's access to managerial and decision-making positions. Sidani (2018) emphasizes that gender inequality in Middle Eastern and Caucasian societies arises not only from structural barriers but also from deeply rooted sociocultural norms, which in turn weaken women's participation in strategic decision-making processes. In the Azerbaijani context, the relatively low level of gender egalitarianism may hinder the realization of the creative approaches and inclusive leadership practices that gender diversity can bring to global project teams. Consequently, insufficient gender balance can narrow leadership perspectives and diminish the strategic advantages derived from diversity.

Humane Orientation (M = 3.70) was relatively low, though broadly consistent with regional trends (Middle East M = 3.85; Eastern Europe M = 3.67) (House et al., 2004). This suggests that expressions of care, compassion, and interpersonal support are not strongly institutionalized within Azerbaijani organizational settings. In the local context, humane orientation is more evident within family and close social circles, whereas in formal workplace environments it tends to be weaker, often manifested through limited cooperation and less structured social support systems. Theoretically, humane orientation measures the extent to which a society values empathy, altruism, and social support (House et al., 2004). In international project settings, Azerbaijani teams tend to emphasize technical competence and task-oriented performance, while activities such as mentoring, social assistance, and interpersonal encouragement are less common (Jafarova, 2022). Globally, countries such as Iceland and New Zealand exhibit high levels of humane orientation, whereas Japan and Germany tend to prioritize technical expertise and individual achievement.

Overall, the findings indicate that the cultural configuration of Azerbaijan—sharing characteristics with both the Middle East and Eastern Europe clusters—presents a blend of strengths and constraints for global project leadership. Recognizing these dualities enables leaders to develop culturally adaptive

strategies that balance collective cooperation with individual creativity, thereby enhancing effectiveness in cross-cultural and transnational project environments.

2. The second stage of the analysis revealed that successful integration into multicultural environments is strongly linked to individuals' attachment to local cultural values, proficiency in multiple languages, and prior international exposure.

Multilingualism / Language

H1. Multilingualism acts as a moderator among certain cultural dimensions, fostering integrative relationships between values and enhancing cognitive flexibility as well as the capacity to adapt to different cultural environments.

Correlation analyses between the GLOBE cultural dimensions and language proficiency revealed limited integration among native speakers, with notable relationships such as FUT → ACH (R^2 = .803*) and ACH → HUM (R^2 = .674). Among participants proficient in only one foreign language, a negative correlation was found between POW → FUT (R^2 = –.334*). In contrast, multilingual participants demonstrated stronger and more coherent positive associations, including FUT → ACH (R^2 = .622) and ACH → HUM (R^2 = .602), indicating robust predictive links between future-oriented thinking, performance, and humane orientation. These findings suggest that as language proficiency increases, the interconnections among cultural values become more integrated and cohesive, thereby enhancing adaptability and cross-cultural flexibility. Among monolingual participants, correlations appeared simpler and, in some cases, contradictory. The negative relationship between power distance and future orientation in single-language respondents implies that hierarchical attitudes may inhibit strategic vision and long-term planning, potentially hindering adaptation in multicultural contexts. Such individuals may display tendencies toward alienation or difficulty adjusting when exposed to diverse cultural environments.

Multinational experience

H2. International experience facilitates the integration of cultural dimensions from the individual to the social and collective levels, thereby strengthening collaboration and leadership competencies in multicultural environments.

Participants without multinational experience exhibited integration of cultural values primarily at the individual level, with significant associations between FUT → ACH (R^2 = .474*) and ACH → HUM (R^2 = .405*). This pattern indicates that individuals lacking international exposure tend to link long-term planning and achievement orientation mainly to personal values and humanistic principles, rather than to broader social or collective dimensions.

In contrast, participants with prior international experience demonstrated a more complex and interconnected structure, including relationships such as POW → TRI (R^2 = .421*), FUT → ACH (R^2

= .603), and ACH → HUM (R^2 = .311). These findings suggest that exposure to multicultural environments fosters greater integration across multiple cultural dimensions—particularly uncertainty avoidance, in-group collectivism, future orientation, performance, and humane values. Consequently, international experience appears to extend the adaptation process beyond the individual domain, reinforcing it at the collective and social levels.

Level of cross-cultural adaptability

H3: The extent to which individuals feel alienated in cross-cultural encounters depends on their mode of attachment to cultural values. A balanced, integrative attachment fosters greater adaptability and facilitates smoother adjustment to culturally diverse contexts.

Correlation analyses between the GLOBE cultural dimensions and participants' feelings of comfort in culturally diverse environments yielded several significant results.

Among participants who reported feeling completely alien in multicultural settings, strong relationships were observed between UNC → TRI (R^2 = .608*), POW → TRI (R^2 = .519), FUT → ACH (R^2 = .645), and ACH → HUM (R^2 = .521), suggesting that heightened uncertainty avoidance and hierarchical tendencies may restrict open intercultural communication.

Participants who reported experiencing significant difficulty adapting displayed weaker harmony among cultural dimensions, with notable associations such as FUT → ACH (R^2 = .619*) → HUM (R^2 = .383) and ACH → HUM (R^2 = .333*). This pattern reflects a partial alignment between performance and humane orientations but an overall limited integration across dimensions.

In contrast, those who indicated having some initial difficulties but eventually adapting showed moderate positive relationships, including UNC → FUT (R^2 = .311*), FUT → ACH (R^2 = .507), and ACH → HUM (R^2 = .383). These results imply that uncertainty avoidance influences both future orientation and performance, supporting gradual cultural adjustment through experience.

Participants who reported feeling comfortable in multicultural environments exhibited the most integrated pattern of relationships across key dimensions—UNC → FUT (R^2 = .309*) → ACH (R^2 = .361), FUT → ACH (R^2 = .514), and HUM → ACH (R^2 = .537) → HUM (R^2 = .540*)—indicating greater flexibility, adaptive balance, and effective functioning in global contexts.

The results indicate that participants who experienced a strong sense of alienation tended to exhibit higher levels of uncertainty avoidance, in-group collectivism, and power distance. These tendencies appear to limit their capacity for cross-cultural adaptation and reinforce feelings of estrangement in multicultural environments. Participants who reported difficulties adjusting displayed weak harmony among future orientation, performance orientation, and humane orientation, suggesting that tensions among these values may create internal conflicts during the adaptation process. Individuals who experienced some initial challenges but eventually adapted demonstrated a relatively balanced application of uncertainty avoidance, future orientation, performance, and humane values. Although this group faced temporary obstacles, their ability to integrate these dimensions enabled gradual and sustainable adaptation over time. Participants who reported feeling comfortable in multicultural environments showed an integrated approach across all cultural dimensions—uncertainty avoidance,

long-term planning, achievement, and human orientation—allowing them to behave more flexibly and perform more effectively in global contexts.

Overall, the findings confirm that:

- Multilingualism fosters cognitive flexibility and value-based harmony that facilitate cultural adaptation.

- International experience extends this harmony from the individual to the social and collective levels.

- Adaptation models differ according to linguistic proficiency and international exposure: monolingual individuals are more prone to alienation and adjustment difficulties, whereas multilingual and internationally experienced participants display either balanced adaptation or advanced levels of cross-cultural integration.

Conclusion

The findings of this study provide an in-depth understanding of Azerbaijan's cultural configuration within the framework of the GLOBE model and its implications for leadership in global project management. The results demonstrate that Azerbaijan's cultural profile exhibits both convergence and divergence with the Middle East and Eastern Europe clusters. While sharing certain collective and hierarchical tendencies, Azerbaijan has developed distinct patterns shaped by its regional dynamics, socio-historical experiences, and ongoing globalization processes. In the Azerbaijani context, multilingualism and international experience appear to "moderate" high power distance and uncertainty avoidance, fostering a more flexible and adaptive model of cross-cultural behavior. This indicates that exposure to multiple linguistic and cultural systems encourages openness, cognitive flexibility, and leadership adaptability in multicultural project environments.

Theoretical Implications

This study contributes to the theoretical advancement of the GLOBE framework by situating it within the Azerbaijani cultural context. The findings reveal a hybrid configuration that integrates elements of both Middle Eastern and Eastern European cultural patterns, thereby challenging the static nature of existing cluster typologies and supporting a more flexible, context-sensitive interpretation of culture. Furthermore, the results highlight the significant impact of individual-level factors—such as multilingualism and international exposure—on broader societal cultural dimensions. These insights suggest that processes of globalization and transnational interaction are reshaping traditional understandings of Power Distance, Uncertainty Avoidance, and Collectivism. Overall, this study refines the GLOBE framework by underscoring the dynamic, adaptive, and evolving nature of cultural systems, portraying culture not as a fixed national characteristic but as a construct continuously redefined through cross-cultural exchange and contextual adaptation.

Limitations

This study has several limitations. First, the sample is restricted to the Azerbaijani context, which limits the generalizability of the findings to other cultural environments. In addition, the sample size for some subgroups was relatively small, which may have affected the stability and robustness of the correlation models. Finally, although the study distinguishes between in-group collectivism and institutional collectivism, the broader dynamics of collectivism as a multidimensional construct warrant further qualitative exploration to capture its depth and contextual variations more comprehensively.

Recommendations for Researchers

Future studies could examine how the GLOBE cultural dimensions evolve within organizational and regional contexts in Azerbaijan, particularly in emerging industries and sectors that require a high level of international collaboration. Comparative research involving countries with similar cultural profiles may also provide additional theoretical and practical perspectives for enhancing global project management and cross-cultural leadership practices.

Recommendations

1. Leadership Development:

Training programs should be designed to strengthen the leadership competencies of Azerbaijani professionals involved in global projects. Particular emphasis should be placed on fostering individual initiative and enhancing the ability to operate effectively under conditions of uncertainty.

2. International Experience Opportunities:

Broader opportunities should be created for local professionals to participate in international projects and exchange programs. Such initiatives can enhance adaptation skills at both social and collective levels, contributing to greater cross-cultural competence.

3. Organizational Policy:

Within local organizations, it is advisable to promote individual initiative alongside collective values and to strengthen institutional mechanisms of social support. This balance can increase innovation and cohesion in organizational environments.

4. National Cultural Mapping:

To recognize Azerbaijan as a distinct cultural cluster within the GLOBE framework, further large-scale empirical research should be conducted to map and refine the country's cultural profile.

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İNFORMASIYA TEXNOLOGIYALARININ MÜASIR KONFLIKTLƏRIN IDARƏ OLUNMASINDA ROLU

Shafag Ahmadova

PhD in Philosophy, Associate Professor
E-mail: shafag.ahmadova@gmail.com
ORCID ID: 0000-0002-8671-5757
Şahsurova Sara

Master's Student
E-mail: shahsurovasara@gmail.com
ORCID ID: 0009-0007-2827-6550

Abstract

Today, information technologies have become an integral part of the global security system and conflict management. In recent years, the widespread use of information technologies has changed the nature and form of conflicts. Now, cyberattacks and disinformation possess as much impact power as armed confrontations. Artificial intelligence and satellite systems play a major role in preventing and managing conflicts. These tools are effective not only during conflicts but also in the post-conflict period. In recent years, numerous scientific presentations have been conducted on information technologies. Based on the results of these studies, it can be concluded that information technologies are not only instruments of conflict but also means of maintaining peace and stability. This issue should also be considered in the context of Azerbaijan. After the 44-day victory, information technologies have been widely used in the Karabakh region to ensure sustainable development and restore social trust. Consequently, the purposeful application of information technologies is regarded as one of the main strategies for establishing lasting peace and effectively managing conflicts in the modern era.

Keywords: Information technologies , modern conflicts, cybersecurity, disinformation and information warfare, artificial intelligence (AI), digital diplomacy, peace and security, early warning systems, digital governance, digital literacy

Xülasə

Bu gün informasiya texnologiyaları qlobal təhlükəsizlik sisteminin və konfliktlərin idarə olunmasının ayrılmaz tərkib hissələrindən birinə çevrilmişdir. Məhz son illərdə informasiya texnologiyalarından geniş istifadə edilməsi nəticəsində konfliktlərin xarakteri və forması dəyişmişdir. Artıq kiberhücumlar, dezinformasiyalar silahlı qarşıdurmalar qədər böyük təsir gücünə malikdir. Münaqişələrin qarşısının alınmasında və idarə olunmasında süni intellekt, peyk sistemləri böyük rol oynayır. Bu vasitələr nəinki münaqişə dövründə, eləcə də post-konflikt dövründə öz təsirini göstərir.

Son illərdə informasiya texnologiyaları ilə bağlı çoxlu elmi tədqiqatlar aparılmışdır. Bu tədqiqatların nəticələrinə əsasən onu demək olar ki, informasiya texnologiyaları nəinki yalnız münaqişə vasitəsidir. Həmçinin sülhün və sabitliyin qorunması vasitələrindən biri hesab oluna bilər. Bu məsələyə Azərbaycan kontekstində də yanaşmaq lazımdır. 44 günlük qələbədən sonra Qarabağ regionunda dayanıqlı inkişaf və sosial etimadın bərpasında informasiya texnologiyalarından çox geniş şəkildə istifadə olunur.

Nəticə etibarilə, informasiya texnologiyalarının məqsədyönlü tətbiqi müasir dövrdə dayanıqlı sülhün qurulması və münaqişələrin effektiv idarə olunması üçün əsas strategiyalardan biri kimi qiymətləndirilir.

Açar sözlər: informasiya texnologiyaları, müasir konfliktlər, kiber təhlükəsizlik, dezinformasiya və informasiya müharibəsi, süni intellekt, rəqəmsal diplomatiya, sülh və təhlükəsizlik, erkən xəbərdarlıq sistemləri, rəqəmsal idarəetmə, rəqəmsal savadlılıq

GİRİŞ

XXI əsrdə informasiya texnologiyaları bəşər aləminin inkişafını formalaşdıran ən vacib amillərdən birinə çevrilmişdir. Qloballaşma, rəqəmsallaşma və kommunikasiya texnologiyalarının sürətli inkişafı cəmiyyətlərin həm idarəetmə mexanizmlərinə, həm iqtisadi sistemlərinə, həm də siyasi sistemlərinə köklü şəkildə təsir göstərir. Biz bu təsirin ən bariz nümunəsini bu gün müasir konfliktlərin xüsusiyyətlərində görə bilərik. XX əsrdə müharibələr daha çox silahlı münaqişələr formasında baş verirdisə, XXI əsrdə artıq konfliktlər daha çox informasiy, kiberməkan və rəqəmsal təsir alətləri üzərində baş verir.

Informasiya texnologiyaları konfliktlərin həm yaranmasında, həm də idarə olunmasında özünəməxsus rol oynayır. Sosial media vasitəsilə dezinformasiyanın yayılması, təxribat xarakterli məlumatların paylaşılması konfliktlərin yaranmasına və getdikcə dərinləşməsinə təsir göstərir. Eyni zamanda, sosial media və rəqəmsal platformalar münaqişələrin idarə olunmasında və sülh quruculuğu prosesində effektiv vasitələrə çevrilmişdir. Məsələn, Birləşmiş Millətlər Təşkilatının 2023-cü ildə təqdim etdiyi Digital Transformation of UN Peacekeeping strategiyasında vurğulanır ki, süni intellekt, peyk məlumatları və məlumatların analitikası münaqişələrin erkən mərhələdə aşkarlanmasına çox böyük kömək edir.

Həmçinin NATO-nun 2020-2040-cı illər üçün "Science and Technology Trends" hesabatında göstərilir ki, artıq gələcəkdə baş verə biləcək istər silahlı, istərsə də qeyri-silahlı münaqişələr kiber və informasiya mühitində baş verəcək. Bu da o deməkdir ki dövlətlər və beynəlxalq təşkilatlar münaqişələrin idarə olunmasında informasiya texnologiyalarından daha çox asılı vəziyyətə düşəcəklər. RAND korporasiyasının "Understanding and Countering Coercion in Cyberspace" (2019) tədqiqatında göstərilmişdir ki, müasir dövrdə hərbi üstünlük öz əhəmiyyətli yerini informasiya texnologiyalarının üstünlüyünə vermişdir.

Hər bir sahədə olduğu kimi, informasiya texnologiyaları sahəsəinin də müsbət və mənfi cəhətləri vardır. İnformasiya texnologiyaları özü ilə bərabər müəyyən təhlükələr də gətirir. Məsələn, kiberhücumlar, saxta xəbərlərin yayılması, vətəndaşların şəxsi məlumatlarının oğurlanması, dezinformasiyaların yayılması və s. Bu təhlükələrin qarşısının alınması dövlətlər və beynəlxalq təşkilatların prioritet fəaliyyət istiqamətlərindən birinə çevrilmişdir. Çünki sadalanan bu hallar nəinki siyasi təhlükəsizliyə, eyni zamanda sosial sabitliyə və ictimai sabitliyə yönəlmiş ciddi təhlükədir. Bu haqda Cornegie Endowment for International Peace təşkilatının "Mapping Worldwide Initiatives to Counter Influence Operations" 2020 hesbatında da danışılır.

Mənfi cəhətlərdən, yaratdığı təhlükələrdən başqa informasiya texnologiyalarının bir sıra müsbət cəhətləri də mövcuddur. Müasir dövrdə sülh və sabitlik aləti kimi informasiya texnologiyalarından geniş istifadə olunur. Aparılan çoxsaylı tədqiqatlar göstərmişdir ki, etnik, dini və siyasi zəmində baş verə biləcək gərginliklərdən əvvəlcədən xəbərdar olmaq üçün süni intellektdən və böyük verilənlərdən ("big data") istifadə olunması artıq praktiki reallıq halına çevrilmişdir.

Beləliklə, deyə bilərik ki, müasir dövrdə informasiya texnologiyalarının münaqişələrin idarə olunmasında ikili rolu özünü göstərir. Bir tərəfdən, yanlış, saxta məlumatların, dezinformasiyaların yayılması münaqişələrdə vəziyyəti gərginləşdirir. Digər tərəfdən, əgər bu texnologiyalardan düzgün və sülhü yaratmaq və sabitliyi bərqərar etmək məqsədilə istifadə olunarsa, münaqişələrin qarşısı alınar, münaqişə tərəfləri arasında etimad bərpa olunar və dayanıqlı sülh formalaşdırılar.

Bu araşdırmanın məqsədi informasiya texnologiyalarının müasir konfliktlərin idarə olunmasında rolunu həm nəzəri, həm də praktiki cəhətdən tədqiq etməkdir. Araşdırma beynəlxalq təşkilatların (BMT, NATO, AB, İCRC) siyasi sənədlərinə, hesabatlarına, həmçinin analitik mərkəzlərin (RAND, CORNEGİE, BROOKİNGS) tədqiqatlarına əsaslanacaq.

İnformasiya texnologiyalarının konfliktlərin idarə edilməsində nəzəri əsasları

Müasir dövrdə informasiya texnologiyaları təkcə kommunikasiya vasitəsi rolunu oynamır. Eyni zamanda social, siyasi və strateji güc mənbəyinə çevrilib.

Münaqişə ilə bağlı olan klassik nəzəriyyələrə ümumi baxış keçirsək deyə bilərik ki, münaqişə tərəflərin maraqlarının toqquşması nəticəsində yaranan fenomendir. XXI əsrdə yaranan konfliktlər isə klassik münaqişələrə nəzərən öz formasını dəyişmişdir. Əvvəllər münaqişələr təkcə fiziki və siyasi sahədə baş verirdi və təsir dairəsi nisbətən az idi. Lakin müasir konfliktlər təkcə fiziki və siyasi sahədə baş vermir. Müasir konfliktlərin yaranma arealı daha da çox genişlənib və artıq münaqişə məlumat mühitində də baş verir. Bu da münaqişələrin artıq yeni mərhələsinin yarandığını göstərir. Məlumat mühitində baş verən münaqişəyə "rəqəmsal konflikt" və "kiber münaqişə" adlarını verdik və bu iki fenomen bu gün geniş surətdə tədqiq edilir. Rəqəmsal konflikt deyəndə nə başa düşürük? İnformasiya axınları, manipulyasiya, dezinformasiyalar, saxta xəbərlə və bütün bunlar vasitəsilə ictimai asayişin pozulması , ictimai rəyin formalaşdırılmasına mənfi təsir və nəticədə informasiya mühitinə nəzarət uğrunda mübarizə rəqəmsal konflikt anlayışının izahı kimi başa düşülə bilər. RAND korporasiyasının 2019-cu ildə dərc etdiyi "Understanding and Countering in Cyberspace " adlı hesabatında informasiya texnologiyalarının dövlət və qeyri-dövlət aktorlarına yeni təsir imkanları açdığı və getdikcə güclənən "görünməz güc" vasitəsi olduğu vurğulanır. Bu vəziyyətdə biz informasiya texnologiyalarının konfliktlərin idarə edilməsindəki rolunu 2 səviyyədə təhlil edə bilərik. Birinci səviyyə-münaqişə zamanı böyük verilənlərin toplanması, məlumatların təhlil edilməsi və çətin qərarların qəbul edilməsi prosesində informasiya texnologiyalarından istifadə. Ikinci səviyyədə isə uzunmüddətli sülhün bərqərar edilməsində, baş verə biləcək risklərin proqnozlaşdırılmasında informasiya texnologiyalarından istifadə.

Müasir konfliktlərin idarə olunmasında informasiya texnologiyalarının təsirini müəyyən edən göstəricilər də mövcuddur. Bunlar aşağıdakılardır:

1.Məlumatların sürətli yayılması və daim hamı üçün əlçatan olması. Bu gün hər kəs istənilən məlumata istənilən an və istənilən yerdə çıxış imkanına malikdir. Məlumatlar rəqəmsal texnologiyalar vasitəsilə saniyələr içərisində qlobal səviyyədə yayılır. Bunun müsbət tərəfi sülh təşəbbüsünə dəstək kimi qiymətləndirilir. Mənfi tərəfi isə təxribat xarakterli məlumatların da olduqca sürətli yayılmasıdır.

2.Asimmetrik güc. Bildiyimiz kimi asimmetriya anlayışı klassik konflikt nəzəriyyələrində özünü göstərir. Yəni, münaqişə tərəflərinin gücləri, resurs imkanları eyni dərəcəyə malik olmayanda asimmetrik müharibə yaranır. Lakin müasir dövrdə bu belə deyil. Münaqişə tərəflərindən biri daha az resursa, daha az hərbi gücə malik ola bilər. ancaq informasiya məkanında qarşı tərəfə güclü zərbələr vura bilər, informasiya məkanında aktiv fəaliyyət göstərərək düşmən tərəfin ictimai fikrinə təsir edə bilər. Beləliklə, kiber məkanda "asimmetrik güc" anlayışı ortaya çıxır.

3.Proqnozlaşdırma və risklərin araşdırılması. Süni intellect və böyük verilənlərin ("big data") vasitəsilə analitik araşdırmaların aparılması gələcəkdə baş verə biləcək münaqişələrin əvvəlcədən proqnozlaşdırılmasına kömək edir. Nature Communications (2024) jurnalında dərc edilən araşdırma nəticələrinə əsasən, peyk məlumatlarının və sosial media məlumatlarının təhlili nəticəsində baş verə biləcək münaqişələrin 70-80%-i dəqiq proqnozlaşdırıla bilir.

İnformasiya texnologiyalarının münaqişələrin idarə olunmasında tətbiqi daha bir sıra yeni anlayışların ortaya çıxmasına səbəb olmuşdur. Belə anlayışlardan da biri "rəqəmsal diplomatiyadır". Bildiyimiz

kimi, diplomatiya dövlətlər, beynəlxalq təşkilatlar və digər siyasi subyektlər arasında münasibətlərin sülh, danışıqlar və qarşılıqlı anlaşma yolu ilə tənzimlənməsi vasitəsidir. İnformasiya texnologiyalarının həyatımıza daxil olması nəticəsində bu anlayış da artıq yenilənmiş, yeni forma və yeni məzmun qazanmışdır. "Rəqəmsal diplomatiya" isə artıq dövlətlər, beynəlxalq təşkilatlar və digər siyasi subyektlər arasında formalaşan diplomatic əlaqələrin sosial media və rəqəmsal platformalar vasitəsilə həyata keçirilməsi prosesidir.

Bir sözlə belə deyə bilərik ki, artıq günümüzdə müasir konfliktlərin idarə olunması prosesində informasiya texnologiyaları köməkçi və ya müşayiətçi qismində deyil, məhz münaqişəni formalaşdıran, onu idarə edən və sonda həll edən vacib bir elementdir.

İnformasiya texnologiyalarının müasir konfliktlərə praktiki tətbiqi

Son illərdə münaqişə ocaqlarının sayının artması, gərginliyin getdikcə daha da çoxalması özünü büruzə verir. Xüsusən də, son onilliklərdə baş verən münaqişələrin sayında çox böyük artım müşahidə olunur. Yer kürəsinin müxtəlif bölgələrində baş verən həm etnik, həm də beynəlxalq xarakterli münaqişələrdə zamanın tələbinə uyğun olaraq, informasiya texnologiyalarından çox geniş istifadə olunur. Bir neçə nümunəyə nəzər salaq:

1.Rusiya-Ukrayna konflikti.

2014-cü ildə Rusiyanın Ukraynaya məxsus olan Krım yarımadasını özünə ilhaq etməsi ilə Rusiya və Ukrayna arasında münaqişənin əsası qoyuldu. Rusiyanın bu davranışı beynəlxalq hüquqa zidd hesab olunsa da, Rusiya hökuməti "referendum" vasitəsilə bu qərarın kifayət qədər beynəlxalq hüquqa uyğun olduğunu bəyan etdi. Rusiyanın verdiyi məlumatlara əsasən bu referendum nəticəsində əhalinin 97%-I Rusiyanın tərkibinə keçmək haqqında səsdən istifadə etdi. Lakin Ukrayna hökuməti və beynəlxalq cəmiyyət bu referendumun nəticələrini qanunsuz hesab etdi. 2014-cü il 18 martda isə Rusiya bütün təzyiqlərə baxmayaraq, Krımın ilhaqını rəsmi şəkildə elan etdi. Bu hadisədən sonra ABŞ, Avropa İttifaqı və bir sıra ölkələr Rusiyaya qarşı sanksiyalar tətbiq etsələr də, Rusiya heç bir geri addım atmadı. Məhz bu hadisə Rusiya və Qərb ölkələri arasında olan münasibətləri pisləşdirdi və demək olar ki, "soyuq müharibə" atmosferi yarandı. 2022-ci ildə Rusiya həm siyasi, həm də fiziki hücuma keçdi. Rusiya Ukraynanın dövlət saytların genişmiqyaslı kiberhücumlar həyata keçirdi. Bu hücumlar, əsasən, elektrik şəbəkələrinə, rabitə və bank sistemlərinə yönəldi. Ukrayna qarşılığında könüllü kiberqoşunlar (Cyber Army of Ukraine) yaratdı və beləcə münaqişə sosial platformalarda yayılan dezinformasiyalarla daha da qızğınlaşdı. Sosial şəbəkələr- X, Telegram, İnstagram, Tiktok, Facebook- bu müharibədə ikili rol oynadı. Çünki həm bu platformalar vasitəsilə münaqişə haqqında məlumatlar anbaan yenilənərək qlobal səviyyədə yayıldı. Həm də platformalar vasitəsilə hər iki tərəf məlumatları təbliğ etməyə başladı. Ukrayna hökuməti "digital diplomacy"- rəqəmsal diplomatiyaya əl atdı. Bunda məqsəd dünyanın güc strukturları tərəfindən dəstək qazanmaq və bütün dünyaya real vəziyyəti, Rusiyanın beynəlxalq hüquq normalarına pozduğunu göstərmək idi. Gedən proseslər onu göstərdi ki, həqiqətən də informasiya texnologiyalarından kəskin surətdə məqsədəuyğun istifadə etdikdə məqsədə nail olmaq mümkündür. Ukrayna bu münaqişədə əvvəldə də vurğuladığım kimi, "asimmetrik güc" anlayışının bariz nümunəsinə çevrildi. Həyata keçirdiyi təbliğat vasitəsilə fövqəl güclərin dəstəyini qazana bildi. Dünyanın güclü dövlətlərinin əksəriyyəti, eyni zamanda, beynəlxalq təşkilatlar Ukraynaya həm humanitar, həm də hərbi yardım göstərdilər. Beləcə, Ukrayna Rusiyaya qarşı kəskin sanksiyaların tətbiq edilməsinə nail oldu. Dünyaca məşhur olan mağaza şəbəkələri öz filiallarının Rusiyada fəaliyyətini qadağa etdilər. Bununla da Rusiyanın iqtisadiyyatına zərbə vurmağa çalışdılar. Lakin bu proses elə də uzun çəkmədi. 3 ildir davam edən müharibədə məşhur mağaza şəbəkələrinin idarə heyətləri anladı ki, getdikcə daha çox qazanc itirirlər və atılan bu addım Rusiyanın məğlub olmasına təsir etmədi. Buna görə də bağlanan filialları yavaş-yavaş açmaq qərarına gəldilər. Bütün bunlara baxmayaraq, Ukrayna bu müharibədə informasiya sahəsində geniş üstünlük qazandı. Bu münaqişədə Ukraynanın haqlı olduğuna inanan Palantir Technologies və Maxar şirkətləri Rusiya qoşunlarının hərəkətlərini peyk məlumatları və süni intellektlə izləyərək Ukrayna qoşunlarına məlumatları ötürürdürlər. Bunun nəticəsində də daha az itki

verilirdi və daha çox vaxt qazanılırdı. Həmçinin Ukrayna əldə etdiyi məlumatlara əsasən, Rusiya qoşunlarının hərəkətini analiz edib proqnozlaşdırma aparma imkanına malik oldu. Bütün bu faktlar sübut etdi ki, informasiya texnologiyalarından istifadə silahlı hücum qədər effektiv təsirə malikdir. Rusiyanın hərbi cəhətdən çox güclü olduğunu və buna görə də müharibənin heç də uzun çəkməyəcəyini hesab edən dövlətlər, eləcə də Rusiya özü günün reallığını və informasiya texnologiyalarının gücünü nəzərə almamaqla səhv etdi.

2.Yaxın Şərqdə baş verən münaqişələr

Son illərdə Yaxın Şərqdə münaqişə ocaqlarının sayında kəskin artım müşahidə olunur. Xüsusən də, Fələstin-İsrail münaqişəsi son illərin ən çox diqqət mərkəzində olan problemidir. Bu münaqişədə informasiya texnologiyaları dezinformasiyaların yayılması və videoların paylaşılmasında mühüm rol onnayıb. Fələstin-İsrail münaqişəsi Yaxın Şərqdə baş verən, bir əsrdən çoxdur davam edən siyasi, dini və ərazi münaqişəsidir. 1967-ci ildə İsrailin Qəzza zolağını, Qərb sahilini və Şərqi Qüdsü işğal etməsi ilə vəziyyət daha da kəskinləşdi. Müasir dövrdə isə HƏMAS terror təşkilatının fəaliyyəti nəticəsində vəziyyət bir az da qarışdı. 2021 və 2023-cü illərdə baş verən toqquşmalar zamanı hər iki tərəf informasiya texnologiyalarından geniş surətdə istifadə edib. Bu istifadə əsasən sosial media vasitəsilə təbliğatda özünü göstərib. BBC Monitoring və Reuters İnstitute hesabatlarına əsasən saxta xəbərlərin və "deepfake video"larının yayılması pik həddə çatıb. Qəzzada olan acınacaqlı vəziyyətin hər an dünya ictimaiyyətinə təqdim edilməsi artıq beynəlxalq ictimaiyyətin dəstəyinə nail olmağa səbəb oldu. Bu münaqişədə insan hüquqlarının pozulması və bununla bağlı faktların sənədləşdirilməsində Fələstin tərəfi informasiya texnologiyalarına müraciət etmişdi. Qəzzada olan vətəndaşların şəkil və videoları QHT əməkdaşları, jurnalistlər və muxbirlər tərəfindən mobil telefonlar vasitəsilə çəkilib və İsrailin vəhşiliyi adı altında rəqəmsal sübut kimi BMT və digər beynəlxalq təşkilatlara göndərilib. Bu zaman informasiya texnologiyalarının daha bir xarakteri formalaşdı: ədalət və şəffalığın yaradılması. İsrail hökuməti də bu münaqişə ərzində aktiv şəkildə informasiya texnologiyalarının yaratdığı şəraitdən istifadə edib. Məsələn, süni intellektlə idarə olunan dronlar və sensor sistemləri HƏMAS qüvvələrinin hərəkət fəaliyyətini dəqiq izləməkdə və hücumun proqnozlaşdırılması və qarşısının alınmasında güclü rol oynayıb.

İnformasiya texnologiyalarında sadəcə hərbi sabitliyi deyil, eyni zamanda, iqtisadi və ictimai sabitliyi qorumaq üçün də geniş istifadə olunur. Buna nümunə olaraq, Afrika regionunu göstərə bilərik. Afrika regionu daim münaqişələrin baş verdiyi bir region kimi tanınmışdır. Burada münaqişələrin əksəriyyəti resurslar uğrunda, etnik fərqliliklərə görə baş verir. Müasir dövrdə, daha dəqiq desək, son illərdə bu münaqişələrin də qarşısının alınmasında informasiya texnologiyalarının imkanlarından geniş istifadə olunur. Onu da deyə bilərik ki, əldə olunan nəticələr onu göstərir ki, həqiqətən də informasiya texnologiyalarından istifadədən sonra bir çox nailiyyətlər, irəliləyişlər əldə edilib. Bir neçə nümunəyə nəzər salaq.

Nigeriyada və Keniyada hər zaman seçki dövründə gərginliklər pik həddə çatır. Bunun qarşısını almaq üçün Afrika İttifaqı "Continental early warning system" (cews) yaradıb. Bu sistem vasitəsilə sosial mediada paylaşılan məlumatlar izlənilir, analiz edilir və zorakılıq riski olan bölgələrə dərhal müdaxilə edərək baş verə biləcək qarşıdurmanın qarşısı uğurla alınır. Daha əvvəl də vurğuladığım kimi, informasiya texnologiyalarının mənfi tərəflərindən biri dezinformasiyaların yayılmasıdır. Afrika ölkələrinin hökümətləri bunu da düşünüb və qarşısını almaq yollarını tapıb. Belə ki, Nigeriyada, Efiopiyada və Keniyada fəaliyyət göstərən QHT-lər daimi olaraq əhaliyə "sülh mesajları" göndərir. Bu mesajlarda yayılan informasiyaların sadəcə bir dezinformasiyadan ibarət olduğu və əhaliyə təşvişə düşməmələri haqqında xəbərdarlıq edilir.

Digər bir vasitə isə zorakılığın qarşısının alınması yoludur. Məhz bunun üçün "Ushahidi" adlı platforma yaradılıb və əhalinin istifadəsinə verilib. Bu platforma vasitəsilə zorakılığa məruz qalmış və ya zorakılığa məruz qala biləcək vəziyyətdə olan şəxs və ya şəxslər dərhal bunu dövlətin hüquq-mühafizə

orqanlarına bildirir. Proqramın işləmə mexanizminin xəritə ilə birbaşa əlaqədə olması nəticəsində dərhal zorakılıq baş verən ərazi müəyyənləşdirilir və lazımi tədbirlər görülür.

Afrikada korrupsiya, dövlətin idarə olunmasında qeyri-şəffaflıq hallarının baş alıb getməsi dövləti bu sahədə də addımlar atmağa sövq etmişdir. Bu hallar həm ölkədaxili vəziyyəti gərginləşdirir, həm də xalqda dövlətə qarşı inamsızlıq formalaşdırır. Qana və Nigeriyada bu hallar tez-tez baş verir. Bunun qarşısının alınması üçün blokçeyn texnologiyası tətbiq edilməyə başlayıb. Bu texnologiyanın tətbiq olunmasında məqsəd odur ki, vətəndaşlar dövlət resurslarının necə idarə olunmasını izləsin və baş verə biləcək etimadsızlığın, inamsızlığın qarşısı alınsın.

Nəticədə bunu deyə bilərik ki, Afrika ölkələri dünyanın bir çox inkişaf etmiş ölkələrindən geridə qalsa da, informasiya texnologiyalarından istifadə edərək sülh və əmin-amanlıq yaratmaqla artıq müasir dövrün tələbləri ilə uyğunlaşdığını göstərə biliblər.

İnformasiya texnologiyalarının konfliktlərin həllində və davamlı sülhün bərpa edilməsində rolu

Müasir dövrdə informasiya texnologiyaları yalnızca münaqişələrin yaradılması və idarə olunması vasitəsi kimi deyil, həm də münaqişələrin həll olunmasında və davamlı sülhün bərqərar edilməsi vasitəsi kimi də çox geniş şəkildə istifadə olunur. Əvvəllər sülhün yaradılması təkcə diplomatik yollarla və ya hərbi hücumların dayandırılması ilə baş verirdisə, indi bu, heç də belə deyil. İndi uzunmüddətli sülhün yaradılmasına nail olmaq üçün rəqəmsal diplomatiya, informasiyanın şəffaflığı və ictimai iştirakçılıq kifayət qədər əhəmiyyətli rol oynamağa başlayıb. Daha əvvəl də vurğuladığım kimi, "rəqəmsal diplomatiya" anlayışı son illərdə beynəlxalq arenada istifadə olunan bir anlayışdır. Dövlətlər və qeyri-dövlət aktorları sosial media və platformalardan, rəqəmsal kommunikasiyalardan istifadə edərək həm uzunmüddətli sülhü bərqərar edirlər, həm də baş verə biləcək hər hansısa bir böhranı əvvəlcədən proqnozlaşdırıb uyğun strategiyalar həyata keçirə bilirlər. Buna nümunə olaraq BMT-nin "Digital peacekeeping" (2023) təşəbbüsünü göstərmək olar. Bu təşəbbüs münaqişə zonalarında yayılan məlumatları izləmək, nəzarət etmək və tərəflər arasında dezinformasiyaların yayılmasının qarşısını almaq məqsədi güdür. Digər bir platforma isə Avropa İttifaqının formalaşdırdığı eDiplomacy platformasıdır. Bu platforma vasitəsilə Avropa İttifaqına daxil olan ölkələrin diplomatik nümayəndəlikləri daim bir-biri ilə əlaqə saxlayır və baş verə biləcək hər hansı bir diplomatik böhran zamanı tərəflər onlayn əlaqə saxlayaraq həm vaxta, həm də maddi vəsaitə qənaət edirlər. Beləliklə, informasiya texnologiyalarının könəyi ilə diplomatik əlaqələr daha sürətli, daha açıq və daha etimadlı qurulur.

Sülh danışıqları zamanı etimadın yaradılması və şəffaflığın təmin edilməsində informasiya texnologiyaları "rəqəmsal vasitəçilik" rolunu oynayır. Məsələn, "Build Up" adlı beynəlxalq QHT onlayn sülh dialoqları zamanı istifadə ediləcək rəqəmsal alətlər hazırlayıb (2019-2024) Bu alətlər vasitəsilə əgər münaqişə baş verərsə, münaqişə tərəfləri vaxt itirmədən və birbaşa görüşmə imkanları olmayanda video konfranslar keçirirlər və müzakirə apara bilirlər. Digər rəqəmsal layihə "PeaceTech Lab" (USAİD) Layihəsidir. Bu layihənin əsas məqsədi sosial mediaya nəzarətdir. Bildiyimiz kimi, sosial mediada münaqişə zamanı daim nifrət nitqləri səsləndirilir. Bu layihə bu nitqləri təhlil edir və sülhə mane ola biləcək davranışları aşkar edir, daha sonra bununla bağlı lazımi işlər görülür.

Sülhün bərpa edilməsində rəqəmsal savadlılıq da vacib rol oynayır. Rəqəmsal savadlılıq insanların informasiya texnologiyalarından səmərəli , məqsədyönlü istifadə etmək bacarığıdır. Bu gün sülhün davamlı olması, iqtisadi, siyasi və sosial sahələrdə sabitliyə nail olunması cəmiyyətin rəqəmsal təfəkküründən və rəqəmsal savadlılıq dərəcəsindən asılıdır. Buna görə də bu sahədə maarifləndirmə işlərinin aparılması böyük əhəmiyyətə malikdir. Məsələn, UNESCO-nun "Digitak Citizenship Education" (2022) proqramı bu sahədə fəaliyyət göstərir. Bu proqram vasitəsilə gənclərə sosial media platformalarında paylaşılan nifrət nitqinə qarşı mübarizə və informasiya etikası ilə bağlı çoxsaylı təlimlər keçirilir. Digər bir layihə UNİCEF və Google-nin əməkdaşlığı nəticəsində yaradılan "Peace

Online" layihəsidir. Bu layihənin əsas məqsədi münaqişə regionunda yaşayan gənclərə və uşaqlara sülhü aşılamaq, onları kin və nifrətdən uzaq tutmaqdır. Bu istiqamətdə ölkəmizdə də müəyyən işlər görülür. Nümunə olaraq, ali təhsil müəssisələrində "informasiya təhlükəsizliyi" və "rəqəmsal media savadlılığı" fənlərinin tədris edilməsini göstərmək olar. Sülh prosesində tətbiq edilən texnologiyalardan bir digəri isə blokçeyn texnologiyasıdıe. Bu texnologiya məlumatların saxtalaşdırılmasının, korrupsiyanın qarşısını alır. 2022-ci ildə BMT world food programme-nin tətbiqi üçün blokçeyn texnoıogiyası tərbiq edildi. Nəticədə şəffaf şəraitdə 1 milyondan çox qaçqın ərzaqla təmin edildi.

Azərbaycan kontekstində yanaşma

Respublikamız üçün informasiya texnologiyalarının konfliktlərin idarə edilməsində tətbiq edilməsi həm ölkəmizin milli təhlükəsizlik siyasəti, həm də sülh quruculuğu prosesi cəhətdən vacib əhəmiyyət daşıyır. Münaqişə və post-münaqişə dövründə ölkəmizdə aşağıdakı istiqamətlərdə informasiya texnologiyalarından istifadə olunub:

1. Qarabağ regionunda ekoloji təhlükəsizlik və rəqəmsal monitorinq sistemləri yaradıldı.

2. Smart City and Smart Village layihələri tətbiq edildi.

3. Münaqişə dövründə dezinformasiyaların qarşısının alınması məqsədilə rəqəmsal savadlılığın gücləndirilməsi işləri həyata keçirildi.

4. Mədəni irsin bərpa olunması süni intellekt və 3D texnologiyalarından istifadə edilərək rəqəmsal arxivlər yaradıldı.

Nəticə

Aparılan tədqiqatlar və nümunələr göstərdi ki, informasiya texnologiyaları müasir konfliktlərin idarə olunmasında aşağıdakı istiqamətlər üzrə rol oynayır:

1. Proqnozlaşdırma və təhlükələrdən daha erkən xəbərdarolma – süni intelellekt və böyük verilənlər riskləri əvvəlcədən görməyə və qarşısını alma yollarını müəyyən etməyə imkan verir.

2. Kiber təhlükəsizlik və rəqəmsal müdafiə- münaqişə zamanı kiber hücumların baş verməsi ehtimalında dövlət öz təhlükəsizliyini qorumaq məqsədilə bu sahədə mühim addımlar atmalıdır. Çünki bu, təhlükəsizliyə birbaşa təhdiddir.

3. İnformasiya müharibələrinə qarşı mübarizə- dezinformasiyaların yayılması, manipulyasiya xatakterli saxta xəbərlərin paylaşılması münaqişə zamanı ictimai və sosial sabitliyin pozulmasına səbəb olur.

4. Rəqəmsal diplomatiya və kommunikasiya vasitələrindən geniş istifadə-vaxta qənaət edərək baş tutan birbaşa danışıqlar və rəqəmsal vasitəçilik sülhün uzunmüddətli, effektiv və şəffaf olmasına gətirib çıxarır.

5. Rəqəmsal savadlılıq- rəqəmsal etika sülhün sosial əsasını uşaqlar və gənclər arasında formalaşdırır.

Beləliklə, informasiya nəinki yalnızca müharibə alətidir, eyni zamanda sülhün yaradılması və etimadın təmin olunması vasitəsidir. Bu gün bütün dövlətlər və qeyri-dövlət aktorları sülhü qorumaq üçün daim yeni və köklü həll variantları tapmağa çalışırlar. Bəşəriyyətin bəlası olan müharibələrin azaldılması və mümkün qədər yox olması üçün informasiya texnologiyaları sahəsində daha çox tədqiqatlar aparılmalı, sülh üçüb innovativ baza yaradılmalıdır. Çünki müharibəsiz, sülh içində dünya istəyirik. Gələcəyin sülhü elmin, texnologiyanın və birgə fəaliyyətin birləşdiyi nöqtədə mümkündür.

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ENHANCING SUSTAINABLE RELIGIOUS TOURISM THROUGH SMART TOURISM TECHNOLOGIES: EVIDENCE FROM HERITAGE SITES IN PAKISTAN

Irtaza NAWAZ

Senior Lecturer, Tashkent State University of Oriental Studies, Uzbekistan
E-mail: Irtaza.joiya@yahoo.com
ORCID ID: 0009-0004-1794-7740
Hassan Mujtaba Nawaz SALEEM

Associate Professor, The Islamia University of Bahawalpur, Pakistan
E-mail: hassan.saleem@iub.edu.pk
ORCID ID: 0000-0003-1572-2068

Abstract

This paper examines how smart tourism technologies (STTs) can benefit sustainable tourism and enhance the visitor experiences at Pakistani religious heritage sites. The study proposal will attempt to identify tourists' perceptions of new technologies and their effects on visiting Kartarpur, Multan, and Uch Sharif. The questionnaire was planned, and researchers surveyed 499 domestic and international tourists. SAS upheld the original analysis, and the PLS-SEM was used in SmartPLS 4. The results show that tourists are more likely to experience a pleasant stay, learn more about the culture, and enjoy their visit with STTs, which will result in a desire to visit again and suggest the attraction sites to others. According to the research, the greater the positive experience with technology, the more positive the support for sustainable tourism. Nevertheless, future studies must apply different places and procedures, as the outcomes vary with the surveyed areas and the respondents' responses. STTs should be incorporated in the planning and policy of religious tourism in order to make sure that it is sustainable, enhances the satisfaction of the tourists, and aids in the preservation of historic sites. In this instance, the PLS-SEM analysis has facilitated a novel insight into the relationship between sustainability, tourism, and technology in Pakistan.

Keywords: Smart Tourism Technologies, Sustainable Tourism, Religious Heritage, Memorable Travel Experiences, Pakistan, Cultural Tourism

INTRODUCTION

Pakistan is a nation that boasts of various natural sceneries, a myriad of historical sites, and a rich cultural heritage that attracts a lot of tourists. Over the past years, the tourism sector in Pakistan has been performing well, which has positively influenced the country's economy and enabled people to understand the various cultures in the country. Pakistan is also blessed with Himalayan attractions, which start at the Arabian Sea on the southern coast and extend northwards. The presence of the Badshahi Mosque in Lahore and Mohenjo-Daro also adds more value to Pakistan geographically (Raza et al., 2024). This has enabled the tourist industry to continue despite Pakistan's security problems. In 2023, there were nearly 1.9 million foreign tourists, a stable increase over 2022. The country relied heavily on tourism as one of its key sources of earnings since it contributed to its revenue to 1.1 billion dollars. The emphasis on domestic tourism has worked out to the advantage of the business (Hussain et al., 2024). Citizens are travelling to Pakistan in larger numbers than before. By providing support to the government for less popular plans and cultural activities, the government attracts national and international tourists to the numerous unique attractions in Pakistan (Arshad et al., 2018). The tourism industry in Pakistan is keeping up with the world's current technology.

Religious tourism is an essential branch of the economy because both Pakistani and international tourists visit the Data Darbar and Lal Shahbaz Qalandar shrines. Pakistan is embracing smart tourism technology in order to maintain the same traditions and enhance sustainability. Although other nations adopt new

technologies in the tourism industry, the application of these technologies in Pakistani religious tourism is insufficiently studied (Ahmed et al., 2022).

This paper evaluates the potential of smart tourism technology to improve the sustainability and repeat visits to the Pakistani religious tourism industry. Chaieb (2025) shows that the integration of the characteristics of STT, i.e., access to information, interactivity, personalisation, and security, can lead to an improved travel experience and the adoption of environmentally friendly strategies. This review discusses the roles played by tourist behaviours, responsiveness to travel, memorable experiences, and technology to maintain a tie with specific destinations. The relationship between smart tourism technology (STT) and sustainability is mediated by using academic sources that demonstrate the adoption and implementation process (Nawaz & Iqbal, 2025). The tastes and experiences of tourists affect this relationship (Sankar & Ilangovan, 2025). This creates questions regarding introducing innovation to religious tourism and the success of new practices in developing cultural awareness and advantages.

Research Question

After reviewing the literature and identifying study gaps, the researcher developed the research question:

i. What are the effects of smart tourism technology towards sustainable tourism?
ii. How does smart tourism technology influence sustainable tourism?
iii. Does technology adoption and implementation mediate the relationship between smart tourism technology and sustainable tourism?
iv. Does perceived enjoyment and implementation mediate the relationship between smart tourism technology and sustainable tourism?
v. How do tourist behaviour and preferences moderate the relationship between smart tourism technology and sustainable tourism?
vi. How does a memorable travel experience moderate the relationship between smart tourism technology and sustainable tourism?

Research Objectives

i. To determine the impacts of Smart Tourism Technologies on sustainable tourism.
ii. To establish how Smart Tourism Technologies affect sustainable tourism.
iii. To determine the mediation by technology adoption and implementation between Smart tourism technologies and sustainable tourism.
iv. To determine the mediation by perceived enjoyment and the implementation of Smart tourism technologies and sustainable tourism.
v. To investigate the moderating effect of tourist behaviour and preferences between Smart Tourism Technologies (STTs) and sustainable tourism.
vi. To examine the moderating effect of memorable travel experiences on the association between Smart Tourism Technologies (STTs).

Review of Literature

Smart Tourism Technologies (STTs)

These digital tools and applications add features to make tourism more enjoyable. For example, big data, AI, mobile technology, AR/VR and social media account for these changes. Neuhofer et al. (2015) explained the basic idea of smart tourism technology by stressing the use of ICTs to create personalised tours. Big data allows the analysis of travellers' preferences and the prediction of demands occurring right now (Baogang, 2020). With help from AI and big data, it is now possible to offer personalised tours and travel services (Gretzel & Zheng, 2020). Nowadays, it is easy for tourists to stay in touch and share experiences using their smartphones at any time, from any place (Kim & Tussyadiah, 2013). Services such as TripAdvisor and social media allow tourists to share and read reviews, which helps influence the image and decisions of travellers. On the other hand, AR and VR make exploring places

before and during your trip much more exciting. The authors argued that there are four main parts of STTs: information, being accessible, interactive components and personalised content. Later, certain studies added security to the main elements to be considered (Huang et al., 2017).

Sustainable Tourism

In sustainable tourism, all three areas of economy, society and environment are balanced to meet the needs of both tourism and communities without wasting resources for others to come (WTO, 2005). Today, being sustainable gives tourism businesses an edge over others in the industry (Yan & Jia, 2021). González-Rodríguez and Tussyadiah (2022), prove that mental and emotional activities influence tourists' sustainable actions. The book shows the importance of including sustainability in every decision made in tourism. Basically, the report revealed that 69% of international tourists search for travel choices that have a positive impact on the environment. In Pakistan, OTAs like sastaticket.pk and booking.com join forces with other companies to introduce projects that effectively support the local community (Saleem et al., 2021).

Technology Adoption and Implementation

Though technology adoption looks different in every country, nearly all people now use technology because of the skyrocketing use of the Internet and smartphones (Poushter, 2016). Destinations at the forefront of tourism introduce technology to boost their services and tourism experiences (Huang et al., 2017). Early adopters set positive examples for others, and all groups use technology in their day-to-day travels. The travel business has included smart features for planning, navigating, booking, and real-time communication.

Perceived Enjoyment

Experiencing enjoyment in technology encourages more people to adopt it. According to Davis et al. (1992), the idea of perceived enjoyment involves how enjoyable it is to use technology, no matter how efficiently it works. When self-service kiosks and mobile guides are used in tourism, they improve the level of user enjoyment and satisfaction (Brown & Chalmers, 2003; Chang & Yang, 2008). Goodhue argued in 1988 that there is a lack of emotional elements in information system research, an area that tourism scholars are keen to fill.

Tourist Behaviour, Preferences, and Memorable Experiences

When tourists use STTs, it improves efficiency, helps share information and enhances their satisfaction, leading to better intentions to behave while travelling (Carbonell & Rodriguez Escudero, 2015). An MTE is an experience that leaves a strong impact and remains memorable. They noted that MTEs are important for the development of destination loyalty. As people aim to have one-of-a-kind experiences, STTs make it possible (Dredge, 2022).

Religious Heritage Tourism in Pakistan

The country's sacred places help attract religious tourists and contribute to preserving its cultural heritage. Distinctive tourism activities at religious heritage places centre around history, faith and architecture. Due to the Kartarpur Corridor, Sikh pilgrims can visit Gurdwara Darbar Sahib without visas, which promotes good relations between people of different faiths (Akhtar et al., 2019). Shrines found in Multan include those of Bahauddin Zakariya, Shah Rukn-e-Alam and Shah Shams Sabzwari, earning it the name "City of Saints". Many people attend these shrines as pilgrims or tourists because of their attractive look and Sufi influence (Del Bo & Bignami, 2014; Gillani, 2024). Uch Sharif has a significant history of spiritual importance, adding to Pakistan's reputation as a popular place for religious tourists (Ali, 2025).

MATERIALS AND METHODS

Theoretical Framework

The study relies on the Technology Acceptance Model (Davis et al., 1992) and the Stimulus-Organism-Response (S-O-R) Framework. According to TAM, people use or accept technology when they consider it useful and user-friendly. We can also add enjoyment and personalisation as ways they feel about using the technology. Under this model, STT is the stimulus, the interaction with technology is positioned as the organism, and the response is the sustainable behaviour. The framework provides a way to explore the impact of different attributes of STTs on people's thoughts and feelings and their resulting behaviours relating to sustainability.

Research Methodology

The research was done using a cross-sectional survey as the primary data collection method. Participants in the study were given a prepared questionnaire to answer if they had ever used smart technology during travel. Researchers measured the constructs using scales designed in previous studies and adapted them for tourism. SmartPLS PLS-SEM was preferred to analyse our data, as it efficiently handles mediation and moderation effects in exploratory research (Nallaluthan et al., 2024). The number of cases involved in the study was larger than the minimum necessary for PLS-SEM, as it gave the test good statistical power. The measurement model was found to be valid and reliable, so the structural model analysis was performed next; its results are described below.

FINDINGS

Descriptive analysis was conducted using SPSS software to understand the demographic and travel-related characteristics of the respondents. Out of 499 participants, the majority were male (76.6%), with females comprising 23.4%. Most respondents were aged between 36–45 years (48.7%), followed by 26–35 years (22.2%) and 18–25 years (21.0%). Regarding occupation, government employees made up the largest group (30.7%), while students (25.7%) and private sector employees (17.0%) were also significantly represented. In terms of travel companions, most tourists travelled with family (54.9%), while others travelled solo (23.6%) or in tour groups (10.0%). Air travel was the most common mode of transport (48.9%), and a large majority were domestic tourists (69.1%). Additionally, 66.5% were first-time visitors, with 33.5% being repeat visitors. These demographic patterns provide valuable context for interpreting the impact of smart tourism technologies on sustainability and visitor loyalty in Pakistan's religious tourism sector.

Inferential analysis

For inferential analysis, the Smart PLS 4.0 software with the partial least squares technique was adopted to draw the conclusion of the study. The two main tests that were run on SmartPLS 4 were the measurement model and structural model analysis. The measurement model consists of reliability and validity analysis, and structural model analysis, with path coefficients analysis.

Measurement model

The measurement model was assessed using key indicators such as Cronbach's Alpha, rho_A, Composite Reliability (CR), and Average Variance Extracted (AVE) to confirm internal consistency and convergent validity.

Table 1: Trial Data

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)

A	0.660	0.694	0.821	0.613
Inf	0.876	0.878	0.924	0.802
Int	0.752	0.750	0.859	0.671
MTE	0.882	0.886	0.914	0.680
MTE*ST	0.954	1.000	0.959	0.611
P	0.813	0.851	0.889	0.729
PE	0.828	0.831	0.897	0.745
S	0.742	0.765	0.851	0.656
ST	0.731	0.872	0.843	0.596
STT	0.829	0.919	0.870	0.387
TA	0.907	0.912	0.927	0.647
TBP	0.885	0.900	0.909	0.560
TBP*ST	0.976	1.000	0.978	0.464

Most constructs showed strong internal consistency, with Cronbach's Alpha and Composite Reliability values exceeding the recommended threshold of 0.7. The AVE values also mostly surpassed the acceptable threshold of 0.5, indicating sufficient convergent validity. Although STT and TBP*ST had AVE values slightly below the ideal (0.387 and 0.464, respectively), they still exhibited strong reliability and can be considered for further structural analysis with caution.

Figure 18: Measurement Model

Discriminant Validity (HTMT Criterion)

Discriminant validity was assessed using the Heterotrait-Monotrait (HTMT) ratio of correlations. An HTMT value below 0.90 indicates adequate discriminant validity among constructs.

Table 2: Discriminant (HTMT criterion) Validity Results

	A	Inf	Int	MTE	MTE*ST	P	PE	S	ST	STT	TA	TBP	TBP*ST
A													
Inf	0.801												
Int	1.029	0.390											
MTE	0.595	0.516	0.610										

MTE*ST	0.482	0.451	0.367	0.516								
P	0.638	0.337	0.893	0.484	0.227							
PE	0.475	0.398	0.587	0.826	0.348	0.509						
S	0.600	0.670	0.383	0.640	0.193	0.400	0.612					
ST	0.557	0.439	0.636	0.734	0.314	0.527	0.804	0.746				
STT	1.021	0.793	0.927	0.892	0.485	0.802	0.743	0.832	0.771			
TA	0.575	0.386	0.642	0.781	0.343	0.542	0.884	0.629	0.809	0.761		
TBP	0.526	0.570	0.506	0.878	0.370	0.447	0.798	0.782	0.733	0.808	0.724	
TBP*ST	0.582	0.347	0.521	0.438	0.652	0.345	0.261	0.285	0.329	0.521	0.364	0.466

HTMT values between constructs such as Inf and MTE (0.516), Int and MTE (0.610), and P and PE (0.509) indicate that the constructs are distinct from one another. However, a few HTMT values, such as A and Int (1.029) and STT and Int (0.927), exceeded the 0.90 threshold, suggesting potential multicollinearity or overlapping constructs. This could be an indication of theoretical or measurement overlap and may require refinement or merging of constructs in future studies.

The Structural Model

Structural Model Analysis

In the second stage of the inferential analysis using SmartPLS 4.0, the structural model was evaluated to test the hypothesised relationships between constructs. This evaluation included direct, mediation, and moderation effect analyses. The significance of the relationships was assessed through path coefficients, t-statistics, and p-values. Below is a detailed explanation of the results from the structural model.

Table 3: Direct relationship results

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values

H1c: Accessibility of STTs has a significant impact on the smart technology supported experience in visitor attractions.	0.132	0.131	0.029	4.592	0.000
H1b: Informative of STTs has a significant impact on the smart technology supported experience in visitor attractions.	0.253	0.253	0.031	8.165	0.000
H1d: Interactivity of STTs has a significant impact on the smart technology supported experience in visitor attractions.	0.354	0.356	0.030	11.674	0.000
H1e: Personalisation of STTs has a significant impact on the smart technology supported experience in visitor attractions.	0.208	0.206	0.031	6.730	0.000
H1a: Security of STTs has a significant impact on the smart technology supported experience in visitor attractions.	-0.316	-0.316	0.029	10.842	0.000
H2: Smart tourism technology significantly influences sustainable tourism.	0.295	0.291	0.054	5.438	0.000

All direct hypotheses (H1a to H1e and H2) are statistically significant at 0.05, with p-values below 0.001. Notably, interactivity (H1d) has the strongest positive effect (β = 0.354), suggesting that interactive features of smart tourism technologies (STTs) most strongly influence smart technology-supported experiences. In contrast, security (H1a) negatively affects STT experiences, implying that increased security concerns may hinder the perceived benefits of STTs.

Table 4: Mediation results

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
H3: Perceived enjoyment and implementation significantly mediate the relationship between smart tourism technology and sustainable tourism.	0.143	0.141	0.041	3.502	0.001
H4: Technology adoption and implementation significantly mediate the relationship between smart tourism technology and sustainable tourism.	0.238	0.237	0.039	6.060	0.000

Both mediation hypotheses (H3 and H4) are statistically significant. This indicates that Perceived Enjoyment (PE) and Technology Adoption (TA) partially mediate the relationship between smart tourism technology and sustainable tourism. Notably, TA shows a stronger mediating effect than PE, highlighting its crucial role in linking STT to sustainable tourism outcomes.

Table 5: Moderation results

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
H5: Memorable travel experience significantly moderates the relationship between perceived enjoyment.	0.026	0.024	0.039	0.674	0.501
H6: Tourist behaviour and preferences significantly moderate the relationship between technology adoption and implementation and sustainable tourism.	-0.007	-0.007	0.039	0.174	0.862

Neither of the moderation hypotheses (H5 and H6) is supported as their p-values exceed 0.05. This indicates that Memorable Travel Experience (MTE) and Tourist Behaviour & Preferences (TBP) do not significantly moderate the relationship between perceived enjoyment/technology adoption and sustainable tourism. These results suggest that while these factors are conceptually important, they do not statistically influence the strength or direction of these specific relationships within the model.

DISCUSSION AND CONCLUSION

The effect of Smart Tourism Technologies (STTs) on sustainable tourism was analysed using five main features: security, informativeness, accessibility, interactivity and personalisation. The findings of interactivity, providing information and personalisation play a key role in making smart technologies more useful at visitor attractions. Surprisingly, strong security measures made the app's usage harder for users. Although accessibility greatly affected the ranking, it came second to the other factors. It was also proven that technological services improve the sustainability of tourism. Enjoyable experiences and familiarity with technology strengthened the idea that new and engaging technologies can make tourists' behaviours and attitudes more sustainable. However, there was no clear difference in the moderating effects of various travel experiences and how people travel. As a result, STTs encourage sustainability in all communities, overcoming individual differences. It validates a new framework that examines how the use of smart technology in tourism can be linked to achieving sustainable results. It suggests that stakeholders improve tourism technology by making it personal and educational for users and visitors, ensuring security is also efficient and user-friendly.

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ARCHITECTURAL METAPHORS IN POLITICAL SPEECH.

Azar Muradzade
Lector, Baku State University
E-mail: Azarmuradzada@bsu.edu.az
ORCID ID: 0000-0003-1823-2750

Abstract

This article analyzes the meaning of metaphor in political speech, being a tool for shaping the perception of political processes, allowing abstract concepts to be presented through more understandable, concrete images. They are not just a stylistic device, but a cognitive tool for simplifying, evaluating and manipulating complex political phenomena, influencing people's opinions and actions. Metaphors transfer the properties of familiar fields to politics, making it more understandable and accessible to the audience. Metaphors evoke specific emotions. For example, the image of an "enemy" in political speech creates a sense of threat and unites supporters, while the metaphor of "construction" is associated with positive change and progress. Using metaphors, politicians channel the interpretation of events in their favor. For example, by calling an opponent a "traitor," they not only describe their actions but also evaluate them negatively. Metaphors in political discourse also serve to shape the agenda. They can evoke certain associations and motivate action.

Keywords: architectural metaphors, coherence model, primitive and compound metaphors, metaphors in conversational context

INTRODUCTION

The political speech of leaders is today considered a significant factor determining and shaping the prospects for the future direction of various processes, both socially individual and socially mass in nature. The growing interest in the social sciences in various aspects of personal identity, particularly in the political sphere, is direct evidence of the irrefutability of this statement. In this regard, it is worth noting the increased interest in the study of the semiosphere - signs and texts as the main constructive components of the surrounding reality, as well as the actions of political leaders capable of producing meanings, and thereby modeling reality. Leading global scientific, academic and scientific-practical research institutions are initiating the development of various problems in this area.

MATERIALS AND METHODS

Methods of analyzing political metaphors include structural analysis, comparative analysis (ethnocultural, social, diachronic, multimodal) and cognitive-semantic analysis. Structural analysis focuses on the metaphor itself. It analyzes the structure of the metaphor, that is, determines which concepts are compared and what image is created. Comparative studies it in different contexts; compares metaphors in different national discourses to identify cultural characteristics; analyzes how metaphors are used in different social groups; tracks how metaphors change over time; considers metaphors presented not only in text but also in other forms of communication. Cognitive – how it shapes the understanding of concepts. It uses ideas from cognitive linguistics to understand how one conceptual domain (e.g., "war") is understood through another (e.g., "political campaign"); it analyzes how metaphors influence thinking and the formation of worldviews.

FINDINGS

The researches of this phenomenon served as a powerful argument for their postulate that ideologies and subsequently actions to initiate policy are largely formed on the basis of conceptual metaphors used by political actors. It is entirely natural that the sector of questions included in this discourse will subsequently expand; individual provisions of the theory of conceptual metaphor were clarified and

developed over time in the theory of "primitive and compound metaphors" by Grady J, theory of "coherence model of cognitive consistency" by Spellman B, theory of 'metaphors in conversational context' Ritchie D. The emergence of various publications reflecting the significant diversity of approaches to the study of conceptual metaphor in political discourse speaks precisely to the actualization of this phenomenon in the political process.

Subtitle

The "coherence model" in politics became the basis for applying the principle of coherence (consistency, interconnection) to political processes and systems. It means analyzing the coherence within a political system (for example, how different policy decisions are related to each other) and assessing the integrity and coherence of political programs, as well as their compliance with public demands. Based on the study of the extent to which the internal elements of a political system (e.g. institutions, ideologies, legislation) are consistent with each other, it provides valid conclusions about the extent to which the political process is internally consistent and meets the goals of the entire system. This model is based on assessing the "coherence" of political speeches or programs. This refers to how logically and consistently a politician or party presents their ideas, as well as the extent to which their words correspond to their actions. This model is based on assessing the "coherence" of political speeches or programs. This refers to how logically and consistently a politician or party presents their ideas, as well as the extent to which their words correspond to their actions.

Second Subtitle

The theory of "primitive and compound metaphors". Metaphor theory in politics divides metaphors into primary (basic, conceptual) and complex (derived, secondary). Primary metaphors create fundamental conceptual structures, understanding one domain (e.g., politics) through another (e.g., war or sports). Complex metaphors arise when additional elements are added to an existing, primary metaphor, clarifying or expanding it. Primary metaphors shape our fundamental understanding of politics. Complex metaphors are used to describe political processes in a more subtle and detailed manner, to create more vivid images and to enhance persuasion.

Third Subtitle

The theory of "metaphors in conversational context" considers metaphors as a phenomenon that cannot be analyzed in isolation. This theory emphasizes the importance of considering the cognitive and communicative context, including the prior experience of the participants in the communication and the overall system of speech representation. The theory suggests analyzing metaphor not only on the basis of the word, but also in the context of speech communication in which it is used. This theory emphasizes that to understand a metaphor, it is necessary to consider its place in communication and its connection with previous statements and knowledge of the participants. Unlike purely linguistic approaches that focus on word structure, connectional theory integrates cognitive and communicative aspects to explain how metaphor creates meaning in real-life communication.

DISCUSSION AND CONCLUSION

Thus, the study showed that the semiotic component of the political process, expressed in financial metaphors, influences public consciousness and leads to the adoption of certain political decisions. Based on the data obtained, it can be concluded that the interpretation of metaphors is directly related to the fund of common knowledge and beliefs of the participants in communication, therefore it is important for the researcher to take this aspect into account when examining interactions. Each metaphor is interpreted in a specific, unique communicative context and individual interpretations can vary considerably. Its presence in political discourse allows for greater engagement with a situation, allowing

for more detailed communication of information. It makes a speaker's speech more expressive and associative. Research shows that political metaphor is not so much a cognitive phenomenon as a social phenomenon. Political metaphor is considered not as a means of argumentation, but as a reflection of implicit categorization structures common to a certain group of people, which have a significant influence on the "construction of social reality".

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LINKING LEADING PROCYCLICAL INDICATORS TO BUSINESS CYCLES: EVIDENCE FROM AZERBAIJAN

Professor Murad Ramiz Taghiyev

Grand PhD in Economic sciences

Baku State University,

Principal Research Fellow at the Institute of Control Systems

PhD Esmira Ahmadova Mirmammad

Lecturer of the Department of Applied Economics Azerbaijan University of Economics

https://orcid.org/0000-0003-2419-2353

email: fbc.baku@gmail.com; esmira.ahmadova@unec.edu.az

+994503378488

ABSTRACT

This study links leading procyclical indicators to Azerbaijan's business-cycle dynamics and evaluates their ability to anticipate turning points. Using annual data from the State Statistical Committee for 2000–2024, we examine a set of eleven candidate indicators with correlation–regression and graphical analysis, complemented by autocorrelation diagnostics to identify lag structures. Multivariate linear and log-linear specifications quantify delayed effects on core macro outcomes, with GDP serving as the reference cycle. The models pass standard specification, parameter, and verification tests, indicating good econometric adequacy for the country context. Findings reveal a coherent subset of leading indicators that reliably signal phases of expansion and contraction, while several commonly cited measures exhibit little or no predictive content ("false" indicators). The estimated effects are statistically significant and economically meaningful, supporting short-to-medium-term forecasting of cyclical conditions during Azerbaijan's diversification phase. The results provide actionable guidance for policymakers and firms to monitor emerging slowdowns, calibrate countercyclical responses, and mitigate crisis impacts at both micro and macro levels. Limitations include the annual frequency and sample length; future research could leverage higher-frequency series and alternative cycle-extraction techniques. To our knowledge, this is the first systematic assessment of leading procyclical indicators for Azerbaijan, offering an empirically grounded toolkit for business-cycle monitoring and prediction.

Key words*: indicators, procyclical factors, correlation analysis, GDP*

1. INTRODUCTION

Business cycles remain a central concern for managers and policymakers because turning points propagate swiftly through sales, investment, credit, and employment. In small open economies undergoing structural change, timely signals about impending expansions or slowdowns are especially valuable for calibrating counter-cyclical policy and firm-level decisions. Azerbaijan offers a pertinent case: after a commodity-driven growth phase, the country is advancing a diversification agenda, which heightens the premium on reliable, forward-looking indicators of cyclical conditions.

Leading procyclical indicators—variables that move ahead of and in the same direction as aggregate activity—are widely used to anticipate cyclical turning points. International practice emphasizes composite leading indexes, diffusion measures, and model-based filters to translate these signals into operational guidance. However, the transferability of such frameworks to resource-rich, reforming

economies is not guaranteed: sectoral concentration, fiscal transmission from hydrocarbons, and evolving financial depth can alter indicator performance and lags. Despite their practical importance, systematic evidence on which indicators lead Azerbaijan's cycle—and which do not—remains scarce.

This paper fills that gap by evaluating the information content of candidate leading procyclical indicators for Azerbaijan and linking them explicitly to business-cycle dynamics. Using annual macroeconomic data for 2000–2020 from the State Statistical Committee, we assess eleven indicators representing demand, production, external, fiscal, and monetary channels. We begin with correlation analysis and graphical inspection, then examine lag structures via autocorrelation diagnostics. Multivariate linear and log-linear regressions quantify delayed effects on core outcomes, with real GDP serving as the reference cycle. Throughout, we apply standard specification and verification tests to ensure econometric adequacy.

The study makes three contributions. First, it identifies a parsimonious set of leading indicators that consistently anticipate expansions and contractions in Azerbaijan, offering an empirically grounded toolkit for cyclical monitoring. Second, it distinguishes reliable signals from "false" indicators that lack predictive content in this context, thereby reducing noise for decision makers. Third, it documents economically meaningful lag patterns that can be operationalized for short-to-medium-term forecasting during the diversification phase.

The findings have direct managerial and policy relevance. Early signals of cyclical turning points can guide inventory and investment timing for firms, inform prudential and fiscal stance for authorities, and improve the targeting of counter-cyclical measures to mitigate crisis impacts. While our sample frequency limits identification of high-frequency dynamics, the evidence establishes a baseline against which future quarterly analyses and alternative cycle-extraction methods can build.

2. LITERATURE REVIEW

Recent work on business-cycle monitoring emphasizes leading indicators that provide early signals of turning points and complement coincident gauges. The OECD's Composite Leading Indicators (CLI) remain a widely used benchmark and have seen ongoing methodological consolidation and frequent monthly updates, reinforcing their role as qualitative early-warning tools rather than point forecasts (OECD, 2023; 2025). Empirical reassessments find that CLI components can anticipate slowdowns, though performance varies by country and sample period—a key consideration for emerging and resource-rich economies (Ojo, 2024). Parallel indicator systems, such as The Conference Board's LEI, have likewise been scrutinized in light of post-pandemic dynamics and shifting financial conditions (The Conference Board, 2025).

Financial variables continue to feature prominently. Updated evidence suggests that term-spread models still contain predictive content for recessions, especially when combined with short rates and broader financial controls (Chinn et al., 2024), even as some analysts question the stand-alone reliability of yield-curve inversions in the current regime (Hornstein, 2022; Reuters, 2024). A complementary stream leverages high-frequency digital traces for "nowcasting," with OECD-led research showing that Google Trends-based models improve short-horizon tracking of activity and turning points (Woloszko, 2024). For Azerbaijan and comparable hydrocarbon-exporters, recent diagnostics underscore ongoing diversification efforts and structural features (commodity exposure, evolving financial depth) that can alter indicator lead–lag properties—motivating country-specific validation rather than off-the-shelf transfer of indicator sets (EBRD, 2024). Together, these strands support a tailored, mixed system of leading indicators that blends macro-financial signals with timely alternative data and country context.

When studying fluctuations in the values of economic indicators during the economic cycle, pro-cyclical indicators come to the fore. Procyclical indicators move in the same direction as the economy. If everything is good in the economy, the economy expands - these indicators usually increase; if the

economy is in a recession, it shrinks - procyclical indicators decrease. Gross Domestic Product is an example of a pro-cyclical economic indicator.

The relationship between macroeconomic performance and financial indicators on the example of numerous currency crises in developed and developing economies was deeply studied by Aziz J., Caramazza F., Salgado R. [Zenkova 2009].

The IMF experts were also involved in identifying the leading indicators for identifying currency crises [Aziz 2000]. Herein, the work analyzes the crises of 50 developed and developing countries (1975 - 1997). The 2019 IMF Report on Global Financial Stability provides an analysis of the impact of various macroeconomic indicators on financial stability. [Issue Report 2019].

According to the classification of the National Bureau of Economic Research of the United States and Western Europe, three groups of factors are distinguished:

- outstripping, or leading: reaching the maximum (minimum) before hitting the rise (decline) [Snieska 2019];
- lagging: reaching the maximum (minimum) after hitting a rise (decline) [Hansen 1997; McConnell 2003];
- coincident or corresponding: moving along with economies [Keane 1988; Zenkova 2005;].

It should be noted that economic performances are analyzed and published by many national and international organizations.

3. RESEARCH DESIGN AND METHOD

3.1. Scope and data

We study how leading procyclical indicators link to Azerbaijan's business-cycle dynamics over an extended sample. The core dataset originates from the State Statistical Committee and the Central Bank of Azerbaijan and covers the original annual span 2000–2020 used in the base study; we extend series through 2024 where available to reassess stability after the pandemic and the subsequent commodity-price cycle. Variables follow the prior paper's definitions: real GDP (reference cycle), industrial production, GDP deflator, CPI, industrial producer price index (IPPI), fixed investment, monetary aggregates (M0–M3), and merchandise imports (USD). First differences or log-differences are used to mitigate non-stationarity and to interpret elasticities. The indicator glossary and sources follow the original specification.

3.2. Measurement and transformations

We take real GDP as the reference cycle and examine whether candidate indicators lead and comove with it. Annual series are transformed as ΔX or $\Delta \ln X$ for growth-rate interpretations; graphical inspection of levels and changes motivates treating most indicators as procyclical and, for several, coincident with the cycle—facts already documented for 2000–2020 and re-checked after 2020. Pairwise correlations provide a first screen, and autocorrelation/partial-autocorrelation diagnostics guide feasible lags.

3.3. Baseline econometric strategy

We estimate three multivariate models that mirror and update the original framework:

- Model 1 (industrial production equation, levels or logs): Industrial production on monetary aggregate M0 and imports (plus controls as feasible). In the base sample both drivers were statistically significant and economically material.
- Model 2 (GDP growth, log-log): GDP on industrial production and the deflator to capture real-activity and price-level co-movements. The original elasticities were sizable and precisely estimated.

- Model 3 (GDP levels/changes): GDP on M0 and imports to capture liquidity and external-demand channels. Coefficients were significant in the base study.

All models are estimated by OLS with heteroskedasticity-robust (HC1) standard errors. We implement a standard verification suite: Ramsey RESET for functional form; Jarque–Bera (or equivalent) for residual normality; Breusch–Pagan for heteroskedasticity; and VIFs for multicollinearity. In the base paper, all models satisfied these diagnostics; we replicate the same tests after adding 2021–2024 to check stability.

3.4. Identification of leading behavior

"Leading" is assessed in three complementary ways: (i) visual lead–lag inspection of Δ/Δln series; (ii) cross-correlations of each indicator with the GDP reference cycle at leads of 1–3 years; and (iii) regression-based significance of lagged indicators in Models 1–3. Indicators that fail to show robust lead-lag structure or lose significance are classified as non-informative ("false" leaders), consistent with the original exclusion of fixed investment, CPI, IPPI, and broader monetary aggregates (M1–M3) from the preferred specifications.

3.5. Robustness and extensions for 2000–2024

To guard against sample-specific results, we (a) re-estimate Models 1–3 on rolling windows; (b) compare level vs. log-level formulations; and (c) check that coefficients on the four core indicators (industrial production, deflator, M0, imports) retain sign, magnitude, and significance when the 2021–2024 observations are included. Where feasible, we benchmark against alternative reference-cycle proxies (e.g., non-oil GDP) and verify that conclusions are not driven by any single post-2020 shock. The overall approach follows the original study's modeling logic and diagnostics while updating the evidence to present day.

4. EMPIRICAL RESULTS

4.1 Descriptive patterns

Visual inspection of levels and first differences indicates that Azerbaijan's core macroeconomic series exhibit pronounced procyclicality: they rise during expansions and retrench in slowdowns. Industrial production, broad price measures (GDP deflator), and selected monetary aggregates move closely with the reference cycle, while external-sector variables, notably merchandise imports, comove with activity and often peak slightly ahead of output. These patterns are consistent with a demand-led transmission in which liquidity and external demand pulses precede real-sector acceleration.

4.2 Leading properties and indicator screening

The initial screening combines pairwise correlations, cross-correlations with the GDP reference cycle at leads/lags of 1–3 years, and graphical lead–lag inspection. Three findings emerge.

1. A compact set of variables—industrial production, the GDP deflator, M0 (currency in circulation), and imports—shows robust procyclical behavior and clear leading/coincident properties relative to real activity.

2. Several frequently cited candidates—fixed investment, CPI, IPPI, and broader monetary aggregates (M1–M3)—display weak or unstable relationships with the reference cycle once lags and transformations are accounted for; these are treated as "false leaders."

3. Estimated leads are economically plausible: liquidity (M0) and imports typically crest before output, while the deflator strengthens on the upswing.

4.3 Baseline estimates (Models 1–3)

We estimate three multivariate OLS specifications with heteroskedasticity-robust standard errors.

- Model 1 (Industrial production ~ M0, Imports). Both regressors are statistically significant with the expected positive sign. The results imply that real-sector acceleration is associated with prior liquidity growth and external demand impulses.

- Model 2 (ln GDP ~ ln Industrial production + ln Deflator). Elasticities on industrial production and the deflator are positive and economically meaningful, indicating that output expands alongside the real-sector proxy and procyclical prices. The log–log form yields stable coefficients and high explanatory power.

- Model 3 (GDP ~ M0 + Imports). Monetary liquidity and imports both enter positively and significantly, capturing short-to-medium-term effects of domestic money conditions and external demand on aggregate output.

Taken together, the four variables—M0, imports, industrial production, and the deflator—constitute a parsimonious, high-signal set of procyclical indicators suitable for operational monitoring and early-warning dashboards.

4.4 Model adequacy and diagnostics

Standard diagnostic checks support the validity of the baseline specifications. Ramsey RESET tests do not indicate functional-form misspecification; residuals pass normality checks; Breusch–Pagan tests do not point to problematic heteroskedasticity; and variance-inflation factors remain below conventional thresholds, suggesting the absence of harmful multicollinearity. Goodness-of-fit is high for the log–log GDP specification, and coefficient signs/magnitudes are stable across reasonable transformations (levels versus logs; differences versus log-differences).

4.5 Extension to 2024 and robustness

Extending the sample to 2024 (where series are available) leaves the core results intact. Signs and economic magnitudes for M0, imports, industrial production, and the deflator remain stable; the "false leader" group continues to show limited or no predictive content once lag structure and stationarity are addressed. Rolling-window re-estimation and alternative formulations (levels vs. logs) confirm that the baseline relationships are not driven by a specific subperiod, including the pandemic shock and the subsequent commodity-price cycle. While annual frequency necessarily limits the precision of peak–trough dating, the indicator set performs reliably at the policy-relevant horizon for Azerbaijan's diversification phase.

Summary. The evidence supports a compact indicator system in which liquidity (M0) and external demand (imports) provide early signals, industrial production tracks the real cycle closely, and the deflator strengthens on expansions. This configuration yields practical lead information for short-to-medium-term monitoring of business-cycle conditions, while several popular candidates add noise rather than decision-useful signal in Azerbaijan's institutional setting.

Figure 1: Dynamics of GDP and procyclical indicators of Azerbaijan (in comparable prices)

(Source: Statistical Bulletins of the State Committee; Statistical Bulletins of the Central Bank)

Figure 2: Dynamics of increments of GDP and procyclical indicators of Azerbaijan

(Source: Statistical Bulletins of the State Committee; Statistical Bulletins of the Central Bank)

According to fig. 1 and fig. 2., procyclical indicators rise in the recovery phase and shrink in the recession phase of the short and medium term economic cycles. In addition, the volume of industrial production, monetary aggregates, industrial production price index, deflator, consumer price index of the Azerbaijani economy are not only procyclical, but also coinciding indicators, since they change almost simultaneously, in accordance with changes in economic activity. We tested our assumptions using statistical methods of correlation analysis and studying the lag component in time series.

The results of the pairwise correlation analysis of Azerbaijan's GDP and its growth with procyclical indicators showed the presence of a close positive relationship between these indicators (Table 1.)

Table 1: Correlation analysis of GDP (Y), increment of GDP (ΔY) and procyclical indicators of Azerbaijan

	ΔY	*ΔP*	*D*	*CPI*	*PPI*	*ΔM0*	*ΔM1*	*ΔM2*	*ΔM3*	*ΔI*
ΔY	1									
ΔP	0,941808	1								
D	0,892806	0,869935	1							
ИПЦ	0,676835	0,633575	0,830231	1						
ИЦП	0,602092	0,666653	0,686892	0,473823	1					
ΔM0	0,455042	0,400585	0,426062	0,238622	0,58999	1				
ΔM1	0,420142	0,368925	0,393619	0,216224	0,519396	0,972109	1			
ΔM2	0,439439	0,396985	0,389384	0,17996	0,506605	0,967642	0,981485	1		
ΔM3	0,502383	0,315706	0,363278	0,318774	0,209929	0,536587	0,563606	0,553936	1	
ΔI	0,634543	0,523234	0,593107	0,387032	0,396652	0,519058	0,474897	0,499606	0,54102964	1
ΔIm	0,64592	0,662157	0,532971	0,254889	0,227013	0,110197	0,1016	0,140562	0,43656023	0,519

(Source: Author's calculations)

Factorial influences on the macroeconomic dynamics of the economic system may not appear immediately. This is due to the characteristics of the indicator: leading, coinciding, or lagging. In the course of the study, the time lag arising between the involvement of the indicator in the cyclical dynamics and its influence on the output and increment of the output is estimated. Any factorial influences on macrodynamics may not appear immediately; accordingly, the reaction of the economic system is delayed by a certain period.

As a result of the analysis of the table of pairwise linear correlation coefficients of the annual increments of the regressors with the increase in the volume of GDP, the position (condition) was adopted that there can be no growth on expectations (negative lag). Thus, a lag was found, with a period of 6 years. It should be noted that the duration and time of turning points and periods depends on the intensity of the factor's impact on the economic cycle and the duration of the reaction of the economic system to this

factor. This phenomenon is confirmed by statistical methods of analysis. In particular, the calculation of pairwise correlation coefficients with lagged explanatory variables is presented in Tables 1 and 2.

Table 2: Linear pairwise correlation of GDP and GDP increment in Azerbaijan with some procyclical indicators and their increment

Lags (years)	**Y**			**ΔY**						
	Indicators			**Indicators' increment**						
	P	**I**	**Im**	**ΔP**	**ΔM0**	**ΔM1**	**ΔM2**	**ΔM3**	**ΔI**	**ΔIm**
0	0,972	0,944	0,945	0,922	0,633	0,897	0,850	0,974	0,664	0,572
1	0,950	0,905	0,903	0,218	0,053	0,148	0,118	-0,094	0,263	0,054
2	0,914	0,894	0,909	-0,028	-0,338	0,035	-0,077	-0,018	0,503	0,156
3	0,896	0,910	0,925	-0,162	-0,407	0,097	0,107	-0,405	0,299	0,178
4	0,914	0,923	0,931	-0,297	-0,134	-0,871	-0,884	-0,322	0,071	0,320
5	0,909	0,925	0,948	-0,036	0,113	-0,178	0,016	0,226	0,157	0,181
6	0,888	0,927	0,9471	0,237	0,211	0,299	0,414	0,328	0,362	0,188

(Source: Author's calculations)

As a result of econometric modeling in order to find dependencies and the influence of indicators on socio - economic performances, the following three multiple regression models were obtained by the OLS method, the econometric characteristics of which are presented in the Table. The volume of industrial production in Azerbaijan in million manat and the Gross Domestic Product of Azerbaijan for the period from 1997 to 2020 inclusive were taken as dependent variables. All the above – mentioned procyclical indicators were taken as independent variables. On grounds of the analysis, it was revealed that the data represents a time series. In order to avoid confusion and find false dependencies, the first differences were taken as the initial data for modeling. Using the differences allows turning non-stationary time series into stationary ones and avoiding high multicollinearity in the model.

Table 3: Econometric characteristics of models 1, 2 and 3. OLS, using observations 1-21 (Heteroskedasticity-robust standard errors, variant HC1)

	Model 1	**Model 2**	**Model 3**
	Dependent variable: ΔP	Dependent variable: ln *ΔY*	Dependent variable: *ΔY*
	Coefficient	*Coefficient*	*Coefficient*
const	-	−11.74 **	1643.89 **
		(−2.462)	(2.188)

ΔM0	1.06 ** (2.642)	-	1.36 *** (3.886)
ΔIm	2.095 *** (4.353)	-	2.28 *** (3.785)
ln ΔP	-	0.810 *** (13.73)	-
ln D	-	2.876 ** (2.644)	-
R-squared	0,60	0.98	0.575340
Adjusted R-squared	0.57	0.97	0.528155
F(2, 19)	11.61	293.51	12.04821
P-value(F)	0.000507	2.86e-10	0.000478
Schwarz criterion	404.53	−6.46	412.04
Akaike criterion	402.44	−8.38	408.91
Breusch-Pagan test for heteroskedasticity	3.318	0.95	2.14
Test statistic: LM p-value	0.190	0.61	0.34
Test for normality of residual Test statistic: Chi-square(2)	1.26 with p-value = 0.531816	2.32 with p-value = 0.312985	0.99 with p-value = 0.607282
RESET test Test statistic: F(2, 17)	0.938 with p-value = 0.410746	2.005 with p-value = 0.190357	1.16 with p-value = 0.337064
Variance Inflation Factors	1.013 1.013	2.344 2.344	1.013 1.013

* in brackets are standard errors (t-ratio)

(Source: author's calculations in the Gretl program)

So, as a result of econometric analysis of the influence of procyclical factors on the dynamics of the volume of industrial production in Azerbaijan, a multiple regression linear model 1 was obtained. According to this model, it was determined that the volume of industrial production is most influenced by the monetary aggregate M0, i.e. the amount of cash in circulation, and import.

Both independent variables are statistically significant at the 5% and 1% levels, respectively. Thus, with an increase in imports by 1 million US dollars, the volume of industrial production in Azerbaijan increases by 2.0952 million manat. An increase in the money supply by 1 million manat leads to an increase in the volume of money supply by 1.0678 million manat. Model 1 is generally adequate because the Fisher statistic of this model is greater than the critical value of 7.09 with a probability of 1%. Also, model 1 is a model without a constant (const), therefore, the interpretation of the coefficient of determination will be incorrect.

According to the multivariate logarithmic model 2, procyclical factors such as the volume of industrial production and the deflator affect GDP growth. The volume Industrial production is a statistically significant parameter in the model at all levels of significance. Thus, with an increase in industrial production by 1%, it leads to an increase in GDP by 0.81%. An increase in the deflator by 1% leads to an increase in Azerbaijan's GDP by 2.87%. The proportion of variance explained is 98%. According to model 3, the change in GDP is affected by the monetary aggregate M0 and imports.

Both coefficients of the independent variables are statistically significant. This suggests that with an increase in the money supply by 1 million manat, Azerbaijan's GDP will increase by 1.36 million manat. With an increase in imports by US $ 1 million, GDP increases by 2.28 million manat (1.34 million US dollars).

All three models are adequate and significant. According to the econometric characteristics presented in the table, there is no multicollinearity in the models. All Variance Inflation Factors of all explanatory variables included in the models are less than 10. According to the Ramsey test, the null hypothesis of the correct model specification is accepted in all three models with a p-value greater than 0.05. When testing the models for the normality of the residuals, we also accept the null hypothesis of the normality of the residuals with a p-value greater than 0.05. The Breusch-Pagan test for heteroskedasticity also shows that we accept the null hypothesis that there is no heteroskedasticity in the model at a probability greater than 5%. Along with the independent variables included in the model, other procyclical indicators were also tested for functional linkages. But these indicators were statistically insignificant in regression models, in view of which they were excluded from further modeling. These include investments in fixed assets, consumer price indexes, industrial production price index, monetary aggregates M1, M2 and M3.

4. CONCLUSION

This study set out to link leading procyclical indicators to Azerbaijan’s business-cycle dynamics and to identify which signals consistently precede expansions and contractions. Using annual macro indicators and econometric diagnostics, we confirm that a parsimonious set of variables—industrial production (as proxy for the reference cycle), the GDP deflator, the narrow money aggregate M0, and imports—carry the strongest and most reliable procyclical content for Azerbaijan.

First, the original 2000–2020 evidence shows that (i) industrial production and the deflator have economically meaningful effects on real activity, and (ii) M0 and imports are significant drivers of both GDP growth and industrial output. Re-estimating the framework with data extended through 2024 preserves these core relationships and their directions of effect, despite sizeable shocks in 2020–2022 and the subsequent energy-price cycle. In other words, the same small set of indicators continues to anticipate turning points with practical lead times, while several commonly cited measures (e.g., selected broader monetary aggregates and certain price indices) remain weak or non-predictive in Azerbaijan’s context.

Second, the lead–lag patterns are stable enough to operationalize. Industrial production (logged differences) aligns closely with the reference cycle; the deflator’s procyclical behavior strengthens around inflationary upswings; M0 captures liquidity pulses that translate into near-term activity; and

imports reflect synchronized demand conditions and external-sector impulses. Together, these signals form a compact, implementable monitoring dashboard for short- to medium-term assessment of cyclical conditions.

Third, model diagnostics remain satisfactory after the sample extension. Baseline OLS specifications with first-difference/log-difference transformations continue to meet standard specification, normality, and heteroskedasticity checks; multicollinearity is limited; and goodness-of-fit stays high for the primary equations. While annual frequency constrains high-frequency dating of peaks and troughs, the indicator set performs robustly at the policy-relevant horizon for Azerbaijan's diversification phase.

Fourth, the results have direct managerial and policy implications. For policymakers, the validated indicators can inform counter-cyclical fiscal stance, prudential buffers, and timing of public investment; for firms, they can guide inventory, working-capital, and capex decisions ahead of inflection points. Embedding these variables in a simple Azerbaijan Composite Leading Indicator (AZ-CLI)—with transparent weights and periodic backtesting—would institutionalize real-time surveillance and reduce reliance on ad-hoc judgment.

Finally, limitations and next steps are clear. Annual data limit granularity; extending the toolkit to quarterly/monthly series (when available), experimenting with alternative cycle-extraction methods (e.g., Bry–Boschan, Hamilton filter), and blending macro-financial indicators with high-frequency "nowcasting" inputs would further improve timeliness. Nonetheless, with data through 2024 the central conclusion stands: a compact set of procyclical indicators—industrial output, the deflator, M0, and imports—provides reliable, actionable early signals of Azerbaijan's business-cycle phases, while several other candidates add noise rather than information.

Note: Detailed variable definitions, sources, and symbol mapping (Y, P, D, CPI, IPPI, M0–M3, I, Im) conform to the original appendix to ensure comparability across the 2000–2024 horizon.

Application 1: Symbols of indicators used in the research to analyze various types of indicators of the economic cycle

Symbols of indicator	Indicators, unit of mesure
Y	Gross Domestic Product (GDP), million manats
Δ Y	Increment Y
P	Azerbaijan industrial production, million manats
Δ P	Increment P
I	Fixed investment, million manats

D	Deflator, %
CPI	Consumer Price Index,% to the previous year
IPI	Industrial production price index, % to the previous year
M0	M0 money supply, million manats
M1	M1 money supply, million manats
M2	M2 money supply, million manats
M3	M3 money supply, million manats
Δ	Increment of relevant indicators
IM	Import, in millions of US dollars

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CLIMATE-INDUCED LABOR MIGRATION: EMERGING TRENDS AND SOCIOECONOMIC DRIVERS

Bahtiyor Ismoyilov
Tashkent State University of Oriental Studies

Tashkent, Uzbekistan

Bahtiyor_ismoyilov@tsuos.uz

ORCID-0009-0007-6002-1945

Mahliyo Ismoyilova
Tashkent State University of Oriental Studies

Tashkent, Uzbekistan

Mahliyo_ismoyilova@tsuos.uz

ORCID -0009-0009-4603-9262

Abstract. *In recent years, climate change has had a direct impact on labor migration processes. As a result of environmental problems such as drought, water scarcity, and land degradation, many workers are forced to change their place of residence. This article analyzes the impact of climate factors on labor migration, its modern trends, and socio-economic factors. The research was conducted on the basis of international organizations and the latest statistical data. The results show that climate instability is forming new forms of labor migration and becoming an important factor in sustainable development policy..*

Keywords*. Climate change, labor migration, climate migrants, environmental factors, sustainable development, climate adaptation, economic factors.*

Introduction

In recent decades, global climate change has been intensifying not only environmental problems but also imbalances in socio-economic processes. Droughts, water scarcity, decreased crop yields, and natural disasters resulting from climate change are directly impacting the living standards of populations in many regions. Consequently, labor resources are increasingly being drawn into internal and external migration flows.

The role of climatic factors in labor migration processes is growing increasingly significant. Negative changes in the ecological environment, particularly in regions dependent on agriculture, are depriving populations of stable income sources. As a result, many citizens are resorting to forced migration to find work in other regions or countries. Such processes can deepen social inequality, pose threats to economic security, and give rise to new problems in the labor market.

Also, labor migration, formed under the influence of climatic factors, occupies an important place in the attention of the international community. The UN, the International Labour Organization (ILO), and other international institutions are putting forward various initiatives aimed at regulating climate-migration relations, ensuring the legal protection of labor migrants, and integrating them into climate adaptation strategies.

This article analyzes the development trends of modern labor migration processes formed under the influence of climate change, their main causes and consequences, as well as their impact on economic and social stability.

Literature Review

In recent decades, the link between climate change and human mobility has become a central focus of global migration research. Studies show that climate change, such as rising temperatures, drought, water scarcity, and extreme weather events, directly and indirectly affect labor migration flows. Climate instability, especially in low-income and agricultural countries, forces labor resources to seek work in other regions. (Ghosh & Orchiston, 2022).

As Draper notes, labor migration can be considered not only as a socio-economic process, but also as a mechanism for adapting to climate change. Analyzing global migration data, he proved that the deterioration of environmental conditions changes the dynamics of the labor market and has a significant impact on the geographical distribution of the workforce (Draper, 2022). Similarly, De Sherbinin notes that climate change is changing not only the scale of migration but also its directions, especially in agricultural economies that rely on natural resources.(De Sherbinin, 2020).

Yang and co-authors in their research, analyzed the interaction between climate factors and economic indicators, discovering that climate shocks and economic instability are dramatically increasing migration flows, particularly in countries with hot climates and low incomes. In their view, climate change does not directly cause migration, but rather acts as a "multiplier factor" that intensifies existing socio-economic inequalities. (Yang and co-authors, 2025)

Yea in her study puts forward the concept of "hyper-uncertain labor migration," indicating that migrants who have left their workplaces as a result of climate instability often face unstable, dangerous, and unprotected working conditions. This reveals the social dimension of the relationship between climate and labor migration. (Yea, 2025)

Liu and colleagues analyzed the intersectoral redistribution of labor resources under climate change conditions. Their research findings revealed that rising temperatures and declining crop yields are accelerating the process of workforce transition from agriculture to industry and service sectors in developing countries. This demonstrates the indirect impact of climate change on the structure of the labor market. (Liu and colleagues, 2023)

In recent years, some scholars have been connecting climate-induced migration with sustainable development and energy transition processes. For instance, Łukaniszyn-Domaszewska and co-authors in their article unveiled the complex interrelationships between climate migration, energy shifts, and socio-economic disparities. They argue that effective management of climate-driven migration requires an integrated policy that combines ecological adaptation, social inclusivity, and economic sustainability. (Łukaniszyn-Domaszewska and co-authors, 2025)

Nevertheless, several scientific gaps remain in the existing literature. Firstly, many studies study climate migration as a general concept, but there are few works that analyze labor migration as a separate category. Secondly, most analyses highlight international migration, while internal labor migration - especially in the Central Asian region - has not been sufficiently studied. Thirdly, the legal protection of labor migrants and institutional mechanisms are still weakly formed under the influence of climate.

Thus, the scientific novelty of this research lies in the fact that it is aimed at identifying the socio-economic determinants of labor migration processes in the context of climate change, developing sustainable political approaches based on global experience, and drawing practical conclusions in the context of Central Asia.

Methodology

Research Design

This study adopts a mixed-method approach to analyze the relationship between climate change and labor migration. The main objective is to identify how climate variables (temperature changes, precipitation, droughts, water scarcity) influence labor migration intensity and to assess the mediating role of socio-economic factors such as income level, employment rate, agricultural productivity, and education. The research relies on panel data analysis covering the period from 2010 to 2024.

Data Sources

Empirical analysis utilizes data from multiple international databases:

- World Bank (WDI) – for economic and social indicators.

- FAO & NASA EarthData – for climate variables such as temperature anomalies and precipitation.

- ILO & UNDESA – for labor migration statistics.

- EM-DAT – for natural disaster occurrences.

- Migration Data Portal and UNHCR – for contextual migration and environmental displacement data.

Variables and Measurement

Variable	Symbol	Measurement / Source	Expected Effect
Labor Migration Rate	MIG_it	Migration flow (% of population), UNDESA	Dependent variable
Average Temperature Change	TEMP_it	°C, NASA GISS	(+) increases migration
Precipitation Anomaly	PREC_it	% deviation, FAO	(±) context-dependent
Drought Index	DRO_it	Palmer Index, NOAA	(+) increases migration
Agricultural Employment Share	AGR_it	% workforce, ILO	(+) increases migration
GDP per capita (log)	GDP_it	USD, WDI	(−) reduces migration
Education Level	EDU_it	% secondary education, UNESCO	(−) reduces migration

Model Specification

The study employs a panel regression model with country and time fixed effects. The model is specified as follows:

$$MIG_it = \alpha + \beta 1\ TEMP_it + \beta 2\ PREC_it + \beta 3\ DRO_it + \beta 4\ AGR_it + \beta 5\ GDP_it + \beta 6\ EDU_it + \mu_i + \lambda_t + \varepsilon_it$$

where i denotes country, t denotes time, μ_i captures country-specific effects, λ_t represents time effects, and ε_it is the error term.

Analytical Strategy

1. Descriptive statistics to analyze variable distributions and correlations.

2. Fixed-effects and random-effects panel regressions to estimate relationships.

3. Robustness checks using alternative indicators (e.g., NDVI instead of drought index).

4. Interaction effects to explore mediating roles (e.g., Drought × Agricultural share).

Ethical and Data Considerations

All datasets used in this research are publicly available and contain no personal or confidential information. Data analysis is conducted using Stata and Python software to ensure transparency and reproducibility.

RESULTS AND DISCUSSION

Descriptive Statistics

The data used in the study were taken from the World Bank's World Development Indicators (2024), International Labor Organization (ILO, 2023), and NASA Earth Observatory (2023) databases. With their help, the relationship between climate change (temperature, precipitation, frequency of droughts) and labor migration indicators in the period 2000-2023 was studied. Panel data analysis made it possible to identify dynamic changes in the context of countries.

Preliminary statistical analysis of the variables selected for the study showed a significant correlation between climate indicators and labor migration. Between 2010 and 2024, the average temperature increased by 0.8-1.2°C, while precipitation decreased by an average of 5-7%. During this period, the level of labor migration, especially in rural areas, increased to 15-20 percent.

According to the results of the correlation analysis:

The relationship between temperature change and migration **r=0.46**

Migration with Drought Index **r=0.52**

The income level (GDP) is negatively related to migration **r= -0.41**

These results confirm that climate stressors, along with economic opportunities, have a significant impact on migration decisions.

According to the results of empirical analysis, an increase in average temperature is one of the main factors stimulating labor migration. As a result of heat stress and a decrease in water resources, agricultural production decreases, which forces the population to seek new sources of income (Cattaneo & Peri, 2016). Also, extreme weather events, in particular, droughts and floods, have a direct impact on seasonal changes in migration flows (Nawrotzki et al., 2016).

Panel Regression Results

The results of panel regression (Fixed Effects model) gave the following main conclusions:

Variable	Coefficient (β)	p-value	Direction of effect
Average Temperature Change (TEMP)	0.213	0.004	(+) Noticeable

Precipitation Anomaly (PREC)	-0.085	0.031	(−) Noticeable
Drought Index (DRO)	0.267	0.001	(+) Strong impact
Agricultural Employment Share (AGR)	0.142	0.007	(+) Positive
GDP per capita (log)	-0.198	0.012	(−) Noticeable
Education Level (EDU)	-0.101	0.049	(−) Weak, but important

The overall accuracy level of the model (R2) ≈ 0.63, which means that climate and socio-economic variables can account for 63% of labor migration intensity.

Interpretation of Findings

The results show that climate stressors - especially rising temperatures and drought - reduce job opportunities and thereby increase labor migration. This is especially noticeable in countries with an agrarian economy.

The impact of climate change is especially significant in regions with a high share of the agricultural sector, which confirms the "environmental dependency hypothesis".

On the other hand, income and education factors reduce the risk of migration - that is, a highly qualified and economically stable population has a wider opportunity for internal adaptation to climate stress.

Climate-dependent labor migration has a significant impact on socio-economic structures. As a result of migration, local labor markets face a shortage of labor in the short term, but in the long term, it stimulates local investments through remittances (Wooldridge, 2020). In addition, such factors as changes in gender roles as a result of migration, family stability, and social adaptation also give rise to new social processes (UNDESA, 2023).

Results for the countries of Central Asia (Uzbekistan, Kazakhstan, Tajikistan, and Kyrgyzstan) show that climate factors have a strong influence on the level of labor migration, especially in rural areas. In the case of Uzbekistan, a 1°C increase in temperature increases the level of external migration by an average of 2.5% (World Bank, 2024; ILO, 2023). This result corresponds to global trends noted in other regions (Beine & Parsons, 2017).

Comparative Discussion

The results are consistent with previous studies:

Chen & Mueller (2018) found that soil salinization in Bangladesh has intensified labor migration. Hoffmann et al. (2021) in quantitative studies showed that the climate-migration relationship manifests itself through economic intermediaries. Almulhim et al. (2024) noted the gap between climate stress and economic opportunities as the main driver of migration in the Global South.

Our results also reinforce the general conclusion in this direction: climate change does not directly cause migration, but exacerbates it through economic vulnerability.

Policy Implications

The results of the study show that the increase in labor migration in response to climate factors requires adaptation policies.

The following areas are especially important:

- Implementation of climate-resilient technologies in agriculture.
- Creating employment opportunities for climate-affected populations through social protection programs.
- Viewing migration not as control, but as part of a sustainable development strategy.
- Strengthening multilateral cooperation on climate adaptation and migration management at the regional level.

Limitations and Future Research

Although this study provides important empirical findings in determining the impact of climate change on labor migration, several limitations must be acknowledged. Firstly, the data used in the analysis are based on existing statistical databases and international reports. This, in some cases, can lead to incomplete reflection of the results due to discrepancies or uncertainties in the data across regions. Secondly, the analysis is mainly based on macroeconomic indicators and does not provide a deep understanding of the determinants of migration decisions at the micro-level (household or individual).

In future research, it is advisable to expand these areas:

Firstly, it is necessary to conduct empirical research at the micro level - to analyze the direct impact of climate factors on migration decisions of households, youth, and gender groups.

Secondly, it will be useful to use economic-econometric models that determine the causal relationship between climate change and migration based on continuous time-series data.

Thirdly, it is necessary to conduct research that assesses the effectiveness of political and institutional factors - in particular, climate adaptation policies, social protection systems, and regional cooperation mechanisms.

Finally, through comparative analysis, comparing the experience of Central Asian countries with practices in other regions allows for the improvement of existing policy models.

Thus, future research will allow for a deeper, systematic, and politically justified explanation of the impact of climate change on labor migration.

Conclusion

The results of this study demonstrate the complex and multifactorial impact of climate change on labor migration processes. Empirical analysis showed that the main environmental factors contributing to the intensification of migration flows are the increase in temperature and the deterioration of drought indicators. At the same time, a decrease in the income level manifests itself as an economic factor stimulating migration decisions. This confirms the relevance of the interaction between climate factors and economic conditions.

The obtained results indicate that labor migration should be interpreted not only as a demographic or economic phenomenon, but also as an integral element of the climate security and sustainable development strategy. From this point of view, it is important to improve the living conditions of the population most affected by climate change through climate adaptation policies, the introduction of sustainable technologies in agriculture, and social protection systems.

The study also shows that responding to climate change requires a multi-level approach to migration management. Strengthening regional cooperation, coordinating national policies, and enhancing the role

of international institutions are crucial factors in climate adaptation and sustainable migration flows management.

The obtained results show that climate change is one of the main determinants of labor migration. To manage this process, governments need to integrate climate adaptation strategies, employment programs, and environmental safety mechanisms. The results are consistent with the research conducted by Cattaneo and Peri (2016), Beine and Parsons (2017), which increases the scientific reliability of the analysis. At the same time, a more in-depth study of the complex interactions between climate and migration remains a relevant area for future scientific research.

Overall, this work contributes to a deeper understanding of the relationship between climate change and labor migration and offers scientifically based recommendations for policy-makers. The results emphasize the need to integrate climate policy with labor market development, social protection, and sustainable economic growth strategies.

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THE MONETARY ASPECT IN THE FOREIGN POLICY OF MODERN STATES

Mehriban Babazada

PhD, Associate professor

Baku State University, Azerbaijan

mehribanbabazade@mail.ru

Orcid id: 0000-0001-7342-0477

ABSTRACT

Although the influence of monetary relations on world politics has recently become the subject of analysis in various branches of social science, no comprehensive research has been conducted in this area. It is this circumstance that makes this topic particularly relevant. Events related to the growth in the number of conflicts with monetary aspects, the conscious internationalization of currencies, and the emergence of new monetary institutions give reason to assert that monetary relations have become one of the most important factors in the formation of a new world order, on which the degree of influence of each actor in international politics will depend. Having proven the connection between these facts, we can state that monetary relations have become politicized, creating a new sphere of international confrontation and a new power hierarchy. Undoubtedly, monetary relations are influenced by technological progress, forcing the introduction of electronic and digital currencies into the analysis matrix.

Key words: monetization, global politics, tariffs, trade war, reserve currency, dollar, the USA, China, imports, exports

INTRODUCTION

All the recent changes that have already taken place and are taking place on the international stage lead us to believe that the old conceptual models of world order are outdated and need to be revised. These traditional models cannot provide an adequate response to all the events we are witnessing in world politics today. One of the main trends, in our opinion, is the further monetization of international politics. Issues of monetary influence and monetary sovereignty reinforce the factor of full financial sovereignty. In this regard, the main trigger in the world is the struggle against US monetary dominance. The United States began a trade war during Donald Trump's first term as president, primarily against China. Trump's trade war takes us back to the era of tariff wars and devaluations of the 1930s. Ultimately, this all ended in the Great Depression and World War II. The president's main argument in

favor of increasing tariffs is to reduce the tax budget deficit. The change in the basic settings of liberal trade policy has resulted in turbulence throughout the global economic system [1].

Monetary tools of US influence

During his first presidential term in 2018-2019, Donald Trump imposed tariffs on imports from China worth $380 billion and from Europe worth $8 billion. However, he introduced them gradually. Nevertheless, the confrontation with China caused significant damage to the US economy. Now, the US president has also struck a blow to his main allies on the American continent – Canada and Mexico. The total amount of taxes on imports from the above-mentioned countries turned out to be much higher – $1 trillion. All this was accompanied by attacks on major trading partners. Trump was not deterred by the stock market crash, the threat of rising inflation, or the possibility of a recession in the US economy. As a result, while the UK, Australia, and Mexico tried to negotiate with the eccentric Trump, China, Canada, and the EU responded with a decisive rebuff. Their retaliatory restrictions on US imports amounted to $190 billion.

The dollar is the world's reserve currency, and the United States, as the issuer of this currency, experiences both positive and negative effects. The main negative effect is the trade deficit. An increase in demand for the global reserve currency during times of crisis has a negative impact on the issuer of this currency. Issuance causes inflation, the price of the dollar rises, and it strengthens, which has a negative impact on exporters and reduces their competitiveness in the global market. This is what happened to the US economy during the global economic crisis of 2008-2009 [2; 6, pp. 72-73]. The Trump administration considers the situation critical, stating the need to eliminate the budget deficit.

This situation occurred in the 1970s, when demand for the US currency rose sharply. Later, in the fall of 1985, a solution to this problem was found at the Plaza Hotel in New York. The agreement, signed by the finance ministers of the world's five leading economies - the US, the UK, Germany, France, and Japan—was called the Plaza Accord. The G5 agreed to coordinate their actions to weaken the dollar, which the US itself needed. The countries decided to correct the trade imbalance with the United States. The main levers for this were currency interventions and stimulation of domestic demand. The main result of the agreement after a year and a half was a 35% devaluation of the dollar. Not wanting the dollar to weaken further, Washington, together with its G5 partners and Canada, initiated a new conference, this time in Paris. The meeting at the Louvre Palace in February 1987 led to the signing of a new document called the “Louvre Agreement”. The signatories pledged to coordinate their monetary and fiscal policies to stabilize currency imbalances and increase economic growth. The main emphasis was on reducing the budget deficit and lowering inflation.

Summarizing the results of the agreements for the US, it is worth noting that Washington implemented its policy in the medium term: the dollar fell in value and the trade deficit was significantly reduced. While in 1984 it amounted to $112 billion, by 1991 it had fallen to $30 billion. However, in the long term, this strategy did not work. Since the mid-1990s, global demand for the dollar as a safe haven for investors has grown again. Developing countries such as China and Mexico replaced cheap competitors. Nevertheless, the dollar weathered this crisis and remained the world's reserve currency. It is quite possible that exports will increase and the value of the dollar will decline, while the US currency will maintain its leading position in the world [5, pp. 24-25].

The US trade deficit reached $1 trillion in 2022, which the new administration considers critical. Donald Trump's tariff policy led to a 9% weakening of the dollar by the fall of 2025, which is beneficial to American manufacturers, as it increases the competitiveness of their goods. However, unlike the Plaza Accord and the Louvre Agreement, the United States began to act aggressively, disregarding its partners and offering them nothing in return. One example is the US-EU trade agreement of July 2025, under

which imports of European goods will be subject to 15% tariffs, while imports of American goods into Europe will be subject to a 1% tariff.

Policy on de-dollarization

It is clear that the role of the US currency will not be undermined in the near future. Nevertheless, a number of countries are pursuing an active policy of de-dollarization. It is worth noting here that when it comes to de-dollarization, it is important to distinguish between the dollar as a reserve currency and the dollar as an invoice currency. There are more opportunities to avoid using the dollar as a means of payment than in the reserve currency sphere, where the only alternative at present is gold, which is hitting historic lows. There are more options in the area of settlements. There are a number of initiatives that bypass the dollar and the banking system. One of the most advanced initiatives is the mBridge project, which allows central banks to conduct currency settlements and transactions between different national digital currencies on a multilateral platform, speeding up and reducing the cost of cross-border payments. The People's Bank of China, the central banks of Hong Kong and Thailand are participating in this pilot project. The Mariana project with European participating countries also allows settlements in national currencies that are included in the multilateral settlement pool, which automatically forms a bilateral price between each currency.

China has set itself the clear goal of reducing the international influence of the United States, which is based on the dominance of the dollar. In this regard, the inclusion of the yuan in the IMF's currency basket in 2016, alongside the dollar, euro, pound sterling, and yen, was a significant achievement for China. At the same time, China began trading gold in yuan on its exchanges, and later, in 2018, oil as well. All of this is part of China's “One Belt, One Road” strategy, which aims to squeeze out its American competitor in the Eurasian and Middle East regions [4, p. 229].

In 2018, Germany announced that it would include the Chinese yuan in its foreign exchange reserves, while simultaneously reducing the share of the US dollar in those reserves. A year earlier, in 2017, Germany completed its program to repatriate part of its gold reserves stored at the Federal Reserve Bank in New York ahead of schedule. Three hundred tons of gold were transported to the German Federal Bank in Frankfurt am Main. There is no doubt that Germany's actions are mainly motivated by political considerations and a desire to gradually withdraw from US tutelage.

A number of countries have begun developing their own national cryptocurrencies, all with the same goal of undermining the dominance of the United States. For example, in 2017, Venezuelan President Nicolas Maduro announced the creation of a Venezuelan cryptocurrency, El Petro, backed by the country's oil reserves. The Venezuelan president believes that this will strengthen the country's monetary sovereignty and get rid of the American financial blockade. Maduro's actions have caused concern in Washington, which fears that other countries will follow suit [3].

In Venezuela, as well as in Iran and Russia, the abandonment of the dollar is primarily motivated by the sanctions imposed on these countries. All of them are forced to seek an alternative to the dollar. The decline in demand for the U.S. currency is a consequence of the absence or low volume of financial transactions in the commodity market, for which payments need to be made in dollars. Sanctions that restrict the freedom of international trade operations also apply to Iran, Russia, and Venezuela. To some extent, Russia's actions regarding the shift of international trade to settlements in other convertible currencies can be seen as a preventive measure. In this light, further rapprochement between Russia and China and the gradual replacement of the dollar by the yuan appear logical, which strengthens the Chinese currency and further increases Russia's dependence on Beijing [8, pp.99-100].

The meeting between U.S. President D. Trump and Chinese President Xi Jinping on October 30, 2025, in Busan (South Korea) at the APEC summit was the first in six years. Moreover, as mentioned

above, this meeting was preceded by a tough tariff policy implemented by the U.S. against China. In response, Beijing tightened control over the export of strategically important rare earth metals to the U.S. In April 2025, the United States and China mutually increased tariffs to 145% and 125%, respectively, and then in June of the same year, the parties agreed to reduce these figures to 10% and 30%. According to a decree by D. Trump, the reduced tariffs are to remain in effect until November 10 of this year. Following the bilateral meeting, the American president decided against imposing new tariffs and also announced a reduction of the tariff rate on Chinese goods from 57% to 47%. In addition, the so-called fentanyl tariff was reduced from 20% to 10% (fentanyl overdose annually causes the deaths of a large number of young Americans). China, in turn, agreed to suspend the introduction of new restrictions on the export of rare earth metals for one year. However, this easing does not apply to seven rare earth metals (samarium, gadolinium, terbium, dysprosium, lutetium, scandium, and yttrium) and their alloys, which are essential for the American automotive industry. Nevertheless, as Trump stated following the meeting, he managed to 'resolve a crisis affecting not only the US but the entire world'.

Undoubtedly, the Chinese export restrictions imposed before the summit allowed the parties to reach a compromise. According to experts, Trump's trade war did not bring the desired results for the American administration, as the Chinese economy was prepared for a new round of tariff confrontations. During talks with Comrade Xi, the American president also tried to raise the issue of China's purchases of Russian energy resources. Washington has repeatedly expressed its dissatisfaction with this fact, lamenting that it contributes to prolonging the conflict in Ukraine. In particular, for the same reason, in August 2025, the U.S. imposed 25% 'penalty' tariffs on Indian goods (New Delhi is actively buying Russian oil). However, similar "penalty" tariffs against China were not imposed. Most likely, this was due to Beijing agreeing to purchase American energy resources (oil and gas) from Alaska. As for changes in Chinese trade policy towards Russia under American pressure, that would mean a demonstrative loss of "sovereignty" for Beijing, so one should not expect it. Thus, this meeting should be seen as something of a diplomatic pause in the trade wars. The parties are seeking compromises, but they are not abandoning global competition. There is a possibility that by the end of the year, Washington will tighten its tariff policy toward China again.

CONCLUSION

The use of monetary instruments by states to achieve their foreign policy goals is becoming one of the triggers of the emerging new world order. Finance expands the toolkit of traditional means of influence. Just like financial relations in general, monetary relations play a dual role, bringing not only economic but also political benefits to those actors in world politics who have established effective control over them, linked to influencing the behavior of other actors. Due to the fact that not all actors are able to establish control over global monetary relations, a new power hierarchy has formed in the world, consisting of beneficiaries and benefactors, with semi-beneficiaries occupying an intermediate position. This gradually led to the emergence of two opposing trends in the development of the international system of monetary unification and monetary diversification. An actor that imposes its own model of monetary relations on the world strengthens its power position relative to others. In this case, all other actors must implement a monetary policy favorable to it, recognizing its currency, issued without any restrictions, as a sort of collateral basis for their national currencies, a role previously fulfilled by gold [7, p.153]. Thus, for the actor to gain maximum political benefits, it is necessary to achieve monetary unification of the international system, i.e., a monetary policy advantageous to itself.

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Abbasov Sərvər Alıcan oğlu

BDU, professor, i.e.d

server.abbasov@gmail.com

DÖVLƏT MALİYYƏSİNİN İDARƏ OLUNMASINDA BÜDCƏNİN ROLU

Xülasə

Azərbaycan Respublikasında dövlət büdcəsi gəlir və xərc planlaşdırması vasitəsilə dövlət maliyyəsinin idarə olunmasında əsas rol oynayır. 2024-cü ildə büdcə gəlirləri təxminən 37,16 milyard manat, xərcləri isə 37,72 milyard manat təşkil edib ki, bu da ÜDM-in 0,4%-i kəsir deməkdir. Bu göstəricilər büdcənin yalnız maliyyə sənədi deyil, həm də dövlətin iqtisadi və sosial siyasətinin həyata keçirilməsi üçün vacib bir vasitə olduğunu göstərir. Bu məqalədə büdcənin əsas funksiyaları, dövlət maliyyəsinin idarə olunmasındakı rolu, statistik göstəricilər və mövcud çətinliklər təhlil edilir və büdcə siyasətinin təkmilləşdirilməsi üçün təkliflər verilir.

Açar sözlər: dövlət büdcəsi, maliyyə idarəetməsi, gəlir və xərclər, fiskal siyasət, iqtisadi sabitlik.

Giriş

Dövlət maliyyəsinin idarə olunması hər bir ölkənin sosial-iqtisadi siyasətinin həyata keçirilməsinin əsas mexanizmlərindən biridir. Dövlət büdcəsi bu idarəetmənin mərkəzindədir. Büdcə, dövlətin il ərzində gəlir əldə edəcəyi mənbələri və bu vəsaitləri necə xərcləyəcəyini müəyyən edən planlaşdırma sənədidir. Büdcənin düzgün hazırlanması və icrası iqtisadi sabitlik, sosial rifah və ölkənin ümumi inkişafı üçün vacibdir. Neft və qaz sektorunun gəlirləri, qeyri-neft sektorunun artımı, xərclərin səmərəliliyi və şəffaflıq kimi amillər Azərbaycanda büdcə siyasətinin formalaşmasında mühüm rol oynayır. Son illərdə dövlət büdcəsinə təkcə maliyyə planı kimi deyil, həm də iqtisadi sabitliyi təmin edən və sosial inkişafı dəstəkləyən əsas strateji sənəd kimi baxılır. Bu məqalədə büdcənin konsepsiyası, strukturu, funksiyaları və dövlət maliyyəsinin idarə edilməsindəki rolu, eləcə də statistik göstəricilər təhlil edilir və mövcud problemlərin həlli üçün təkliflər təqdim olunur.

1.Büdcə anlayışı və strukturu

Dövlət büdcəsi müəyyən maliyyə ili üçün dövlətin planlaşdırılan gəlir və xərclərini əks etdirən rəsmi maliyyə planıdır. Sadə dillə desək, bu sənəd dövlətin nə qədər pul alacağını və necə xərcləyəcəyini müəyyən edir. Büdcə vasitəsilə dövlət iqtisadi və sosial siyasətini həyata keçirir, vəsaitlərin toplanmasını və effektiv bölüşdürülməsini təmin edir.Azərbaycanın büdcə sistemi üç əsas səviyyədən ibarətdir:

- Mərkəzi (dövlət) büdcəsi dövlətin əsas gəlir və xərclərini, əsasən neft və qaz sektorundan, vergilərdən və qeyri-neft sektorundan əldə edilən vəsaitləri əhatə edir;

- Yerli büdcələr regionların sosial-iqtisadi inkişafı, təhsil, səhiyyə və infrastruktur layihələrinin maliyyələşdirilməsində iştirak edir;

- Uzunmüddətli və strateji layihələrin maliyyələşdirilməsi üçün hədəf fondlar yaradılır.

Beləliklə, dövlət büdcəsi sadəcə rəqəmlər toplusu deyil, həm də ölkənin maliyyə siyasətini həyata keçirən və iqtisadi sabitlik və sosial rifah üçün vacib olan idarəetmə vasitəsidir.

2. Büdcə Funksiyaları

Dövlət büdcəsi, ən vacib maliyyə idarəetmə alətlərindən biri kimi, müxtəlif funksiyaları yerinə yetirir:

- Birincisi tənzimləyicidir. Bu funksiya vasitəsilə dövlət iqtisadi proseslərə təsir göstərərək makroiqtisadi sabitliyi qoruyur. Büdcə gəlirlərinin və xərclərinin düzgün planlaşdırılması inflyasiya, işsizlik və iqtisadi artım kimi məsələlərin idarə olunmasına kömək edir. Məsələn, iqtisadi fəaliyyəti artırmaq üçün dövlət xərcləri artırıla bilər və ya bu fəaliyyət iqtisadi bərpa dövrlərində vergi gəlirlərinin artırılması ilə tənzimlənə bilər;

- İkinci əsas funksiya bölüşdürmədir. Bu halda, dövlət toplanan maliyyə resurslarını müxtəlif sektorlar - təhsil, səhiyyə, müdafiə və infrastruktur arasında bölüşdürür. Bu bölüşdürmə sosial ədalətin təmin edilməsi, əhalinin rifahının yaxşılaşdırılması və regionlararası bərabərliyin təşviqi üçün vacibdir;

- Üçüncü funksiya nəzarətdir. Bu mexanizm büdcə vəsaitlərinin necə və harada xərcləndiyini izləyir. Bu funksiya maliyyə intizamının qorunmasına, şəffaflığın, məsuliyyətin və hesabatlılığın təmin edilməsinə kömək edir.

- Dördüncü funksiya fiskal adlanır. Bu funksiya dövlət gəlirləri və xərclərinin balansını təmin edir, borc səviyyələrini idarə edir və ümumi maliyyə sabitliyini qoruyur. Fiskal sabitlik dövlətin iqtisadi risklərə qarşı dayanıqlığını artırır və uzunmüddətli inkişaf üçün zəruri şərait yaradır.

Ümumilikdə, bu funksiyalar büdcənin yalnız maliyyə resurslarının toplanması və xərclənməsi üçün texniki bir vasitə deyil, həm də dövlətin sosial-iqtisadi siyasətinin təməlini təşkil edən strateji idarəetmə vasitəsi olduğunu göstərir.

2.Dövlət maliyyəsinin idarə edilməsində büdcənin rolu.

Vergi sistemi büdcə və maliyyə sisteminin təməlidir. Vergi ödənişlərinin mahiyyətini tam anlamaq üçün vergitutmanın fundamental prinsiplərini araşdırmaq lazımdır. İqtisadi baxımdan vergi sisteminin keyfiyyəti Adam Smit tərəfindən dörd əsas klassik prinsip şəklində ifadə edilmişdir:

- bir ölkənin vətəndaşları dövlət xərclərinin ödənilməsinə töhfə verməlidirlər. Bu qaydaya riayət etmək və ya riayət etməmək vergitutmada bərabərliyə və ya bərabərsizliyə gətirib çıxarır;

- hər bir vətəndaşın ödədiyi vergi dəqiq müəyyən edilməlidir. Verginin məbləği, ödəniş müddətləri və ödəniş proseduru həm vergi ödəyicisi, həm də orta statistik vətəndaş üçün aydın olmalıdır;

- vergi vergi ödəyicisi üçün əlverişli vaxtda və qaydada tutulmalıdır;

- vergilər elə müəyyən edilməlidir ki, onların məbləği dövlət xəzinəsinə daxil olan ümumi gəlir məbləğindən aşağı olsun.

Azərbaycan Respublikasında büdcə çoxşaxəli funksiyalarına görə dövlət maliyyəsinin idarə edilməsində mərkəzi yer tutur. İlk növbədə, büdcə ölkənin iqtisadi inkişafını müəyyən etmək üçün çox vacib olan dövlət gəlirlərinin və xərclərinin planlaşdırılmasını təmin edir. 2024-cü ildə dövlət büdcəsinin gəlirləri təxminən 37,16 milyard manat təşkil edib ki, bu da əvvəlki illə müqayisədə təxminən 5,5% artım deməkdir. Həmin il xərcləri 37,72 milyard manat təşkil edib ki, bu da 3,4% artım deməkdir. Nəticədə büdcə kəsiri 551,8 milyon manat və ya ÜDM-in 0,4%-ni təşkil edib. Bu rəqəmlər dövlətin xərcləri nisbətən nəzarət altında saxlayaraq balanslaşdırılmış maliyyə siyasəti həyata keçirdiyini göstərir.

Büdcənin sosial sahədəki rolu da son dərəcə vacibdir. Təhsil, səhiyyə, sosial müdafiə, aztəminatlı ailələrə dəstək və digər sosial proqramlar büdcə vəsaitləri hesabına həyata keçirilir. Bu, dövlətin sosial öhdəliklərini yerinə yetirməsi və vətəndaşların rifah halını yaxşılaşdırması üçün şərait yaradır.Bundan əlavə, büdcə iqtisadi artımı dəstəkləyən əsas mexanizmlərdən biridir. İnfrastruktur layihələrinin, regional inkişaf proqramlarının və investisiya təşəbbüslərinin maliyyələşdirilməsi büdcə gəlirləri

hesabına mümkündür. Xərclərin cəmi 3,4%, gəlirlərin isə 5,5% artması dövlətin xərclərə praqmatik və məsuliyyətli yanaşmasını nümayiş etdirir.

Eyni zamanda, büdcə makroiqtisadi sabitliyin qorunmasında aparıcı rol oynayır. Gəlirlərin və xərclərin balanslaşdırılması, dövlət borcunun idarə edilməsi və maliyyə sabitliyinin qorunması kimi məsələlər büdcə siyasətinin ayrılmaz hissələridir. Beləliklə, büdcə yalnız maliyyə sənədi deyil, həm də dövlətin iqtisadi, sosial və strateji məqsədlərinə çatmasını təmin edən vacib idarəetmə vasitəsidir.

3.Mövcud büdcə siyasəti məsələləri və təkmilləşdirilməli sahələr

Son illərdə Azərbaycan Respublikasının dövlət büdcəsinin əhəmiyyətli dərəcədə inkişaf etməsinə baxmayaraq, büdcə siyasətinin həyata keçirilməsində müəyyən çətinliklər qalmaqdadır. Bu məsələlər əsasən məhdud gəlir mənbələri, xərcləmə səmərəliliyinin qeyri-kafi olması, büdcə gəlirlərində qeyri-neft sektorunun payının az olması və şəffaflığın artırılması zərurəti ilə bağlıdır.Əvvəla, büdcə gəlirlərinin əhəmiyyətli bir hissəsi neft və qaz sektorundan asılı olaraq qalır. Bu, dövlət gəlirlərini xarici bazarlarda neft qiymətlərinin dəyişkənliyinə qarşı həssas edir. Neft gəlirlərinin azalması büdcə kəsirinin, dövlət borcunun artmasına və sosial proqramların maliyyələşdirilməsində çətinliklərə səbəb ola bilər. Buna görə də, gələcəkdə dövlətin maliyyə sabitliyinin təmin edilməsi üçün qeyri-neft sektorunun inkişafı və bu sektordan gəlirlərin artırılması prioritet olmalıdır.

Digər bir problem xərclərin qeyri-kafi səmərəliliyidir. Bəzi hallarda büdcə vəsaitləri real nəticələr verməyən və ya onların icrası zamanı kifayət qədər hesabatlılıq olmayan layihələrə ayrılır. Bu, maliyyə intizamının pozulmasına və dövlət resurslarından sui-istifadəyə səbəb ola bilər. Bu baxımdan, xərclərin nəticələrə əsaslanaraq planlaşdırılması, yəni "nəticəyə əsaslanan büdcələşdirmə" sisteminə keçid vacibdir.

Şəffaflıq və ictimai nəzarət də vacibdir. Büdcənin icrası hesabatlarının ictimaiyyətə sadə və başa düşülən formada təqdim edilməsi, eləcə də vətəndaşların büdcə prosesinə cəlb edilməsi dövlət maliyyə idarəçiliyinə etimadı artıracaq.

Təkmilləşdirilməli sahələrə gəldikdə, bir neçə vacib addımı qeyd etmək olar. Birincisi, qeyri-neft sektorunda vergi bazasının genişləndirilməsi və vergi inzibatçılığının təkmilləşdirilməsi büdcə gəlirlərinin sabitliyini artıracaq. İkinci sahə büdcə xərclərinin səmərəliliyini artırmaq üçün innovativ layihələrin və rəqəmsal idarəetmə mexanizmlərinin tətbiqidir. Üçüncü sahə büdcə intizamının və şəffaflığın gücləndirilməsi ilə bağlıdır. Bu məqsədlə dövlət qurumları arasında informasiya mübadiləsinin rəqəmsallaşdırılması və ictimai hesabatlılığın artırılması tövsiyə olunur.

Buna görə də, büdcə siyasətinin təkmilləşdirilməsi iqtisadi sabitliyin qorunması, sosial rifahın artırılması və uzunmüddətli inkişaf məqsədlərinə çatmaq üçün vacibdir. Effektiv və şəffaf büdcə idarəçiliyi dövlətin iqtisadi müstəqilliyini gücləndirir və cəmiyyətin rifahına birbaşa təsir göstərir.

Büdcə gəlirləri və xərclərinin xüsusi çəkisi (2019-2024 **Cədvəl 1.**

İllər/ Göstəricilər	**Büdcə gəlirləri (mlrd. manat)**	**Artım faizi (%)**	**Büdcə xərcləri (mlrd. manat)**	**Büdcə kəsiri (% ÜDM**
2019	24	8,6	25.0	2,1
2020	26,5	10.4	27.5	2,2
2021	30,0	13.2	31,0	2,2

2022	33,5	11.7	34,5	2,3
2023	34,8	3.9	35,8	2,0
2024	36,3	4.3	37.3	2-3

Mənbə: Hesablama Palatasının məlumatları bazasında müəllif tərəfindən tərtib olunub .

Cədvəldən göründüyü kimi, son illərdə dövlət büdcəsinin gəlirləri və xərcləri durmadan artmaqdadır. 2019-ci ildə 24 milyard manat təşkil edən büdcə gəlirləri 2024-cü ildə təxminən 51,2% artımla 36,3 milyard manata çatıb. Bu artımın əsas səbəbləri qeyri-neft sektorunun genişlənməsi, vergi bazasının böyüməsi və iqtisadi aktivliyin artmasıdır.Eyni zamanda, sosial proqramlara, infrastruktur layihələrinə və dövlət investisiyalarına ayrılan büdcə xərcləri də artıb. Bu proses büdcə kəsirinə səbəb olsa da, beynəlxalq maliyyə standartlarına uyğun olaraq idarəolunan səviyyədə – ÜDM-in 2–3 faizi civarında qalmışdır. Ümumilikdə, büdcə sisteminin şəffaflığını və hesabatlılığını artırmaq və dövlət investisiyalarının effektivliyini qiymətləndirmək üçün həyata keçirilən islahatlar büdcə idarəetməsinin modernləşdirilməsi və maliyyə sabitliyinin qorunması üçün şərait yaradıb.

5. Mövcud məsələlər və təkliflər

Büdcə siyasəti bir sıra çətinliklərlə üzləşir. Bir tərəfdən, gəlir mənbələri müəyyən dərəcədə neft və qaz sektorundan asılı olaraq qalır. Bu, qlobal neft qiymətlərinin dəyişkənliyini nəzərə alaraq gələcəkdə risklər yarada bilər. Digər tərəfdən, büdcə xərclərinin səmərəliliyi və hədəflənməsi məsələləri hələ tam həll olunmayıb. Büdcənin icrasında şəffaflıq və ictimai hesabatlılıq mexanizmlərinin gücləndirilməsi də vacibdir.Bu məsələlərin həlli üçün bir neçə təklif irəli sürülə bilər. Birincisi, qeyri-neft sektoru üçün gəlir əldə etmə mexanizmlərinin genişləndirilməsi vacibdir. Bu baxımdan investisiya mühitinin yaxşılaşdırılması, vergi islahatları və iqtisadi diversifikasiyanın təşviqi çox vacibdir. İkincisi, büdcə xərclərinə prioritet vermək və nəticəyə əsaslanan xərcləmə və proqnozlaşdırma sistemlərinin inkişaf etdirilməsi lazımdır. Üçüncüsü, büdcənin icrasının şəffaflığının artırılması və hökumətin nəzarət mexanizmlərinin optimallaşdırılması sosial ədalətin təmin edilməsi və maliyyə prosesinə ictimai etimadın artırılması üçün vacibdir.

Nəticə etibarilə, Azərbaycan Respublikasında dövlət büdcəsi dövlət maliyyəsinin idarə edilməsi üçün aparıcı alət kimi xidmət edir. Büdcə gəlirlərin planlaşdırılması və xərclərin yönləndirilməsi, sosial-iqtisadi prioritetlərin müəyyən edilməsi və makroiqtisadi sabitliyin qorunması üçün istifadə olunur. Statistik göstəricilər göstərir ki, 2024-cü ildə gəlirlər artmış, xərclər nisbətən nəzarətdə saxlanılmış və kəsir ÜDM-dən aşağı olmuşdur. Lakin gəlir mənbələrinin şaxələndirilməsi, xərclərin səmərəliliyi kimi məsələlər hələ tam həll olunmayıb. Buna görə də, qeyri-neft gəlirlərinin artırılması, büdcə xərclərindən səmərəli istifadə edilməsi və dövlət nəzarətinin gücləndirilməsi büdcə siyasətinin gələcək istiqamətinin əsas prioritetləri arasında olmalıdır. Bu istiqamətdə tədbirlərin həyata keçirilməsi büdcənin dövlət maliyyəsinin idarə edilməsindəki rolunu daha da gücləndirəcək və davamlı inkişaf və rifahın yaxşılaşdırılması üçün yeni imkanlar yaradacaq.

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The role of the budget in public finance management

Summary

In the Republic of Azerbaijan, the state budget plays a key role in managing public finances through revenue and expenditure planning. In 2024, budget revenues amounted to approximately 37.16 billion manat, and expenditures amounted to 37.72 billion manat, which means a deficit of 0.4% of GDP. These indicators show that the budget is not only a financial document, but also an important tool for implementing the state's economic and social policy. This article analyzes the main functions of the budget, its role in public finance management, statistical indicators and current difficulties, and makes proposals for improving budget policy.

Keywords: state budget, financial management, revenue and expenditure, fiscal policy, economic stability.

THE IMPACT OF DIGITAL MATURITY ON SME PERFORMANCE: EVIDENCE FROM CROSS-COUNTRY PANEL DATA

Shabnam SAFAROVA

PhD student, Baku State University
E-mail: shabnamsafarova2@bsu.edu.az
ORCID ID: 0009-0006-9230-9997

Abstract

Digital transformation has become a crucial factor determining the competitiveness and sustainability of small and medium-sized enterprises (SMEs). While the immediate benefits of digitalization are well-documented, its medium- and long-term effects on organizational performance remain underexplored, particularly in emerging and transition economies. This study investigates the impact of digital maturity on SME productivity and growth using a balanced panel dataset covering 30 countries from 2016 to 2025. The dataset combines World Bank Enterprise Surveys, OECD SME Outlook indicators, and EU DESI data to capture both firm- and country-level dimensions of digital transformation.

Applying fixed and random effects models, the analysis evaluates how digital adoption, ICT investment, and innovation intensity influence productivity, turnover, and employment in SMEs. The findings reveal a statistically significant positive relationship between digital maturity and SME success, particularly in economies with stronger human capital and institutional quality. Moreover, the long-term effects of digital transformation outweigh short-term gains, emphasizing that continuous investment in digital skills fosters sustained productivity growth.

Overall, the study enriches the literature by offering cross-country empirical evidence that digital maturity serves as a strategic driver of competitiveness and resilience. Policy implications stress the importance of expanding digital infrastructure, financing tools, and innovation support for inclusive digital progress.

Keywords: Digital transformation, SMEs, productivity, panel data, econometrics, cross-country analysis

INTRODUCTION

In the age of rapid digital transformation, small and medium-sized enterprises (SMEs) are widely recognized as important drivers of economic development, innovation, and employment. As global competition increases and technological advancements transform production and management paradigms, the capacity of SMEs to attain digital maturity the systematic incorporation of digital tools, processes, and competencies has emerged as a critical determinant of sustained competitiveness and resilience.

While numerous studies have examined the immediate benefits of adopting digital technology, a significant information deficit remains regarding the influence of digital maturity on SME performance over time. There are only a few studies that have looked at these effects in different countries with very different institutional settings, innovation strategies, and levels of infrastructure readiness. Contemporary research often prioritizes micro-level analysis or individual country case studies, overlooking cross-national trends and medium to long-term dynamics.

This study examines the influence of digital maturity on SME performance with a balanced panel dataset encompassing 30 countries from 2016 to 2025. The dataset consolidates firm-specific indicators from the World Bank Enterprise Surveys, digital adoption and innovation measures from the OECD SME and Entrepreneurship Outlook, and national digital ecosystem data sourced from the EU's Digital Economy and Society Index (DESI).

The research uses fixed-effects and random-effects econometric models to examine the impact of changes in digital adoption, ICT investment, and innovation intensity on SME productivity, turnover, and employment. The findings are anticipated to demonstrate how ongoing advancements in digital maturity produce gradual performance improvements over time. This study enhances the existing evidence about the impact of digital transformation on SME competitiveness and provides policy recommendations for improving digital readiness, innovation ecosystems, and sustainable economic growth in various economies.

MATERIALS AND METHODS

Data Sources

The research utilizes a balanced panel dataset including 30 countries from 2016 to 2025, integrating company-level, sectoral, and national metrics pertinent to the digital maturity and performance of SMEs. Three principal databases were used:

1. The World Bank Enterprise Surveys (WBES) give information about the productivity, sales, and employment of small and medium-sized businesses (SMEs).
2. The OECD SME and Entrepreneurship Outlook (OECD, 2024) gives information about SMEs' innovation, digital adoption, and access to finance across countries.
3. The EU Digital Economy and Society Index (DESI) looks at how mature a country is in terms of things like connectivity, human capital, digital integration, and e-government.

They were standardized with ISO-3 country codes and changed to real numbers based on prices from 2015 to make it easier to compare the numbers. Missing variables were addressed using multiple imputation methods, and outliers were detected via interquartile range (IQR) analysis.

Variable Definition

The dependent variable is SME performance, assessed through labor productivity (log of value added per employee) and turnover growth. The independent variables comprise:

Digital Maturity measure (DMI): a composite measure built from the dimensions of the Digital Economy and Society Index (DESI) and OECD digital indicators.

ICT Investment (% of GDP): an indicator of the degree of technology adoption.

Innovation Activity: proportion of SMEs indicating product or process innovation. Control variables encompass GDP per capita, human capital index, institutional quality, and sectoral composition to address macroeconomic and structural variability.

Econometric Model

To evaluate the influence of digital maturity on SME performance, the following econometric model was used:

$$Y_{it}=\alpha+\beta_1 DMI_{it}+\beta_2 ICT_{it}+\beta_3 INNOV_{it}+\gamma X_{it}+\mu_i+\lambda_t+\varepsilon_{it}$$

where:

- Y_{it} — performance of SMEs in country *i* at time *t*;
- DMI_{it} — level of digital maturity;
- ICT_{it} — intensity of ICT investment;
- $INNOV_{it}$ — innovation activity;
- X_{it} — vector of control variables (e.g., firm size, capital intensity, or export orientation);
- μ_i — country-specific (time-invariant) effects;
- λ_t — time-specific effects capturing global or macroeconomic shocks;
- ε_{it} — idiosyncratic error term.

Both Fixed Effects (FE) and Random Effects (RE) estimations were conducted to take into consideration differences that couldn't be seen between countries and over time. The Hausman test was subsequently applied to determine the appropriate model specification and ensure the consistency of parameter estimates. Robust standard errors were used to correct for potential heteroskedasticity and serial correlation in the panel data.

Software and Tools

All estimations were conducted using **STATA 18** and **R (plm package).** Diagnostic assessments, such as the Wooldridge test for autocorrelation and the Breusch–Pagan test for heteroskedasticity, were conducted to verify model assumptions. Variance Inflation Factors (VIF) were employed to assess multicollinearity among the explanatory variables.

FINDINGS

Descriptive Statistics

Before doing regression analysis, descriptive statistics were computed to determine cross-country variations in SME performance and digital maturity criteria. The results demonstrate that between 2016 and 2025, the average value-added growth rate for SMEs increased by 17.4%, and the average Digital Maturity Index (DMI) rose from 48.6 to 68.3. OECD countries generally attained higher DMI scores, although developing economies exhibited stronger relative growth potential.

Table 1 summarizes the main descriptive indicators:

Variable	Mean	Std. Dev.	Min	Max	Observation
SME Productivity (log VA/employee)	10.84	0.72	8.91	12.32	300
Digital Maturity Index (DMI)	58.4	9.8	35.1	77.9	300
ICT Investment (% of GDP)	2.47	0.84	0.7	4.3	300

Variable	Mean	Std. Dev.	Min	Max	Observation
Innovation Activity (%)	32.5	11.2	10.2	58.6	300
GDP per capita (log, PPP)	10.62	0.89	8.70	11.85	300

Regression Results

The results of the panel regression are displayed in Table 2 below. The fixed-effects and random-effects models produced consistent results; however, the Hausman test indicated a preference for the fixed-effects specification ($\chi^2 = 21.37$, $p < 0.01$).

Table 2: Estimation Results (Dependent Variable: SME Productivity)

Variable	Coefficient (FE)	t-Statistic	Coefficient (RE)	z-Statistic
Digital Maturity Index (DMI)	0.023***	4.91	0.021***	4.56
ICT Investment (% of GDP)	0.036**	2.87	0.034**	2.74
Innovation Activity (%)	0.017**	2.32	0.015**	2.08
Human Capital Index	0.028***	3.94	0.026***	3.65
Institutional Quality	0.012*	1.88	0.010*	1.74
Constant	7.894***	10.21	7.955***	10.37
Observations	300		300	
Countries	30		30	
R^2 (within)	0.47			

*Note: Standard errors are resilient to heteroskedasticity. ***p<0.01, **p<0.05, p<0.1.

Interpretation of Results

The empirical findings confirm a statistically significant and positive relationship between digital maturity and the success of SMEs. A 1-point rise in the DMI results in an average 2.3% increase in output, taking into account other factors. Investing in ICT and new ideas pays off in small ways, showing that going digital makes work more productive by using new technology and spreading new ideas. Adding human capital and institutional quality to the model makes it more useful for explaining things. This means that countries with advanced education systems, skilled workers, and stable governments get more out of their digital investments.
The significantly high within-R^2 (0.47) further confirms that a considerable share of the volatility in SME performance over time is due to variations in digital maturity levels.
The results support the idea that digital transformation gives small and medium-sized businesses long-term, cumulative benefits. This means that digital maturity can be both a short-term way to boost

efficiency and a long-term strategic asset that helps businesses stay competitive, adapt, and be strong in changing global markets.

Subtitles

First subtitle: Cross-country variations in digital maturity

The analysis reveals considerable variability in digital maturity across the 30 examined nations from 2016 to 2025. The economies of Northern and Western Europe, such as Finland, Denmark, and the Netherlands, have the highest Digital Maturity Index (DMI) scores, which are over 70 points. This shows that they have advanced ICT infrastructure, innovation ecosystems, and laws that make it easier for businesses to grow. Conversely, transition economies in Eastern Europe and Central Asia show lower DMI levels but higher yearly growth rates, which shows how quickly they are converging digitally. The cross-country analysis demonstrates that structural reforms, investment in human capital, and policy coordination are crucial for enhancing SME digital preparedness.

Second subtitle: The role of innovation and human capital

Regression results indicate that innovative activity and human capital substantially enhance the beneficial effect of digital maturity on SME performance. Countries where SMEs actively participate in R&D and digital skills training exhibit greater productivity elasticity concerning DMI. The results indicate a complementary relationship: innovation allows firms to effectively leverage digital technologies, while human capital fosters organizational adaptability and learning capacity. Thus, policies that promote digital upskilling, STEM education, and knowledge-intensive entrepreneurship significantly impact the long-term competitiveness of SMEs.

Third subtitle: Long-term implications for economic resilience

The longitudinal aspect of the panel data (2016–2025) indicates that digital transformation produces cumulative effects rather than instantaneous impacts. The influence of digital maturity on productivity amplifies after a delay of two to three years, affirming that continuous investment in ICT capabilities yields cumulative advantages over time. This pattern shows that digital transformation serves as a resilience-enhancing strategy, enabling SMEs to withstand market fluctuations, adjust to disruptions, and sustain growth during economic recessions. This conclusion demonstrates that, for emerging economies, digital maturity transcends a mere technology enhancement and serves as a strategic catalyst for equitable and sustainable growth.

DISCUSSION AND CONCLUSION

This study's findings affirm that digital maturity significantly and consistently influences SME performance, corroborating the theory that digital transformation improves firm-level productivity through the synergistic effects of technological adoption, innovation, and human capital. The research demonstrates that countries with higher digital maturity experience enhanced productivity gains and exhibit greater proficiency in adapting to structural shifts in global value chains.

The findings theoretically augment the resource-based view (RBV) of the firm by demonstrating that

digital capabilities function as a strategic intangible asset that evolves over time. The lasting advantages of digital maturity demonstrate that the value of digital investment increases as organizations progress through the successive stages of transformation – from digital adoption to digital integration, ultimately reaching digital innovation. This cumulative process validates the claim that digital maturity serves as both a productivity enhancer and a resilience booster.

The research empirically illustrates that innovation intensity and human capital development strengthen the relationship between digital maturity and SME performance. These findings align with previous research by OECD (2023), Brynjolfsson & McElheran (2019), and the World Bank (2024), which underscore the importance of digital competencies in bridging productivity gaps among SMEs. The cross-national variability underscores the importance of institutional quality and public policy in creating favorable conditions for digital advancement.

The results offer some useful lessons for policymakers. To get the most long-term benefits from using technology, governments and development agencies need to put digital infrastructure, efforts to digitize small and medium-sized businesses, and skills training at the top of their list of spending priorities. Policy frameworks must transcend short-term incentives and concentrate on promoting sustained digital progress through public-private partnerships and innovation ecosystems. In conclusion, the empirical evidence from 2016 to 2025 indicates that digital maturity is not solely a technological phenomenon but a strategic component in sustaining competitiveness. Small and medium-sized firms that undergo digital transformation, supported by favorable institutional and human capital conditions, are more likely to achieve improved productivity, greater adaptability, and sustainable growth. Future research could improve this analysis by integrating firm-level microdata, exploring sectoral diversity, and assessing the relationship between digital maturity and green transition strategies in shaping the next generation of competitive SMEs.

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DÜNYA IQTISADIYYATINA INTEQRASIYA PROSESLƏRINDƏ TƏSƏRRÜFAT KOMPLEKSLƏRININ FORMALAŞMASI ISTIQAMƏTLƏRI

Qələndərova Ümmühəbibə Məmmədtağı qızı

İqtisadi elmlər üzrə fəlsəfə doktoru, dosent

Bakı Dövlət Universiteti, Azərbaycan

hebibe.qelenderova@gmail.com

Orcid: 0000-0002-6055-6997

Xülasə

Məqalədə dünya iqtisadiyyatına inteqrasiya proseslərində, təsərrüfat kompleksinin formalaşmasının əsas istiqamətləri tədqiq olunmuşdu. Eyni zamanda, dünya ölkələrin qlobal iqtisadi sistemdə iştirakında, xarici iqtisadi fəaliyyətin inkişaf prosesində yaranan problemlərə geniş yer verilmişdi.

Məqalənin əsas mövzusunda, Azərbaycanda və dünya ölkələrinin iqtisadi inkişaf strategiyalarında siyasi – iqtisadi maraqlarına təsir edən amillərin nəzərə alınmasıdır. Beynəlxalq iqtisadi əlaqələrin inkişafında Azərbaycan Respublikasında fəaliyyət göstərən yerli və xarici müəssisələrin inkişaf mövqelərinin əhəmiyyəti vurğulanmışdır. Məqalənin sonunda nəticə və təkliflərlə bərabər, istinad edilmiş ədəbiyyat siyahısı verilmişdi.

Açar sözlər : dünya iqtisadiyyatı, yeni texnologiyalar, qlobal iqtisadiyyat, iqtisadi inkişaf strategiyası, bazar iqtisadiyyatı.

Направления формирования хозяйственных комплексов в процессах интеграции в мировое хозяйство

Резюме

В статье рассматриваются основные направления формирования народнохозяйственного комплекса в процессах интеграции в мировое хозяйство. При этом большое внимание уделяется проблемам, возникающим в процессе развития внешнеэкономической деятельности и участия страны мира в мировой экономической системе.

Основной темой статьи является рассмотрение факторов, влияющих на политические и экономические интересы в стратегиях экономического развития Азербайджана и стран мира. Была подчеркнута важность позиций развития местных и иностранных предприятий, действующих в Азербайджанской Республике, в развитии международных экономических связей. В конце статьи приведены выводы и предложения, а также список цитируемой литературы.

Ключевые слова: мировая экономика, новые технологии, глобальная экономика, стратегия экономического развития, рыночная экономика.

Giriş

Ölkənin sosial - iqtisadi inkişafında, təsərrüfatı kompleksi resurslarının əsas istiqamətləri tələb və təklif səviyyəsinə görə dəyişir. Bu proses ölkənin dünya iqtisadiyyatına inteqrasiya prosesinə təsir edir. Dünya iqtisadiyyatına inteqrasiya proseslərində təsərrüfat komplekslərinin formalaşması istiqamətləri dünyəvi

iqtisadi proseslərin yaranmasına səbəb olmuşdur. Dünya iqtisadiyyatında gedən tendensiyaların transmilliləşdirilməsi qloballaşma proseslərinin inkişafına, bununla da yeni tələblər sistemində yeni təsərrüfat kompleksinin formalaşmasına təkan vermişdir.

Dünyada gedən sosial – iqtisadi proseslər, ölkənin milli iqtisadiyyatına təsir etməsi, ölkələr arası iqtisadi münasibətlərdə yeni tələblərin tədqiq olunmasın tələb edir. Bu tələb, dünya ölkələrinin iqtisadi inteqrasiyanda fərqliliklərin yaranması ilə bir çox problemlərin meydana çıxmasına səbəb olmuşdur ki, bu da dünya təsərrüfat sistemində müxtəlif mərhələdə azad ticarət zonaların yaranması ilə birlikdə, iqtisadi proseslərin genişləndiyinin göstəricisidir.

Dünya iqtisadiyyatında ayrı-ayrı ölkələrin iqtisadiyyatı ilk növbədə milli təsərrüfatlarını təhlilindən asılıdır. Bütün bunlar, dünya təsərrüfatının oxşar əlamətlərinə görə təsnifləşdirilməsini tələb edir. Təsnifləşdirmə ölkələrin oxşar əlmətlərinə görə qruplaşdırılması üçün şərait yaradır. Dünya iqtisadiyyatının inkişaf meyllərini, inkişaf dinamikasını və perspektivini təyin etmək çox vacibdir. [1, 24]

Bütün bunlardan göründüyü kimi, ölkələrin dünya iqtisadiyyatına inteqrasiya proseslərində, təsərrüfat kompleksinin formalaşması istiqamətləri prosesində, ölkələr arası münasibətlərdə yeni sahələrin yaradılması tələb olunur. Məsələn, bu proseslərdə, gömrük ittifaqlarında, qarşılıqlı münasibətlərin aydınlaşdırılması tələb olunur.

Dünya təsərrüfatını kriteriyalardan biri də - iqtisadi inkişaf tipidir. Bu kriteriyalarda bütün dünya ölkələri iki yerə-intensiv və ekstensiv yolla inkişaf edən ölkələrə bölünür. Burada onu nəzərə almaq lazımdır ki, təcrübədə intensiv və ekstensiv inkişafa az rast gəlinir. [1, 30]

Dünyada gedən köklü qlobal inkişaflar, Azərbaycan Respublikasının iqtisadi inkişafına da təsir etmişdi. Bu baxımdan, Azərbaycan Respublikasının iqtisadi inkişafında beynəlxalq iqtisadi münasibətlərin yüksək səviyyədə inkişaf etdirilməsi məsələsi, aktual məsələlərdən hesab olunur. Azərbaycan Respublikasının dünya iqtisadiyyatına inteqrasiya məsələlərində, inkişaf etmiş ölkələrin təcrübələrini öyrənməklə, özünə məxsus xüsusi inkişaf yolunun seçməsi məqsədəuyğun hesab olunmalıdır.

Azərbaycanda mövcud iqtisadi potensialın gücləndirilməsi, təsərrüfat kompleksinin formalaşması istiqamətlərini aktuallaşdırmaqla yanaşı, dünya iqtisadiyyatına inteqrasiya prosesini sürətləndirir. Hal-hazırda respublika daxilində gedən fundamental iqtisadi inkişaf, yeni dayanıqlı nailiyyətlərlə birlikdə, müasir dünya iqtisadi inkişafının təməlini dəstəkləyir.

Bu baxımdan, təsərrüfat kompleksinin formalaşması istiqamətlərinin öyrənilməsinin aktuallığını nəzərə alaraq, bu sahədə həm Azərbaycan Respublikası, həm də inkişaf etmiş ölkələrin təcrübə və imkanlarının öyrənilməsinə ehtiyac vardır. Belə ki, Azərbaycan Respublikasının beynəlxalq iqtisadi münasibətlərinin işlənib hazırlanması sahəsində aparılan iqtisadi islahatlar, bu sahənin daima dövlət tərəfindən diqqət mərkəzində olduğunu göstərir. Bu da onu deməyə əsas verir ki, aparılan tədqiqatların nəticəsinin səmərəliliyin yüksək səviyyədə olmazsa, ölkə daxilində təsərrüfat kompleksinin formalaşması istiqamətlərinin, yeni tələblər əsasında yenidən formalaşması lazımdır.

Müasir dünyada dövlətləri arasındakı iqtisadi münasibətlərdə, beynəlxalq təşkilatların fəaliyyətinin aktivlik sferasının miqyasının genişləndiyi görünür. Belə ki, bir çox iqtisadi qurumların verdiyi iqtisadi üstünlüklərdən istifadə etməklə, artan iqtisadi inkişafda rəqabətə davamlılıq əldə etməsi, dövlətin iqtisadi inkişafının, lazımi şərtlərinin olmasını vacib edir.

Buradan belə bir nəticəyə gəlmək olur ki, bu proses öz-özlüyündə, hökumətin iqtisadi problemlərini həll etmir. Qanuni olaraq, hər bir ölkələrinin təkamülünün strateji perspektivlərində, beynəlxalq standartların olmasını dəstəkləyərək, dövlətlər arası iqtisadi münasibətlərin mövcud vəziyyətini əsas amil hesab edir.

Belə ki, bəzi ölkələr və xalqlar müasirləşmənin texniki, maliyyə, informasiya və digər maddi və virtual faydalarını rədd etmirlər. Heç bir ölkə texniki yeniliyin faydalarından kənarda qalmaq istəmir və ölkələr

modernləşmənin faydalarını mənimsəməyə çalışırlar. Cəmiyyətin aktiv quruluşu ənənə ilə, müasiri birləşdirməyə imkan verən, onların qarşılıqlı uyğunlaşmasını təmin edən bir vasitədir. Son iki əsrin təcrübəsinə əsasən, bunu qısamüddətli və keçici bir hadisə hesab etməyə heç bir əsas yoxdur. [2, 17]

Dünyada, hər bir dövlətin iqtisadi maraqları, iqtisadi sistemində yer alması, milli iqtisadiyyatlarının hüdudlarından kənara çıxması ilə mümkündür. Bunun nəzərə alması lazımdır. Dünya təcrübəsinə əsasən onu demək olar ki, bu kimi standart formaların, dünya dövlətləri arasında qarşılıqlı fəaliyyətində inkişafı, dövlətin daxili siyasi - iqtisadi ziddiyyətlərinin kəskinləşməsini aradan qaldırmasında, mövcud problemlərin həllində əsaslı zəmin yaratmışdır.

Sosial - iqtisadi amillərin təsiri çox vaxt, sahibkarlıq subyektlərinin faydalılıq dəyərlərinin göstəricilərində fərqli anlam daşıyaraq, iqtisadi maraqlarda yaranmış mövcud ziddiyyətlərin çoxalmasına səbəb olur. Qlobal dünyanın inkişafında baş verən bu kimi proseslərin əsası hesab olunan riskli əməliyyatların çoxalması buna misal ola bilər. Baxmayaraq ki, beynəlxalq iqtisadi münasibətlərin formalaşmasında, dünya ölkələrinin iqtisadi maraqlarının nəzərə alınması vacib amillərdən hesab olunur.

Beynəlxalq münasibətlərin tələblərinin dəyişməsi, yeni texnologiyaların inkişafı ilə, fərqli anlam daşıyır. Bu baxımdan, dünyada bərabərhüquqlu əməkdaşlıq əlaqələrinin formalaşması ilə, dünya ölkələri arasında yüksək səviyyəli əlaqələrin yaranması hazırda xüsusi millərdən biri hesab olunur.

Ümumilikdə iqtisadi siyasət, cəmiyyətin və dövlətin maraqlarını tənzimləmək və uyğunlaşdırmaq yollarını axtarır. O, böyük ölçüdə empirik elm kimi formalaşaraq, müxtəlif mədəni və psixoloji ənənələrin təsiri altında müxtəlif ölkələrdə əlaqələrin inkişaf etdirilməsi təcrübəsini toplayır, sistemləşdirir və dərk edir. Bu, uzunmüddətli perspektivdə ümumi siyasi – iqtisadi biliklərin elmi nəzəri fikirlərini zənginləşdirməyə imkan verir. [2, 26]

Müasir dünyada beynəlxalq iqtisadi əlaqələrin formalaşmasında qəbul olunmuş qanun və qaydalar, yeni dünya trendi kimi çıxış edərək, beynəlxalq münasibətlərdə bütün iqtisadi sahələrə təsir etməklə, milli maraqların zəifləməsinə gətirib çıxardacağının nəzər alınması labüddür. Hazırda bu məsələlərin nəzərə alınması, dövlətlərin milli maraqlarına təsir etməklə, iqtisadi sabitliyin qorunub saxlanmasını çətinləşdirmişdir. Beynəlxalq əlaqələrinin inkişafında istənilən dövlətin mübarizə strategiyasının formalaşması tələb olunur.

Bütün bu proseslər, dünya iqtisadiyyatına inteqrasiyanın əhəmiyyətini artırmaqla və təsərrüfat komplekslərinin yüksək şəkildə formalaşmasına təsir etməklə, yeni elmi istiqamətlərin yaranmasına müvəffəq olmuşdur. Bu kimi elmi -texniki inkişafın müəyyən olunması, aktual məsələlərin tədqiqində, xüsusən də təsərrüfat subyektlərinin maraqlarına xidmət etməklə, xüsusi əhəmiyyət daşıyır.

Dövlət uzunmüddətli iqtisadi hədəflərin yerinə yetirilməsində, milli dəyərləri qorumaqla, təsərrüfat subyektlərinin maraqlarını əsas götürməsi lazımdır. Bununla da dövlətin uzunmüddətli iqtisadi hədəflərin məqsədindən asılı olaraq, beynəlxalq iqtisadi münasibətlərdə, xarici iqtisadi - siyasətinin tələblərinin, qlobal qaydalara uyğun hazırlanması yönündə tədbirlər paketinin hazırlanmasına başlayır. Bütün bunlar, dünya iqtisadiyyatının inkişafında dövrün tələblərinin mövcud ziddiyyətlərin müəyyən olunmasını və aradan qaldırılmasını vacib edir. Müasir dövrdə iqtisadi fəaliyyət əlaqələrində, fərqli üsullardan istifadə olunur. Bu kimi mövcud tələblər, ölkənin iqtisadi böhran tənzimləməsində, yeni arxitekturaya ehtiyac yaradır.

Qabaqcıl texnologiyaların təsiri ilə, qlobal iqtisadi əlaqələrin dünya iqtisadiyyatına inteqrasiyası proseslərinin istiqamət strukturu, təsərrüfat komplekslərinin formalaşmasını yenidən qurulmaqla, elm tutumlu sənaye sahələrinin inkişafına səbəb olmuşdur. Bu baxımdan, qlobal iqtisadiyyatda yaranan böhran sistemli şəkildə, etibarlılığa zərər verə bilən bir problem kimi qarşılanacaqdır.

Bu təkcə dünyada deyil, ayrı – ayrı ölkələrin fonunda iqtisadi qaydaların müzakirəsində də, dünya ölkələri arasında münasibətlərə təsir edərək, geniş spektrli məsələlərdə öz mövqeyini bildirməyə imkan verəcəkdir. Bu prosesin həm dövlətlər arası münasibətlərdə, iqtisadi qaydalarının müəyyən edilməsinə təsir edəcəyi gözlənilir. Bununla da, bir çox dövlətlər beynəlxalq mövqelərini qorumaq üçün mübarizə aparacaqlar. Dünyada gedən bu kimi iqtisadi proseslər mühitində, heç bir dövlət praktiki olaraq bu mübarizəyə hazır deyil. Bunun əsas səbəbi, beynəlxalq iqtisadi münasibətlərdə, bərabər iqtisadi hüquqların olmamasıdır. Bunu nəzərə alan və inkişafdan geri qalan dövlətlər, öz üzərinə diqqəti çəkməklə, iştirakçı ölkələrin iqtisadi proseslərinə qatılmağa çalışırlar. Nəzərə alınmaq lazımdır ki, bu kimi hallar, xüsusi hazırlıq tələb edir.

Beynəlxalq iqtisadi fəaliyyətdə, qarşılıqlı institusional üstünlüklərin əldə olunmasına yenidən baxılması, yeni bir mübarizənin təməli ola bilər. Belə ki, bəzi Şərqi Avropa ölkələrinin kapitalizm tipli bazar iqtisadiyyatına keçidi, açıq-aşkar iqtisadi münasibətlərdə mövqeyinin itirilməsinə səbəb oldu. Bu prosesdə bəzi ölkələrdə müşahidə olunan iqtisadi artımdan istifadənin çoxalması, muzdlu insan əməyinin istismarının yüksək dərəcədə artmasına təkan verdi.

Rəqabətə və davamlı struktur dəyişikliklərinə əsaslanan iqtisadiyyatın inkişafında xarici müflisləşmə qanunvericiliyinə və onun transformasiya istiqamətlərinə də diqqət etmək lazımdır. Bu müxtəlif ölkələrə qoyulan tələblər daxili müflisləşmənin təsiri altında transformasiyaya uğraya bilir. Bazar iqtisadiyyatı inkişaf etdikcə xarici ekspertlərin müflisləşmə institutunun mahiyyəti və məqsədləri haqqında fikirləri də dəyişir. Məsələn, ötən əsrin 90-cı illərində bəzi ekspertlər bazar iqtisadiyyatı olan ölkələrdə müflisləşmə institutunun zəruri olduğunu iddia etdikləri halda, artıq başqa fikirlər səslənir. [3, 46]

Bütün bunlar onu göstərir ki, dünya iqtisadiyyatına inteqrasiya proseslərinin yeni formaya keçməsi, təsərrüfat komplekslərinin formalaşması istiqamətlərinə təsirinin aktuallığını artırmışdır. Bu da öz növbəsində, hər bir ölkənin sosial - iqtisadi bərabərsizlik dərəcəsinin artmasına səbəb olmaqla, inkişaf etmiş ölkələrin təsirini artıraraq, inkişaf etməkdə olan ölkələrin bazarlarının potensialına təsirini çoxaldılmasına səbəb oldu. Bu kimi proseslərin artması, əslində iqtisadi təsiri çoxaltmaqla, yeni inkişaf mühiti yaratdı. Beləliklə, dünya iqtisadiyyatına inteqrasiya prosesi, iqtisadi sahələrin effektiv rəqabət imkanlarına təsir edərək, yeni dünya maraqlarına xidmət edən tələblər yaratdı. Beynəlxalq əlaqələrin qurulmasında, ölkənin alternativ perspektivdə iqtisadi sahələrin inteqrasiyasına təkan verməklə, orta və uzunmüddətli hədəflərin mümkünlüyünü asanlaşdırır.

Dünya iqtisadiyyatının inkişaf perspektivlərinin nəzərə alınması, təsərrüfat komplekslərinin formalaşması istiqamətlərində, beynəlxalq inteqrasiyanın yeni mərhələyə daxil olmasının göstəricisi hesab olunur. Bu zaman, dünya iqtisadiyyatına inteqrasiya proseslərinin yeni formaya keçməsi təsərrüfat komplekslərinin formalaşması istiqamətlərinin qiymətləndirilməsi baxımdan, əhəmiyyətli hesab olunur.

Azərbaycan Respublikasının dünya iqtisadiyyatına inteqrasiyasının, təsərrüfat komplekslərinin formalaşması inkişafına təsiri

Təcrid olunmuş regional iqtisadi inkişafın səmərəliliyin azalmasının müşayiət olunması, onu deməyə əsas verir ki, milli iqtisadiyyatın dünya iqtisadiyyatına inteqrasiya olmadan, regional iqtisadi inkişaf mümkün deyildir. Azərbaycan Respublikasında iqtisadi inkişafın müasir tələblər səviyyəsində artması, dünya iqtisadiyyatına inteqrasiyasının dərinləşməsinə səbəb olmuşdur. Bütün bu göstəricilər onu deməyə əsas verir ki, ölkəmizdə regional iqtisadi inkişaf mexanizmləri, regional mezosəviyyədə inteqrasiya proseslərinin inkişafında mühüm rol oynayır.

Bu baxımdan, Azərbaycan Respublikasının dünya iqtisadiyyatına inteqrasiyasının, təsərrüfat komplekslərinin formalaşması inkişafına təsiri prosesləri, yeni istiqamətlərin, xüsusən də dövlətlər arası inteqrasiya proseslərinin makro və mikro səviyyədə nəzərə alınmasını vacib etmişdir.

Respublikada regionlarının coğrafi mövqeyinin, sosial - iqtisadi, mədəni potensialının, vahid iqtisadi komplekslərə inteqrasiyasında, beynəlxalq münasibətlər sisteminə transformasiyasının nəzərə alınması baxımdan, xüsusi əhəmiyyət daşıyır. Beynəlxalq iqtisadi münasibətlərdə, regional səviyyədə nəzərə alınaraq, dövlət tərəfindən verilən layihələrində xüsusi yer tutmadadır.

Bu da onu göstərir ki, Azərbaycan Respublikasında makro - mikro səviyyələrdə beynəlxalq əlaqələr formalaşır. Mövcud tələblər, respublikada regionların inteqrasiya mexanizmlərində əməkdaşlıq amillərinin nəzərə alınması, tələbini yaradır. Bu Azərbaycan Respublikasında regionların dünya iqtisadiyyatına inteqrasiyası mərhələsinin əsas xüsusiyyətlərini əhəmiyyətli edir.

Azərbaycan Respublikasının dünya iqtisadiyyatına inteqrasiyasında, regionların reproduktiv strukturlarının inkişaf səviyyəsinin artırılması zəruriliyi yaranır. Bu proses öz növbəsində regionlar arası əlaqələrdə əmək bölgüsünün inkişafına təsir etməklə, yüksək dərəcədə istehsalın beynəlmiləlləşməsinə gətirib çıxardılır.

Regional rəqabət qabiliyyətlilik konsepsiyasında bütün bunlar, rəqabət mühiti kimi çıxış edir. Regionlarda daha çox fəal rəqabət şəraitinin getdikcə daha çox firmaların fəaliyyət göstərici sində, təşkilati qurum kimi çıxış edir. Müəyyən xarici tələblər altında, strategiyaların həyata keçirilməsinin rəqabətə davamlı olması, bu sahəsində sahibkarlıq sahəsinin inkişafında səmərəli hal hesab edilir.

Azərbaycan Respublikasında regionların iqtisadi sahələrində müasir tələblər baxımından, fəaliyyət göstəricisinin olması, üstünlüklərin əhəmiyyətini artırmaqla, inteqrasiya proseslərinin güclənməsinə səbəb olur.

Şəkil 1.

Azərbaycan Respublikasında təsərrüfat komplekslərinin formalaşması istiqamətləri və görüləcək işlər.

Mənbə: Şəkil 1 müəllif tərəfindən tərtib olunmuşdu.

Şəkil 1 də verildiyi kimi, dövlətin səmərəli sosial siyasətində, təhsilə, səhiyyəyə, və mədəni inkişafına ayrılan investisiyaların artırılması, mövcud tələblər əsasında qurulmasın vacib edir. Bütün bunlar onu deməyə əsas verir ki, Respublikanın beynəlxalq iqtisadi əlaqələrinin qurulması, həm beynəlxalq tələblərin nəzərə alınması, həm də milli iqtisadi kontekstində inkişaf etməlidir.

Azərbaycan Respublikası beynəlxalq səviyyədə layiqli yerini tutmaq üçün, ölkə daxilində iqtisadi faktorları gücləndirməyə çalışır. Azərbaycanın dünya iqtisadiyyatında yüksək mövqeyi, başqa inkişaf etməkdə olan ölkələr üçün əla nümunə hesab olunur.

Cədvəl 1

Azərbaycan Respublikasında ilin sonuna, cari qiymətlərlə, iqtisadi fəaliyyət növləri üzrə əsas fondlar, milyon manatla.

	2018	**2019**	**2020**	**2021**	**2022**	**2023**
Əsas fondlar, o cümlədən:	198,970.4	227,220.6	240,694.0	259,274.9	269,438.4	281,691.1
Kənd təsərrüfatı, meşə təsərrüfatı və balıqçılıq	7,441.1	8,379.9	8,524.0	9,230.3	9,981.4	10,147.7
Mədən çıxarma sənayesi	101,255.1	121,932.1	125,998.7	132,166.5	136,133.2	139,463.5

Emal sənayesi	8,356.2	9,830.1	11,737.2	13,255.6	13,717.6	14,160.4
Elektrik enerjisi, qaz və buxar istehsalı, bölüşdürülməsi və təchizatı	12,208.1	12,312.7	13,657.6	16,431.5	17,203.2	17,961.6
Su təchizatı , tullantıların təmizlənməsi və emalı	5,937.4	6,782.1	7,431.4	9,508.1	9,901.1	10,341.8
Tikinti	5,662.1	5,672.2	9,570.0	11,463.6	12,054.6	14,966.0
Ticarət; nəqliyyat vasitələrinin təmiri	2,584.8	2,221.6	2,266.8	2,393.2	2,395.7	3,030.7
Nəqliyyat və anbar təsərrüfatı	15,174.5	15,695.5	15,704.6	17,260.9	18,942.2	21,245.4
Turistlərin yerləşdirilməsi və ictimai iaşə	1,512.5	1,795.5	1,789.7	1,807.4	1,830.2	1,851.2
İnformasiya və rabitə	3,368.7	4,097.4	4,190.2	4,193.4	4,285.4	4,503.1
Maliyyə və sığorta fəaliyyəti	3,298.0	3,507.3	3,699.4	3,769.1	3,829.1	3,926.6
Daşınmaz əmlakla əlaqədar əməliyyatlar	10,130.9	10,803.6	11,585.3	12,795.8	13,486.6	14,275.8
Peşə, elmi və texniki fəaliyyət	2,041.8	2,114.0	2,226.4	2,219.0	1,903.2	1,997.4
İnzibati və yardımçı xidmətlərin göstərilməsi	568.4	652.0	747.9	789.6	812.7	895.8
Dövlət idarəetməsi və müdafiə; sosial təminat	9,119.4	10,480.8	10,498.3	10,884.3	11,473.5	11,289.9
Təhsil	2,732.6	3,059.1	3,075.5	3,092.7	3,115.6	3,259.8
Əhaliyə səhiyyə və sosial xidmətlərin göstərilməsi	3,738.1	3,930.6	4,007.4	4,010.7	4,261.0	4,265.3
İstirahət, əyləncə və incəsənət sahəsində fəaliyyət	3,131.9	3,211.4	3,235.9	3,246.2	3,349.0	3,283.8
Digər sahələrdə xidmətlərin göstərilməsi	708.8	742.7	747.7	757.0	763.1	825.3

Mənbə: https://www.stat.gov.az/source/system_nat_accounts/

Cədvəl 1-dən göründüyü kimi, əməliyyat növləri üzrə, əsas fondlarda 2018- ci ilə nisbətən 2023 – cü ildə 82,720.7 milyon manat artmışdır. Kənd təsərrüfatı, meşə təsərrüfatı və balıqçılıq sahəsi 2018- ci ilə nisbətən 2023 – cü ildə 2,706.6 milyon manat artmışdır. Cədvəl 1 də verilən məlumatlar Azərbaycanın iqtisadi rayonlarının təsərrüfat komplekslərinin təhlili və qiymətləndirilməsinin nəticəsi

onu deməyə əsas verir ki, beynəlxalq iqtisadi əlaqələrin yüksək səviyyədə inkişaf etməsi, iqtisadi fəaliyyət növlərinin inkişafına müsbət təsir etməklə, xüsusi əhəmiyyət daşıyır.

Nəticədə Azərbaycan Respublikasının dünya iqtisadiyyatına inteqrasiyasının, təsərrüfat komplekslərinin formalaşması inkişafına təsirinin qiymətləndirilməsi, onu deməyə əsas verir ki, ölkənin beynəlxalq iqtisadi əlaqələrin inkişafında, təsərrüfat kompleksinin formalaşmasının nəzərə alınması vacib amillərdən hesab olunmalıdır. Belə ki, ölkə iqtisadiyyatı, xarici iqtisadi münasibətlərin təsir mexanizmisinin müəyyən edilməsi, iqtisadi inteqrasiya proseslərinin tələbləri əsasında qurulmalıdır. Bu sahəyə imkan verən bütün imkanların nəzərə alınması və istifadə olunması aktual məsələlərdən hesab edilməlidir. Güclü rəqabətə qarşı, beynəlxalq inkişafa təkan verən əsas elementlərdən istifadə olunması labüddür. Xüsusən də kən təsərrüfatının inkişafına yenidən nəzərə salınması, bu sahədə aparılan tədqiqatların artırılması lazımdır.

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SOCIO-ECONOMIC ANALYSIS OF THE APPLICATION OF DIGITAL TECHNOLOGIES IN THE FIELD OF MARKETING IN AZERBAIJAN

Khadija Zeynalli

Lecturer, BSU
E-mail: xadica1@gmail.com
ORCID ID: 0000-0001-6461-320X

Abstract

The rapid advancement of digital technologies in the modern world has brought fundamental transformations to the field of marketing. The widespread adoption of the Internet, mobile devices, and social media platforms has shifted traditional marketing practices into the digital environment, enabling companies to communicate with consumers more efficiently and conveniently. Azerbaijan has also benefited from this digital transformation, allowing local businesses to develop marketing strategies based on innovative technologies and digital communication tools.

In today's economy, business success is strongly dependent on technology. Entrepreneurs must be able to deliver information to customers at any time and through the communication channel most convenient for them.

The main objective of this paper is to analyze how digital technologies are being integrated into marketing strategies in Azerbaijan and to assess their impact on the country's socio-economic structure. The diffusion of digital tools in marketing has the potential to reshape consumer behavior, redefine business models, and stimulate economic development. In this context, the article aims to discuss the role of digital marketing in strengthening business competitiveness in Azerbaijan, its impact on employment, and the shifts it generates in consumer habits, thus exploring the broader social and economic consequences of this transformation.

Keywords: digital marketing, chatbots, digital communication, artificial intelligence, Internet of Things (IoT)

INTRODUCTION

The development of innovative digital technologies and the emergence of the Internet have fundamentally transformed the nature of marketing, giving rise to new subfields such as digital marketing and Internet marketing. The primary goal of digital marketing is to ensure a company's presence in the online environment and to achieve optimal commercial outcomes through technological integration. Internet marketing, as a key component of this process, aims to attract new customers, establish sustainable communication channels, automate sales processes, and identify the needs of target audiences in order to improve products and services. It also seeks to create fast, efficient, and data-driven interaction with potential clients, enabling businesses to respond dynamically to market demands.

These domains are deeply interconnected, as they utilize similar communication technologies such as mobile applications, digital television, SMS, MMS, and QR codes. All of these tools operate through Internet-based communication systems, allowing companies to manage consumer engagement through multiple platforms simultaneously. A major direction of digital marketing activity involves the large-scale migration of corporate operations into the online sphere. This includes the creation of corporate websites, online stores, and mobile applications, as well as the promotion of goods and services on social media platforms, blogs, and online forums. Additionally, digital marketing campaigns often incorporate event promotions, contests, and interactive campaigns aimed at increasing product visibility and brand recognition.

MATERIALS AND METHODS

This study is based on a qualitative and analytical research approach aimed at examining the role of digital technologies in the development of marketing strategies in Azerbaijan. The methodological framework combines desk research, secondary data analysis, and comparative review of existing literature, statistical reports, and industry data. The primary sources of information include official reports from the State Statistical Committee of the Republic of Azerbaijan, DataReportal (2025), Statista (2025), and relevant publications of the Ministry of Digital Development and Transport of Azerbaijan. Additional materials were collected from international databases such as the World Bank, OECD Digital Economy Outlook, and We Are Social reports, which provide updated global and regional statistics on digital marketing and social media usage. The research method relies on content analysis of digital marketing practices and comparative evaluation of Azerbaijan's digital marketing environment with international trends. Statistical indicators, including Internet and social media penetration rates, user demographics, and advertising expenditure, were used to assess the scale and efficiency of digital transformation within the country. Given the descriptive and exploratory nature of this paper, no experimental or survey-based data collection was conducted. Instead, the analysis focuses on synthesizing secondary data and identifying key relationships between digital technology adoption, consumer behavior, and marketing performance in the Azerbaijani context.

FINDINGS

The analysis of recent digital marketing practices in Azerbaijan revealed several significant trends. First, Internet and social media penetration have reached record levels, with 89% of the population having Internet access and 64.9% being active social media users (*DataReportal, 2025*). This demonstrates that the majority of consumers in Azerbaijan are digitally connected and accessible through online platforms. Second, Facebook, Instagram, and YouTube remain the most dominant platforms for digital advertising. Facebook continues to lead in audience reach, especially among users aged 34–55, while Instagram appeals to a younger demographic aged 18–35. YouTube is the most effective channel for video-based product promotion, with approximately 70% of users reporting purchase decisions influenced by video content. Third, the adoption of AI-driven marketing tools, particularly chatbots, has significantly improved communication efficiency between companies and customers. For example, the introduction of Rabitabot by Rabitabank and ASAN Bot in the public sector demonstrates the growing use of artificial intelligence for service automation and citizen engagement. These tools have reduced operational costs, enhanced 24/7 service accessibility, and minimized the need for large-scale call centers. Fourth, e-commerce platforms such as *b2b.az*, *tap.az*, *boss.az*, and *bina.az* have shown rapid growth in both user base and transaction volume, reflecting the increasing digitalization of trade and consumer behavior. Finally, the study found that the government's strategic initiatives under the "Azerbaijan 2030: National Priorities" framework have accelerated the country's digital transformation. The integration of digital marketing, ICT infrastructure, and innovation ecosystems (including the Microsoft IoT Lab) highlights Azerbaijan's progress toward building a knowledge-based digital economy.

Parallel to the evolution of information and communication technologies, digital marketing has begun to exert a profound influence on the economic and social structures of countries. The removal of traditional market barriers and the expansion of globalization are most visible in e-commerce-oriented sectors. As markets grow increasingly dynamic and digital media consumption rises, both companies and individuals are encouraged to participate in e-commerce and maintain their presence in the digital marketplace. In nations with wide Internet accessibility, both consumers and businesses have shifted

substantial parts of their activities from the physical to the virtual environment, thereby redefining traditional models of commerce and interaction.

In Azerbaijan, this transformation has been particularly noticeable over the past decade. The rapid growth in Internet usage and the adoption of digital tools have enabled both small and large enterprises to expand their marketing operations online. According to *DataReportal (2025)*, Internet penetration in Azerbaijan has reached 89%, and the number of active social media users now accounts for 64.9% of the population, demonstrating that digital marketing has become an indispensable element of national business strategy.

The starting point for generating ideas and identifying consumer preferences on the Internet is the users themselves. Through customer inquiries, group discussions in online chats and forums, and the analysis of website and social media traffic, companies can monitor and evaluate the evolving needs and behaviors of their target audiences. Marketing approaches that rely on direct communication and interaction with customers are inherently customer-oriented, as they allow the collection of detailed, real-time information about consumer interests, purchasing activities, and behavioral trends. Such data-driven marketing practices enable firms to measure performance, track revenue, and identify actions that directly lead to sales.

In the modern marketplace, using these customer-focused strategies is essential for companies aiming to reach wide and diverse consumer audiences. The growing importance of data analytics and online interaction has transformed how marketers understand and engage with potential buyers. In several sectors, the high performance indicators observed among businesses reflect the growing activity of Internet users who represent a company's potential customers. Over the past five years, online advertising has become fully integrated into digital platforms and social networks, reflecting a shift from traditional advertising to algorithm-based, interactive marketing. This trend is closely related to the rapid increase in social media popularity, which in turn has been driven by the global expansion of Internet accessibility. The correlation between the rise of digital connectivity and marketing efficiency underscores how digital marketing and social media marketing are now interdependent and mutually reinforcing disciplines. During the COVID-19 pandemic, Internet adoption rates grew dramatically worldwide. Between 2020 and 2022, the number of global Internet users increased by approximately 17%, expanding the potential audience available to marketers. According to DataReportal (2025), as of January 2025, there are 5.35 billion Internet users and 5.24 billion social media users globally — equivalent to nearly 64% of the world's population. This figure represents an increase of more than one billion users compared to 2021. The most popular platforms among global marketers remain Facebook, Instagram, and YouTube, which collectively dominate digital advertising expenditure. These networks are widely recognized for their ability to deliver highly segmented, behavior-based advertising to specific consumer groups. According to Statista (2025), Facebook remains the largest digital advertising network worldwide, with an advertising reach exceeding 2.9 billion users, followed by Instagram with 2.1 billion, and YouTube with 2.7 billion active viewers. This shift highlights the evolution of digital marketing into a data-driven and technology-enabled field where social media platforms serve as the main channels for business-to-consumer communication and engagement. According to global statistical data, Facebook remains the world's largest digital advertising platform, reaching approximately 2.9 billion users in 2025 (*Statista, 2025*). This extensive user base provides unparalleled opportunities for targeted marketing campaigns across different demographic segments.

In Azerbaijan, recent statistics indicate that Facebook advertisers primarily target adults aged 24 to 64, who represent the most active online audience and typically access the platform at least once a day (*DataReportal, 2025*). Audience segmentation—particularly gender distribution—plays a significant role in advertising strategy. While from 2017 to 2019 women constituted the majority of social media users, this trend shifted during and after the pandemic, with a notable increase in male participation. Consequently, the number of male consumers responding to digital advertisements has grown, reflecting broader changes in consumer engagement patterns.

Table 1. Gender distribution of users on major social media platforms (2025)

Platform	Total Users (%)	Female (%)	Male (%)
Facebook	100	44.1	55.9
Instagram	100	47.8	52.2
YouTube	100	46.3	53.7

Source: DataReportal (2025)

Advertising revenues generated from these platforms continue to demonstrate their economic dominance. In 2024, Facebook's global advertising revenue exceeded USD 154 billion, while Instagram generated USD 60 billion and YouTube earned approximately USD 35 billion (*Statista, 2025*). These figures reflect the sustained importance of digital advertising as one of the most profitable segments of the global marketing industry.

An analysis of these data suggests that potential buyers who pay attention to online advertisements are primarily users of these popular social networks, confirming their status as essential tools for modern marketers. Furthermore, age segmentation provides additional insight into audience behavior. For example, advertising on YouTube is most effective for users aged 18–34, as approximately 90% of viewers use the platform to learn about new products and brands, and around 70% make purchases after watching branded content (*Google Ads, 2024*). In contrast, Facebook remains the most effective medium for the 34–55 age group, where 85% of users report responding to ads and 26% proceed to purchase after exposure. Instagram, on the other hand, serves a much broader demographic—ranging from 12 to 55 years old—making it an ideal platform for lifestyle, fashion, and visual storytelling campaigns. Collectively, these findings illustrate that social media has become the dominant arena for digital marketing, where audience segmentation, behavioral data, and content personalization determine advertising success. The concept and strategy of digital marketing represent a comprehensive system of measures designed to attract the attention of Internet users to a particular company through social media platforms. One of the most advanced technologies in establishing interaction with social network users is the chatbot—a rapidly developing innovation that is transforming the fields of marketing, communication, and sales. Chatbots are based on neural network mechanisms and constitute a practical application of artificial intelligence (AI) in marketing. A chatbot is a digital service that allows users to interact with businesses via a conversational interface, often embedded within messaging applications. In Azerbaijan, one of the most commonly used chatbot platforms among marketers is Facebook Messenger, which enables automated and personalized customer engagement. Although the introduction of AI-driven chatbot communication tools in Azerbaijan is relatively recent, the use of such technologies has already become widespread across multiple business sectors (*DataReportal, 2025*).

A notable example is Rabitabank's Rabitabot, launched in early 2020 as the country's first financial chatbot integrated into its online banking system. Shortly thereafter, Bank Respublika became the first Azerbaijani bank to provide customer service via WhatsApp, enabling clients to perform banking operations directly through the messaging application. These initiatives represent a crucial step toward automating financial services and improving customer accessibility through digital communication tools. Azerbaijan's first digital B2B trading platform, www.b2b.az, currently hosts more than 14,000 registered users, facilitating direct access to markets for entrepreneurs—particularly agricultural producers—by removing traditional trade barriers. The platform attracts visitors from over 20 countries, including Russia, the United States, Türkiye, China, Ukraine, Germany, Kazakhstan, India, Belarus, the United Kingdom, Indonesia, France, Italy, the United Arab Emirates, Spain, Greece, South Korea, Denmark,

Hungary, and the Netherlands. It serves as a digital marketplace offering trade opportunities in industries such as food production, construction, logistics, information and communication technologies (ICT), education, manufacturing, and services (*Ministry of Digital Development and Transport of Azerbaijan, 2025*). Additionally, several local e-commerce platforms—turbo.az, tap.az, boss.az, and bina.az—have experienced a substantial increase in transaction volume and popularity in recent years. These websites provide essential services such as vehicle trading, property sales and rentals, and job placement, making them integral components of Azerbaijan's online economy. During the COVID-19 pandemic, and later as a result of the depreciation of the Turkish lira against the US dollar, Azerbaijan's trade volume with Türkiye increased by an estimated 25–30 times compared to pre-pandemic levels (*State Statistical Committee of Azerbaijan, 2024*).

To streamline public communication during the pandemic, the ASAN Bot system was introduced as an official digital assistant. Its purpose was to provide citizens with 24/7 access to reliable information about government services, thereby reducing in-person interactions and improving service accessibility. The success of this initiative demonstrated the growing role of AI-based digital tools in enhancing communication efficiency within Azerbaijan's public sector (*ASAN Service, 2025*). In addition to the examples mentioned above, several digital health programs have been developed under the Ministry of Health of the Republic of Azerbaijan using AI-based chatbot information systems. Among these initiatives are the digital projects "Şəkərli Diabet" (Diabetes Awareness), "Ürəyinizi Qoruyun" (Protect Your Heart), "Tütündən İmtina Et" (Quit Tobacco), and "Sağlam Qida" (Healthy Nutrition). Many of these programs have been implemented in collaboration with software developers or within the framework of local start-up ecosystems, which are becoming an increasingly important component of Azerbaijan's digital economy (*Ministry of Health, 2025*).

These AI-driven systems provide round-the-clock access (24/7) to reliable information and interactive support services. Beyond improving accessibility, they also deliver significant economic efficiency: the use of automated chatbots reduces the cost of maintaining large call centers and minimizes the need for extensive consulting staff. Consequently, organizations achieve direct cost savings on salaries and indirect savings by eliminating the necessity of regular staff training. Once a single bot has been "trained," its knowledge and algorithms can easily be replicated across other automated systems, enhancing scalability and productivity (*OECD Digital Economy Outlook, 2024*).Another example of digital marketing application in Azerbaijan involves the promotion of services and products through Facebook Messenger and WhatsApp Business. Many organizations and online retailers utilize these platforms for direct advertising, online ordering, and real-time customer service. This approach covers the full spectrum of e-commerce, including online shopping and food delivery, both of which experienced exponential growth during and after the COVID-19 pandemic.

Numerous transportation and logistics companies in Azerbaijan actively employ Internet marketing strategies. These include Uber, Bolt, City Taxi, Baku Taxi, and 166 Taxi, all of which operate in an intensely competitive market environment. Their marketing strategies emphasize low-cost, fast, and door-to-door delivery services, appealing to consumers who value convenience and time efficiency.

An analysis of the Uber ecosystem demonstrates that since its founding in 2009, the company has continuously relied on digital marketing as a core element of its business model—primarily due to the high level of global competition in the mobility sector. In Azerbaijan, demand for ride-hailing and delivery services grew substantially during the pandemic, as customers sought affordable, safe, and contactless transportation. During that period, almost all Uber users were active online, making social media platforms the company's most powerful marketing channel. Digital advertising for such services in Azerbaijan is primarily concentrated on Facebook and Instagram, as these remain the country's most widely used platforms. According to *DataReportal (2025)*, Facebook accounts for 58.3% of active social media users, while Instagram represents 40.1%, confirming their dominant position in Azerbaijan's digital landscape. Furthermore, content marketing and the Internet of Things (IoT) have become increasingly influential in shaping the

evolution of digital marketing in Azerbaijan. One particularly noteworthy initiative is the establishment of the country's first IoT Laboratory, created by Microsoft Azerbaijan. The laboratory—officially named "Microsoft Lab"—aims to enhance the efficiency of digital marketing and foster collaboration among young professionals and startups in developing innovative technological solutions. Within this ecosystem, it becomes possible to design and prototype new IoT-based marketing tools that integrate data analytics, automation, and smart communication technologies (*Microsoft Azerbaijan, 2025*).

CONCLUSION

At the current stage of economic development, the most significant trend shaping the evolution of innovative marketing is its digital transformation. The ability to select and effectively utilize the appropriate digital platforms for advertising and promotion has become a decisive factor for business success. Modern marketing communications simplify interaction processes, accelerate information exchange, and provide real-time feedback, enabling marketers to measure and optimize performance more efficiently than ever before.

Advances in Internet technologies have fundamentally redefined the relationship between companies and consumers. Unlike traditional one-way marketing, digital marketing allows for interactive, multidirectional communication, giving consumers an active role in shaping brand narratives and market trends. This participatory model enhances engagement and fosters stronger loyalty between businesses and their audiences.

A professional and competent understanding of the characteristics of digital technologies in marketing ensures that marketing processes are cost-effective for companies and informationally beneficial for consumers. To maintain competitiveness in a rapidly evolving environment, organizations must integrate digital marketing as a strategic management function rather than a mere communication tool.

Globally, governments are increasingly incorporating information and communication technology (ICT) tools into their administrative and economic operations. In Azerbaijan, this trend has been formalized through the "Azerbaijan 2030: National Priorities for Socio-Economic Development" strategy, which emphasizes the expansion of digital infrastructure and the implementation of new strategies in the field of digital marketing and e-governance (*Government of Azerbaijan, 2025*).

One of the country's key strategic priorities is the widespread adoption of digital marketing services, which is seen as an essential component of building a modern, knowledge-based society. The government's digital transformation roadmap promotes innovation, transparency, and citizen engagement through technology-driven initiatives. At the same time, these efforts contribute to the expansion of digital trade volume, supporting the sustainable growth of Azerbaijan's economy and its integration into the global digital ecosystem.

In summary, the future of marketing in Azerbaijan—and globally—depends on how effectively businesses and public institutions can leverage digital technologies to foster innovation, enhance communication, and create value for society. Continued investment in digital skills, artificial intelligence, and data analytics will be essential to ensure that marketing evolves in line with the demands of the Fourth Industrial Revolution.

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Səfərova Afət Ağa Əli qızı

BDU-nun Diplomatiya və müasir inteqrasiya prosesləri kafedrasının dosenti, siyasi elmlər üzrə fəlsəfə doktoru

TRANSXƏZƏR BEYNƏLXALQ NƏQLİYYAT MARŞRUTU (TXBNM) ORTA TİCARƏT DƏHLİZİNİN İNKİŞAFI KONTEKSTİNDƏ

afa.sfrva.19@gmail.com

Orcid: 0000-0001-5422-5748

X Ü L A S Ə

Ölkələrin, xalqların və xüsusən də iqtisadiyyatların tam qarşılıqlı asılılığı dövründə geosiyasət yeni ittifaqlar qurmaq və təsir dairələrini müəyyən etmək deyil, bu ölkələri, xalqları və iqtisadiyyatları birləşdirən marşrutlara nəzarət etməkdən ibarətdir. Bu gün ixrac və idxal üçün alternativ marşrutlar mövzusu o qədər populyardır ki, bunun niyə yarandığını və bu marşrutların nə olduğunu izah etməyin mənası yoxdur. Orta dəhliz Mərkəzi Asiyadan Xəzər dənizi vasitəsilə Azərbaycana uzanır və Rusiya ərazisindən yan keçməklə ya Gürcüstan limanlarına, ya da Bakı-Tbilisi-Qars xətti ilə Türkiyəyə qədər davam edir. Bu gün Orta Dəhlizə yüksək marağın səbəbi Ukraynadakı müharibə və Avropa Birliyinin anti-Rusiya sanksiyalarının Rusiya ərazisindən keçən Aİ-yə gedən marşrutu praktiki olaraq bağlamasıdır. Layihənin bütün iştirakçılarının onu həyata keçirmək üçün siyasi iradəsi var. Onların hamısı ikitərəfli və çoxtərəfli görüşlər zamanı Transxəzər Beynəlxalq Nəqliyyat Marşrutunu (TİTR) və Orta Dəhlizi inkişaf etdirmək əzmində olduqlarını təsdiqləyirlər.

Açar sözlər: Transxəzər Beynəlxalq Nəqliyyat Marşrutu, Orta Dəhliz, "Bir kəmər, bir yol", Azərbaycan, Çin, Qazaxıstan, Türkiyə, Gürcüstan

Safarova Afet Agha Ali

Ph(D) on political sciences, Associate professor of the Department of modern integration process of Baku State University

The Trans-Caspian International Transport Route (TCITR) in the context of the development of the Middle Trade Corridor

S U M M A R Y

Geopolitics in the era of total interdependence of countries, peoples and especially economies is not so much about building new alliances and defining spheres of influence as it is about controlling the routes connecting these countries, peoples and economies. Today the topic of alternative routes for export and import is so popular that there is no point in explaining why it arose and what these routes are. The middle corridor runs from Central Asia through the Caspian Sea to Azerbaijan and continues either to Georgian ports or to Turkey along the Baku-Tbilisi-Kars line, bypassing Russian territory. Today, the high interest in the Middle Corridor is due to the fact that the war in Ukraine and the anti-Russian sanctions of the European Union have practically blocked the route to the EU passing through Russia. All project participants have the political will to implement it. All of them, during bilateral and multilateral meetings, confirm their determination to develop the Trans-Caspian International Transport Route (TITR) and the Middle Corridor.

Keywords: Trans-Caspian International Transport Route, Middle Corridor, "One Belt, One Road", Azerbaijan, China, Kazakhstan, Turkey, Georgia

Giriş

Son illərdə dünya arenasında baş verən qlobal dəyişikliklər və Avrasiya qitəsində ticarət-iqtisadi əlaqələrinin transformasiyası bir sıra layihələrə marağı artırıb. Bu gün bir sıra səbəblərdən həyata keçirilməsi mümkün olmayan hesab edilən bu layihələri reallaşdırmaq istəyi, Rusiya-Ukrayna müharibəsinin başlamasından sonra baş verən hadisələr tərəfindən dəstəklənir.

Antirusiya sanksiyaları, əvvəlki iqtisadi zəncirlərin qırılması, siyasi mərkəzlərin yeni bölgələrə köçməsi və bir çox digər amillər Mərkəzi Asiya regionundakı ölkələrin fəaliyyətinin aktivləşməsinə birbaşa təsir göstərdi. Bu vəziyyətdə, yaranmış şəraitdə sərfəli alternativ nəqliyyat marşrutları üçün imkan pəncərəsi görən ölkələrin diqqətini çəkməsi təəccüblü deyil. Bu baxımdan, son bir ildə Transxəzər qaz kəmərinə (TXQK) olan marağın kəskin artması da təbii haldır; bu kəmər, bütün Avrasiya məkanında strateji əhəmiyyətə malik enerji layihələrindən biri halına gəlib.

Rusiyanın bu gün sanksiyalar altında olması və bir sıra ölkələrin onunla ticarət-iqtisadi əməkdaşlığını məhdudlaşdırması səbəbindən, Mərkəzi Asiya dövlətləri və Çin Rusiyadan yan keçərək Avropaya mallarının ixracını artırmaq üçün yeni imkanlar axtarırlar. Rusiyanın dominant mövqedə olduğu və nəqliyyat yolunun böyük hissəsinə nəzarət etdiyi Şimal Nəqliyyat Dəhlizinə və Hind okeanı vasitəsilə keçən ənənəvi dəniz yoluna ən perspektivli alternativ Mərkəzi Asiyadan Avropaya malların tədarükü üçün yaradılmış Orta Dəhlizdir. Bu dəhliz həmçinin Transxəzər Beynəlxalq Nəqliyyat Marşrutu adı ilə də tanınır. Orta Dəhlizin keçdiyi əsas ölkələr, xüsusilə Azərbaycan, Çin, Gürcüstan, Qazaxıstan və Türkiyə üçün bu marşrut Rusiyadan yan keçən alternativ Avrasiya ticarət marşrutuna olan beynəlxalq maraqdan faydalanmaq imkanı verəcək.

Orta Dəhliz təxminən qədim İpək Yolunun marşrutunu izləyir. Tarixi ticarət yolu Xəzər dənizinin cənubundan və Fars (müasir İran) ərazisindən keçsə də, Orta Dəhliz İrandan yan keçərək Qazaxıstan və Türkmənistan limanlarından istifadə edərək yükləri Xəzər dənizi vasitəsilə Azərbaycana daşıyır. Oradan yüklər Gürcüstanın yük limanları və ya Türkiyə ərazisi vasitəsilə Avropaya göndərilir.

Orta Ticarət Dəhlizinin İnkişafının Aktuallığı

7 oktyabr 2023-cü il tarixində baş verən faciəli hadisələr Yaxın Şərqdə gərginliyin artmasına səbəb oldu və bunun nəticəsində Qırmızı dənizdə husi hücumlarının sayı artdı. Bundan əlavə, Rusiyaya qarşı tətbiq olunan çoxsaylı beynəlxalq sanksiyalar, ən populyar qlobal gəmiçilik marşrutlarının getdikcə daha etibarsız hala gəldiyini ortaya qoydu. Rusiyada qərb istiqamətində yük daşımalarının dəmir yolu tranziti, Ukraynaya tammiqyaslı müdaxilənin başlanması ilə kəskin şəkildə azaldı. Nəticədə, daha az tanınan marşrut olan Orta Dəhliz, beynəlxalq bazarlar üçün yaşamağa qadir alternativ ola bilər.

Qırmızı dəniz və Süveyş kanalı beynəlxalq gəmiçilik və ticarət üçün mühüm qovşaq nöqtələridir. Təxminlərə görə, dünya ticarətinin 15 faizə qədər hissəsi Süveyş kanalından keçir, həmçinin dünya konteyner daşımalarının 30 faizə qədər hissəsi [4]. Noyabr ayından etibarən husilər Qırmızı dəniz və Aden körfəzində ticarət və hərbi gəmilərə qarşı təxminən 60 hücum həyata keçiriblər. Davam edən hücumlara baxmayaraq, gəmiçilik şirkətləri hələ də bu marşrut üzrə fəaliyyət göstərirlər. Lakin bu şirkətlərin bir çoxu gəmilərə və heyətə olan təhlükələri kompensasiya etmək üçün minlərlə dolları aşan fövqəladə əlavələr də daxil olmaqla, əlavə ödənişlər tətbiq edirlər.

Digər şirkətlər Süveyş kanalı vasitəsilə marşrutdan tamamilə qaçmaq üçün addımlar atırlar, hətta bu, tranzit müddətinin uzanmasına və daha yüksək xərclərə səbəb olsa da. Analitiklər qiymətləndirir ki, Qırmızı dəniz və Süveyş kanalı vasitəsilə keçən adi konteyner yükdaşımalarının

təxminən 90 faizi Cənubi Afrikadakı Düzgün Ümid burnunu əhatə etmək üçün yönləndirilib. Şərqi Asiyadan Avropaya göndərişlər indi əlavə 10 gün tranzit müddəti ala bilər. Bəzi şirkətlər hətta yükünü çatdırmaq üçün hava daşımalarına müraciət edirlər. Bu metod tranzit müddətini əhəmiyyətli dərəcədə azaldır və daha təhlükəsizdir, lakin hava daşımalarının xərci ənənəvi Süveyş marşrutundan 15 dəfə baha ola bilər.

Rusiya əleyhinə sanksiyalar və Şimal Dəhlizindən istifadə etməyə artan istehsaçlıq bu marşrut üzrə daşımaların həcminin əhəmiyyətli dərəcədə azalmasına səbəb olub. 2023-cü il ərzində Qərb daşımalarının həcmi Şimal Dəhlizi marşrutu üzrə əvvəlki illə müqayisədə 51 faiz azalıb. Orta Dəhliz hər iki marşruta daha təhlükəsiz, qısa və əlverişli alternativ təklif edə bilər.

Orta Dəhliz vahid nəqliyyat marşrutu deyil, daha çox qarşılıqlı əlaqəli yol, dəmir yolu və dəniz marşrutları şəbəkəsidir. Son üç onillikdə bir sıra infrastruktur layihələri Orta Dəhlizin modernləşdirilməsinə və naviqasiya üçün tranzit vaxtının azaldılmasına kömək etdi. Çinin Bir Kəmər-Bir Yol Təşəbbüsü çərçivəsində kütləvi investisiyalarla yanaşı, Avropa Birliyi də Orta Dəhlizə əhəmiyyətli miqdarda sərmayə qoyub [7].

Orta Dəhlizi təşkil edən Avrasiya ölkələri mövcud infrastrukturun yaxşılaşdırılmasına xeyli vaxt və resurslar sərmayə qoyublar. 2022-ci ilin sonunda Qazaxıstan, Gürcüstan, Azərbaycan və Türkiyənin xarici işlər və nəqliyyat nazirləri marşrut üzrə inkişafın sürətləndirilməsi və yük axınının genişləndirilməsi yollarının işlənib hazırlanması üçün toplaşıblar. Nazirlər dəmir yollarının modernləşdirilməsinə yönəlmiş beşillik plan elan etdilər və dəmir yolunun gücü başa çatdıqdan sonra iki dəfə artdı. 2027-ci ilə qədər ölkələr ildə 10 milyon ton daşıma qabiliyyətinə və 14-18 gün tranzit vaxtına sahib olmağı planlaşdırırlar [9].

Orta dəhlizin Avropa ucunda dəhlizə marağı Çinin marağına uyğun olan ölkə Türkiyə yerləşir. Ankara dəhlizə təkcə Mərkəzi Asiya ilə iqtisadi əlaqələri gücləndirmək deyil, həm də strateji mövqeyini yaxşılaşdırmaq üçün bir yol kimi baxır. Türkiyə bölgənin türkdilli ölkələri ilə ortaq dil köklərindən istifadə edərək və onlara İranla və ya Rusiya ilə ticarətə cəlbedici alternativ olan ticarət imkanlarını təklif etməklə buna nail olmağa ümid edirdi. Əslində Türkiyə Orta dəhlizi Mərkəzi Asiyadakı xarici siyasətinin mərkəzi elementi edib. 2013-2015-ci illər arasında Azərbaycan, Çin, Gürcüstan və Qazaxıstan ilə dəhlizin Avropa ilə əlaqəsinin yaxşılaşdırılmasına dair sazişlər imzalanmışdır. Türkiyə 2016-cı ildə İstanbulda Avrasiya tuneli və Yavuz Sultan Səlim körpüsünü tikib və artıq Ədirnə-Qars yüksək sürətli dəmir yolunun və Şimal Mərmərə dənizi avtomobil yolunun tikintisini başa çatdırır. Diplomatik cəhətdən Ankara Ermənistanın Zəngəzur regionu vasitəsilə yeni Orta dəhliz dəmir yolunun tikintisinə kömək etməyə çalışır [3].

Mərkəzi Asiya və Çin ölkələrinin Transxəzər Beynəlxalq Nəqliyyat Marşrutu layihəsinə marağı

Daha əvvəl qeyd edildiyi kimi, məhz Ukraynada vəziyyətin gərginləşməsi Mərkəzi Asiya ölkələrinin Rusiyadan yan keçərək Asiyadan Avropaya malların tədarükünü həyata keçirmək mümkün olan alternativ ticarət dəhlizini fəal şəkildə təbliğ etməyə başlamasına səbəb olub. Mərkəzi Asiya ölkələri münaqişədə bitərəf qalsalar da, Rusiyanın üstünlük təşkil etdiyi Şimal dəhlizinə alternativin mövcudluğunda üstünlük gördülər. Orta dəhliz regiondaxili ticarətin artmasına kömək edir, belə ki, 2022-ci ildə Orta dəhliz üzrə yük daşımaları 3,2 milyon tona qədər artıb, ticarət yolunun tutumunun 10 milyon tona çatacağı gözlənilir [2].

Orta dəhliz layihəsinin inkişafında beş ölkə, o cümlədən Azərbaycan, Gürcüstan, Qazaxıstan, Türkiyə və Çin ən böyük maraq göstərir. Transsərhəd dəmir yolu əlaqələrinin yaxşılaşdırılması və ticarətdəki ziddiyyətlərin azaldılması məqsədilə nazirlər səviyyəsində silsilə konfranslar və görüşlər keçiriblər və bu sahələrdə bir sıra məsələləri müzakirə ediblər. Orta dəhliz regional güc mərkəzi statusunu artıracağını vəd edir, buna görə də onun keçdiyi Mərkəzi Asiya ölkələri, məsələn, Qazaxıstan, Özbəkistan, Türkmənistan, Qırğızıstan, dəhlizlə birləşəcək öz dəmir yollarını qurmağa çalışırlar.

Çin üçün Orta dəhlizə maraq beynəlxalq bazarlara çıxış əldə etmək və Moskva ilə Pekin arasında uzun müddətdir rəqabətin müşahidə olunduğu Mərkəzi Asiya regionunda nüfuzunu artırmaq imkanlarına əsaslanır.

Çinin «Bir kəmər - bir yol» təşəbbüsü ölkənin xarici siyasətində prioritetdir. Bu təşəbbüs çərçivəsində Çin Orta Yol layihəsinin infrastrukturunun inkişafına sərmayə qoyur. Çin üçün dəmir yolu transkontinental dəhliz geostrateji əhəmiyyət daşıyır. Bu, dar Malakka boğazından asılılığı azaldır, bu da ABŞ və onun peykləri ilə bağlana bilər, Çini Hind okeanı və Avropadan kəsir. Buna görə də Çin Avropa ilə dəmir yolu əlaqəsinin yaradılmasına və inkişafına böyük töhfə verib. Pekin əvvəlcə zərərli olan dəmir yolu ilə yüklərin göndərilməsini subsidiyalaşdırdı. Əgər 2011-ci ildə cəmi 11 qatar işə salınıbsa, ötən il Çin və Avropa arasında hər iki istiqamətdə 16 min qatar keçib. Pekin Avropa biznesini dəmir yolu marşrutunun nəinki daha sürətli, etibarlı, sabit və təhlükəsiz olduğuna öyrətdi. Pandemiya və karantin tədbirləri zamanı dəniz marşrutu daha etibarlı və demək olar ki, ucuzlaşıb. Ən təsirli dəhliz şimal dəhlizi oldu. Lakin eyni zamanda Çin cənub marşrutunu da sınaqdan keçirdi və müharibənin başlamasından xeyli əvvəl. Buna görə də, Orta Dəhlizi Şimal kimi etibarlı və sürətli etməyin ən yaxşı (və bəlkə də yeganə) yolu Çin təchizatçıları tərəfindən marşruta tələbatı artırmaqdır [1].

Çin və Qazaxıstan sərhədində yerləşən geniş dəmir yolu keçid mərkəzi olan Horgos Qapısının tikintisi və Horgos - Şərqi Qapı xüsusi iqtisadi zonasının maliyyələşdirilməsi infrastrukturun inkişafına misal ola bilər. Aydındır ki, Pekinin nöqteyi-nəzərindən Rusiyanın üstünlük təşkil etmədiyi (Şimal dəhlizində olduğu kimi) və ABŞ-ın birbaşa müdaxilə edə bilmədiyi (ənənəvi dəniz yolunda olduğu kimi) ticarət marşrutunun mövcudluğu Çin üçün strateji əhəmiyyət kəsb edir [1].

Təhlükəsizliyin artırılması və tranzit vaxtının azaldılması ilə yanaşı, Orta Dəhlizdən istifadə əmək miqrasiyasının ümumi mövzu olduğu bütün Mərkəzi Asiyada iqtisadi imkanları yaxşılaşdırmağa kömək edə bilər. Rusiyanın Ukraynaya genişmiqyaslı işğalından sonra da Orta Asiyadan bir milyondan çox əmək miqrantı Rusiyaya köçdü. Özbəkistan kimi Mərkəzi Asiya dövlətləri əmək miqrasiyasının istiqamətlərini şaxələndirmək üçün yollar axtarır. Avropa İttifaqının və müxtəlif beynəlxalq qurumların yeni investisiyaları bütün Mərkəzi Asiya və Qafqaz üzrə əmək miqrasiyasının dövriyyəsi üçün bir yol təklif edə bilər, bütün marşrut üzrə daha böyük ölkələrarası əməkdaşlığı təşviq edir.

Azərbaycan Orta dəhliz layihəsinin mühüm aktoru kimi

Azərbaycan coğrafi cəhətdən «Şimal-Cənub» və «Şərq-Qərb» ən böyük beynəlxalq nəqliyyat dəhlizlərinin kəsişməsində yerləşir. Ölkə ərazisindən digər MTK-lar da keçir: «Cənub-Qərb» (Aİ - Hindistan), «Şimal-Qərb» (RF - Aralıq dənizi ölkələri), həmçinin gələcəkdə «Şimal-Cənub» və «Şərq-Qərb» dəhlizlərinin inkişafına təkan verən Zəngəzur dəhlizi.

Azərbaycanın öz ərazisindən keçən dəhlizlərin bərabər inkişafı şərti ilə beynəlxalq nəqliyyat mərkəzinə tam miqyaslı çevrilməsi potensialı var. Lakin bunun üçün infrastrukturun modernləşdirilməsi və inkişafı, normativ-hüquqi bazanın təkmilləşdirilməsi və uyğunlaşdırılması, logistika sahəsinin inkişafı, o cümlədən logistika mərkəzlərinin yaradılması zəruridir. 2020-ci il 44 günlük müharibəsinin və 2023-cü il yerli antiterror tədbirlərinin nəticələrinə əsasən ərazi bütövlüyünün bərpasından sonra Azərbaycanın böyük regional və beynəlxalq layihələrin həyata keçirilməsi üçün yeni imkanlar yaranıb. Belə ki, artıq azad edilmiş ərazilərdə dəmir yolu və avtomobil nəqliyyatının bərpası istiqamətində işlər aparılır. Zəngəzur dəhlizinə gəlincə, onun istifadəyə verilməsi Azərbaycanla Türkiyə arasında birbaşa yerüstü əlaqə yaradacaq, bu isə Aİ və Mərkəzi Asiya ölkələri arasında ticarət dövriyyəsini artıracaq. «Azərbaycan Respublikası ərazisindən keçən beynəlxalq nəqliyyat dəhlizlərinin tranzit potensialının artırılması və tranzit yükdaşımaların inkişafı üzrə 2024-2026-cı illər üçün Fəaliyyət Planına» əsasən ölkə ərazisindən yük axını 2022-ci ilin göstəriciləri ilə müqayisədə 27% artmalıdır. Hazırda azad edilmiş ərazilərdə yol infrastrukturunun tikintisinə xüsusi diqqət yetirilir [8].

Hacıqabul-Mincivan-Zəngəzur dəhliz avtomobil yolundan başlayaraq Şuşa şəhərinə qədər davam edən «Qələbə yolu», uzunluğu 123,6 km olan Horadiz-Cəbrayıl-Zəngilan-Ağbənd (Zəngəzur dəhlizi) avtomobil yolunun tikintisi də demək olar ki, istismara verilib Azərbaycan və Naxçıvan Muxtar Respublikasını Zəngəzur dəhlizi ilə birləşdirəcək Horadiz-Ağbənd dəmir yolunun tikintisi başa çatıb, davam etdirilir.

Dəniz nəqliyyatı da inkişaf edir. Bakı Beynəlxalq Dəniz Ticarət Limanı 2018-ci ildən istifadəyə verilmişdir. Hazırda limanın ikinci mərhələsinin açılması planlaşdırılır.

Dünya Bankının Orta dəhlizin fəaliyyəti haqqında hesabatında qeyd olunub ki, 2022-ci ildə Azərbaycan tərəfinin ixracı 72% artıb ki, bu da əsasən faydalı qazıntıların ixracına səbəb olub. Eyni dövrdə qeyri-mineral malların ixracı 50% artdı [8].

Rəqəmsallaşma prosesi nəqliyyat-logistika sahəsinin inkişafında xüsusi yer tutur. Belə ki, 2021-ci ildə Azərbaycanın Rəqəmsal İnkişaf və Nəqliyyat Nazirliyi və Asiyada Əməkdaşlıq və Etimad Tədbirləri üzrə Müşavirə «Nəqliyyat-logistika əməliyyatlarının rəqəmsallaşdırılmasının gücləndirilməsi istiqamətində əməkdaşlığın təşviqi» mövzusunda xüsusi tədbir keçirib və burada nəqliyyat və logistikanın rəqəmsallaşdırılması sahəsində əməkdaşlıq imkanlarını müzakirə ediblər.

2022-ci ildə Azərbaycan İnnovasiya və Elm Nazirliyinin İdarəetmə Sistemləri İnstitutunun və Özbəkistan Daşkənd Dövlət Nəqliyyat Universitetinin ekspert qrupları arasında Orta Dəhliz çərçivəsində rəqəmsallaşdırma layihəsi hazırlanmağa başlayıb.

2023-cü ildə Azərbaycanın Rəqəmsal İnkişaf və Nəqliyyat Nazirliyi müqavilələrin imzalanması prosesindən tutmuş nəqliyyat növünün seçilməsinə qədər nəqliyyat-logistika sahəsində bütün proseslərin rəqəmsallaşdırılması layihəsini təqdim edib. Layihə 2024-cü ildə həyata keçirilməlidir.

Azərbaycan tərəfindən dəhlizin inkişafı çərçivəsində ölkənin öz vəsaiti hesabına böyük işlər görülüb, o cümlədən infrastrukturun inkişafı və modernləşdirilməsi, dəmir yollarının və avtomobil yollarının tikintisi və təmiri. Kifayət qədər böyük həcmdə yük qəbul edə və malların sürətli hərəkətini təmin edə bilən Bakı limanı tikilib. Xəzər dənizində Azərbaycan tərəfdən iri logistika donanması yaradılıb.

Azərbaycan üçün tam hüquqlu nəqliyyat mərkəzinə çevrilmək təkcə iqtisadi cəhətdən sərfəli addım deyil, strateji hədəfə çevrilib. Söhbət gəlirlərin neft sektorundan asılılığının azaldılmasından, həmçinin milli təhlükəsizliyin təmin edilməsindən gedir.

Azərbaycan və Mərkəzi Asiya ölkələri arasında əməkdaşlıq kontekstində Orta dəhliz də əhəmiyyətli rol oynayır. Türk dünyası ölkələri arasında həm TDT çərçivəsində, həm də ikitərəfli formatda əməkdaşlıq inkişaf edir. Bu kontekstdə Azərbaycan Qərb və Mərkəzi Asiya ölkələri arasında birləşdirici həlqəyə çevrilib. Özbəkistan (avqust 2023) və Qazaxıstan (mart 2024) dövlət başçılarının Azərbaycana rəsmi səfərləri təsdiqidir. Bu səfərlərin əhəmiyyəti onunla müəyyən edilir ki, onlar ölkələrin infrastruktur və ticarət əməkdaşlığı məsələlərində ilkin inkişaf mərhələsinə müəyyən xətt çəkirlər. Məlum səbəblərə görə «Orta dəhliz» - Bakıdan Gürcüstana və Türkiyəyə gedən transxəzər ticarət marşrutu ideyası onun əsasını təşkil edir. "Resurslarla yanaşı, hazırda bütün dünyada məhz nəqliyyat-logistika imkanlarına çıxış uğrunda mübarizə kəskinləşir. Bu strateji sahədir. Sevindirici haldır ki, həm Qazaxıstan, həm də Azərbaycan burada təbii tərəfdaş kimi sıx əməkdaşlıq edir. Və bu gün Sian limanından Qazaxıstan ərazisi ilə Azərbaycana dəmir yolu marşrutunun açılış mərasimi çox şeydən danışır", - deyə Azərbaycan Prezidenti İlham Əliyev Qazaxıstan Prezidenti Kasım-Jomart Tokayevin Bakıya səfəri zamanı keçirdiyi mətbuat konfransında bildirib. [11] 2022-ci il aprelin 13-də Çinin Sian şəhərindən idman qatarı ilə yola düşüb mal. Beləliklə, Siyandan Almaniyanın Mannheim şəhərinə Qazaxıstan, Azərbaycan, Gürcüstan və Qara dəniz boyunca Rusiya ətrafında dəmir yolu qatarlarının hərəkəti başladı [12].

Orta dəhliz kifayət qədər çox sayda ölkəni əhatə edir və infrastrukturun inkişaf səviyyəsi, rəqəmsallaşma səviyyələri, dəmir yollarının ötürmə qabiliyyəti arasındakı fərqlərə görə ticarət dövriyyəsi səmərəli və sürətlə baş verə bilər.

Azərbaycan ölkə ərazilərinin çoxillik işğalına və kifayət qədər uzun və nəticəsiz danışıqlar prosesinə baxmayaraq, nəqliyyat-logistika sahəsinin inkişafına xeyli səy göstərib. Ərazi bütövlüyü bərpa edildikdən sonra ölkə hakimiyyəti azad edilmiş ərazilərdə tikinti işlərinin başlanmasına birdən-birə müdaxilə edib.

Zəngəzur dəhlizinin açılması Azərbaycan üçün mühüm vəzifəyə çevrilib, çünki onun istifadəyə verilməsi Azərbaycanla Türkiyə arasında birbaşa quru əlaqəsi yaradacaq, həm regional inkişaf kontekstində, həm də Orta dəhlizin inkişafı kontekstində mühüm rol oynayacaq.

Orta dəhliz layihəsinin həyata keçirilməsi yolunda Azərbaycan əsasən öz vəsaiti hesabına böyük işlər görmüşdür. Lakin dəhlizin inkişafı yolunda həllini tələb edən bir çox vəzifələr var:

- yükdaşımaların dəyərinin aydınlığının və proqnozlaşdırılmasının təmin edilməsi

- malların yerini yoxlamaq imkanı

- sənədləşmə də daxil olmaqla bütün proseslərin rəqəmsallaşdırılması, vahid logistika mərkəzlərinin yaradılması

- layihənin inkişafı üçün özəl sektorun, eləcə də investisiyaların işə cəlb edilməsi.

Avropa İttifaqının Transxəzər Beynəlxalq Nəqliyyat Marşrutu mövqeyi

Orta dəhliz mövzusu Transxəzər beynəlxalq nəqliyyat marşrutunu geosiyasi layihə hesab edən Avropa İttifaqının diqqət mərkəzində qalır.

2023-cü ildə «Orta dəhliz» mövzusu bir çox yüksək səviyyəli platformalarda geniş müzakirə edilmişdir. O cümlədən G7 sammitində və Ümumdünya İqtisadi Forumunda. Orada Böyük Britaniya və ABŞ da daxil olmaqla Qərb ölkələrinin nümayəndələri layihəyə investisiyalarla dəstək verməyə hazır olduqlarını bildiriblər. G7 sammitində 2027-ci ilə qədər "Orta dəhliz 'in inkişafına 600 milyard dollar ayırmaq barədə razılığa gəldilər [2].

Brüsseldə Avropa İttifaqı, Mərkəzi Asiya, Qafqaz və Türkiyədən hökumət, maliyyə qurumları, biznes və vətəndaş cəmiyyəti nümayəndələrinin iştirakı ilə Global Gateway investisiya forumu keçirilmişdir. Avropa Komissiyası və Avropa İnvestisiya Bankı strateji nəqliyyat infrastrukturu obyektlərinə investisiya qoymağa hazırdır. "Uzunluğu 11 min km olan nəqliyyat dəhlizi regionlarımızı 15 gün və ya daha az müddətə birləşdirməlidir. Biz bu dəhlizi rəqabətə davamlı etməliyik. Biz konkret nəticələr əldə etmək niyyətindəyik. Buna görə də Avropa Komissiyası və Avropa İnvestisiya Bankı Mərkəzi Asiyanın nəqliyyat imkanlarına 1,5 milyard avro sərmayə qoymaq niyyətindədir. Daha sonra qarşılıqlı anlaşma haqqında müvafiq memorandumlar imzalanacaq", - deyə Avropa Komissiyası sədrinin müavini, ticarət məsələləri üzrə komissar Valdis Dombrovskis bildirib. Bundan əlavə, AİB Qazaxıstanla artıq həyata keçirilən nəqliyyat layihələrinə 1,5 milyard avro ayrılması barədə saziş imzalayıb [2].

Dombrovskisin qeyd etdiyi kimi, Avropa İttifaqı "Transxəzər Beynəlxalq Nəqliyyat Marşrutu 'na 20 milyard avro sərmayə qoyur, uzunmüddətli perspektivdə isə söhbət ictimai və özəl investisiyalardan 2027-ci ilə qədər yığılması planlaşdırılan 300 milyard avro həcmində təsirli məbləğdən gedir.

Siyasi baxımdan aydındır ki, Avropa İttifaqı öz layihəsi ilə Mərkəzi Asiyaya Rusiyadan yan keçmək üçün yeni yollar axtarır. Digər tərəfdən, Azərbaycan, Gürcüstan və Türkiyə öz coğrafi mövqelərindən Mərkəzi Asiya ərazisindən yüklərin tranzitçisi kimi istifadə edə biləcəklər. Bu gün ölkələr arasında «Bakı - Tbilisi - Qars» dəmir yolu layihəsi fəaliyyət göstərir və artıq Qazaxıstan vasitəsilə daşınan Çin yükləri onunla hərəkət edir. Avropa layihəsində iştirak yalnız bu dövlətlərin Aİ üçün əhəmiyyətini

artıracaq. Gürcüstan - bu, onun avrointeqrasiyaya olan ümidlərinə, Türkiyə - investorların etimadını bərpa etmək və lirə böhranını söndürmək üçün, Azərbaycana isə avroquruculuqların anti-Azərbaycan hücumlarını dayandırmaq üçün lazımdır.

Nəticə

Beləliklə, beynəlxalq münasibətlərin qeyri-sabitliyi şəraitində Orta dəhliz hazırda Avropa İttifaqının Rusiyaya tətbiq etdiyi sanksiyalarla əlaqədar fəaliyyət göstərən Şimal Ticarət Yolunun yeganə alternatividir. Bu layihənin bir sıra üstünlükləri var, məsələn, Orta Asiya ölkələrindən və Çindən Avropaya malların daha sürətli daşınması təmin edilir ki, bu da cəmi 12 gündür, Şimal dəhlizi ilə ən azı 19 gün çəkir.

Lakin malların Orta dəhliz boyunca daşınması prosesində bir sıra çətinliklər var. Bu çətinliklər ilk növbədə nəqliyyat yolunun çoxlu sayda ölkələrin ərazisindən keçməsi ilə bağlıdır ki, bu da daşınma prosesini maliyyə baxımından kifayət qədər bahalı edir, çünki gömrük rüsumlarını ödəmək lazımdır. Bundan əlavə, marşrutun bir hissəsi Xəzər dənizindən keçir və burada tankerlər vasitəsilə daşımaq lazımdır.

Bu nəqliyyat marşrutunun gələcək inkişaf perspektivlərinə nəzər salsaq, demək olar ki, geosiyasi liderlər dəyişə bilər. Mərkəzi Asiya regionunda nüfuz uğrunda mübarizədə Çin bu marşrutun yaradılmasının təşəbbüskarlarından biri kimi qalib gələcək. Eyni zamanda, bu marşrut Rusiyaya Avropa İttifaqının sanksiya siyasətindən yan keçməyə və ticarətin bərpası və yeni bazarların axtarışı üçün Orta Marşrutdan istifadə etməyə kömək edə bilər.

Təhlükəsizliyin artırılması və tranzit vaxtının azaldılması ilə yanaşı, Orta Dəhlizdən istifadə əmək miqrasiyasının ümumi mövzu olduğu bütün Mərkəzi Asiyada iqtisadi imkanları yaxşılaşdırmağa kömək edə bilər. Rusiyanın Ukraynaya genişmiqyaslı işğalından sonra da Orta Asiyadan bir milyondan çox əmək miqrantı Rusiyaya köçdü. Özbəkistan kimi Mərkəzi Asiya dövlətləri əmək miqrasiyasının istiqamətlərini şaxələndirmək üçün yollar axtarır. Avropa İttifaqının və müxtəlif beynəlxalq qurumların yeni investisiyaları bütün Mərkəzi Asiya və Qafqaz üzrə əmək miqrasiyasının dövriyyəsi üçün bir yol təklif edə bilər, bütün marşrut üzrə daha böyük ölkələrarası əməkdaşlığı təşviq edir.

İqtisadi imkanları artırmaqla yanaşı, Orta Dəhliz üzrə daşımaların həcminin artırılması daşımalarla bağlı tranzit rüsumlarından əldə edilən gəlirləri artıracaq. 2021-ci ildə Misir Süveyşdən keçən yük gəmilərindən tranzit ödənişlərindən 6,3 milyard dollar qazanıb. Bu rekord rəqəmlər koronavirus pandemiyası və Ever Given yük gəmisi tərəfindən altı günlük kanal blokadasına baxmayaraq əldə edilmişdir. Süveyşdən keçən həcm Orta Dəhlizin gözlənilən tutumundan dəfələrlə çox olsa da, Orta Dəhliz üzrə həcmin artması layihədə iştirak edən bütün ölkələr üçün sabit gəlir axını təmin edərdi.

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AÇIK KAYNAK İLE SİBER TEHDİT ALGILAMA VE OLAY YANIT OTOMASYONU

İslam YENER

Öğrenci/Nişantaşı Üniversitesi
E-mail: islamyener@gmail.com
ORCID ID: 0009-0002-1797-9414)
Ezgi DEMİR

Doç.Dr./Nişantaşı Üniversitesi
E-mail: dr.ezgidemir34@gmail.com
ORCID ID: 0000-0002-7335-5094

Özet

Giderek hızlanan siber saldırı vektörleri, artan alarm hacmi ve güvenlik analistlerinin iş yükünü azaltma gereksinimi, güvenlik operasyonlarında otomasyonun kritik önemini ortaya koymaktadır. Bu çalışma, açık kaynaklı siber tehdit algılama araçlarının etkinliğini artırarak olay yanıt süreçlerini otomatikleştirilmiş bir analiz katmanı ile güçlendirmeyi amaçlamaktadır. Bu kapsamda, Suricata gibi yüksek performanslı açık kaynaklı Saldırı Tespit Sistemlerinden (IDS) gelen alarmlar, Karmaşık Olay İşleme (CEP) motoru kullanılarak korelasyon senaryolarına tabi tutulur. Çalışmanın temel amacı, IDS'lerin ürettiği aşırı ve hatalı alarm yükünü azaltmak için alarm korelasyonunu otomatikleştirilmiş bir analiz adımı olarak kullanmaktır. Geliştirilen yöntemde, korelasyon sonuçları, İşletim Sistemi (OS) düzeyindeki log kayıtları ve nesne bağımlılıkları ile otomatik olarak doğrulanarak yanlış pozitif (False Positive) oranını sıfıra yaklaştırmak hedeflenmiştir. Deneysel bulgular, İşletim Sistemleri logları (OS logları) ile desteklenmiştir. Korelasyon yöntemi ile, yalın korelasyonda görülen yanlış ilişkilendirmelerin büyük bir çoğunluğunu eleyerek, gerçek saldırı senaryosunu doğru ve temiz bir şekilde gösteren bir Saldırı Korelasyon Grafiği (ACG) elde edilmesini sağladığını göstermiştir. Bu açık kaynak entegrasyon modeli (Suricata + CEP + OS Logları), alarm analizini otomatikleştirmiş ve olayın gerçekliğinden emin olmayı sağlayan güvenilir bir Otomatik Analiz katmanı sunmaktadır.

Keywords: Siber güvenlik, olay yanıt otomasyonu, açık kaynak kullanımı

GİRİŞ

Günümüzün dijitalleşen dünyasında siber saldırıların sayısı ve karmaşıklığı hızla artmaktadır. Bu durum, kurumların güvenliğini sağlamak için geleneksel savunma mekanizmalarının (güvenlik duvarları, antivirüs yazılımları) ötesine geçen dinamik ve proaktif güvenlik çözümlerini zorunlu kılmaktadır. Saldırı Tespit Sistemleri (Intrusion Detection System, IDS), ağ ve uç nokta düzeyinde potansiyel tehditleri belirleme noktasında kritik bir rol oynamaktadır. Özellikle Suricata gibi açık kaynaklı IDS araçları, yüksek performanslı ve maliyet etkin çözümler sunarak geniş bir kullanım alanına sahiptir.

Ancak, modern tehdit ortamında saldırı vektörlerinin hızlanması, güvenlik analistlerinin manuel olarak yönetebileceği alarm hacminin çok ötesine geçmiştir. Artan alarm hacmi ve analistlerin iş yükünü azaltma gereksinimi, güvenlik operasyonlarında otomasyonu (SOAR, Security Orchestration, Automation, and Response - Güvenlik Orkestrasyonu, Otomasyon ve Yanıt) zorunlu kılmaktadır. Geleneksel IDS'ler tarafından üretilen aşırı alarm yükü, analistlerin kritik olaylara odaklanmasını zorlaştırmakta ve yanlış pozitif (False Positive) alarmlar nedeniyle büyük bir zaman kaybına neden olmaktadır.

Bu alarm yükünü yönetmek ve ilişkili olayları anlamlandırmak için literatürde Alarm Korelasyonu ve Karmaşık Olay İşleme (Complex Event Processing ,CEP) motorları kullanılmaktadır. Alarm korelasyonu, birbirinden bağımsız görünen IDS alarmlarını; zaman, kaynak ve hedef bilgisi gibi kriterlere göre birleştirerek mantıksal bir Saldırı Senaryosu Hipotezi oluşturur. Bu hipotezler, saldırının aşamalarını gösteren Saldırı Grafikleri (Attack Graphs) oluşturulmasına olanak tanır.

Ancak, mevcut korelasyon yöntemlerinin çoğu, yalnızca ağ trafiği ve IDS verilerine dayanmaktadır. Bu sınırlılık, korelasyon sonuçlarının güvenilirliğini düşürmektedir. Bir IDS'in alarm üretmesi, saldırının yalnızca girişim aşamasında olduğunu gösterir; ancak saldırının hedef sistem üzerinde gerçekten başarılı olup olmadığını doğrulayamaz. Bu durum, yanlış korelasyonlar (False Correlation) ve sonuç olarak yüksek oranda yanlış pozitifler (False Positive) üretilmesine yol açar. Bu da otomatik yanıt süreçlerinin yanlış bir olaya tetiklenmesi riskini beraberinde getirmektedir.

Bu çalışmanın temel amacı, alarm korelasyonunun güvenilirliğini artırarak siber olay yanıt otomasyonu için güvenilir bir Otomatik Analiz Katmanı oluşturulmasıdır. Çalışmamız, geleneksel IDS alarm korelasyonu modelindeki doğrulama eksikliğini gidermeyi hedeflemektedir.

Bu bağlamda, bu çalışmanın ana katkısı aşağıdaki gibi sıralanabilir:

- **Açık Kaynak Entegrasyonu:** Tehdit tespitinde Suricata gibi yüksek performanslı açık kaynak araçlarının etkinliğinin, CEP (Coral8 veya muadili) tabanlı korelasyon ile birleştirilmesi.

- **Çok Katmanlı Otomatik Doğrulama:** Korelasyon motorunun ürettiği saldırı hipotezlerinin, yalnızca ağ verilerine değil, aynı zamanda hedeflenen sistemden alınan İşletim Sistemi (OS) düzeyindeki log kayıtları (süreç çalıştırma, dosya sistemi erişimi, nesne bağımlılıkları) ile otomatik olarak doğrulanması.

- **Hatalı Korelasyonların Eliminasyonu:** OS logları ile desteklenen bu entegre doğrulama yöntemi sayesinde, IDS'lerin ürettiği aşırı ve hatalı alarm yükünü azaltmak ve yanlış pozitif oranını sıfıra yaklaştırmaktır.

Elde edilen deneysel bulgular, bu entegrasyon modelinin, yalın korelasyon yöntemlerinin aksine, olayın gerçekliğini kesin olarak teyit eden temiz ve güvenilir bir analiz sonucu ürettiğini göstermektedir.

YÖNTEM

Bu çalışma, siber tehdit algılama süreçlerinde alarm analizi doğruluğunu artırmak ve olay yanıt otomasyonunun temelini oluşturmak amacıyla açık kaynak tabanlı, üç aşamalı bir otomatik analiz mimarisi önermektedir. Mimari, ağ düzeyinde tehdit algılama, olay korelasyonu ve İşletim Sistemi (OS) düzeyinde otomatik doğrulama bileşenlerinden oluşmaktadır.

1. Deneysel Ortam Mimarisi (Architecture)

Geliştirilen yöntem, bir Saldırı Alarm Korelasyon Sunucusu (Intrusion Alert Correlation Server) üzerinde test edilmiştir.

- **Platform:** Sunucu, Snort IDS ve Coral8 Korelasyon Motorunu barındıran Ubuntu 9.04 işletim sisteminde çalıştırılmıştır.
- **Log Entegrasyonu:** Snort'tan gelen alarmlar (csv_alert.csv) ve Ubuntu 9.04 sistem logları (syslogFormatted.csv), Coral8 Korelasyon Motoruna entegre edilmiştir.
- **Hedef Hizmet:** Saldırı tespiti için sunucuda, zafiyetleri loglayabilmek ve saldırı tespiti yapabilmek amacıyla Samba 3.0 dosya ve yazıcı paylaşım hizmeti çalıştırılmıştır.

Bu mimaride temel amaç, farklı kaynaklardan (ağ trafiği ve sistem kayıtları) elde edilen verileri birleştirerek alarm doğruluğunu yükseltmektir.

2. Üç Aşamalı Otomatik Analiz Modeli

Tehdit analizi ve yanıt sürecinin otomatikleştirilmesi, Tablo 1. de detayları verilen üç ardışık aşama üzerinden gerçekleştirilmiştir

Tablo 1: Tehdit Analizi

Aşama	Bileşen/Araç	İşlev	Kaynak
Algılama	Suricata (IDS)	1. Deneysel Ortam Mimarisi (Architecture) Geliştirilen yöntem, bir Saldırı Alarm Korelasyon Sunucusu (Intrusion Alert Correlation Server) üzerinde test edilmiştir. Platform: Sunucu, Snort IDS ve Coral8 Korelasyon Motorunu barındıran Ubuntu 9.04 işletim sisteminde çalıştırılmıştır. Log Entegrasyonu: Snort'tan gelen alarmlar (csv_alert.csv) ve Ubuntu 9.04 sistem logları (syslogFormatted.csv), Coral8 Korelasyon Motoruna entegre edilmiştir. Hedef Hizmet: Saldırı tespiti için sunucuda, zafiyetleri loglayabilmek ve saldırı tespiti yapabilmek amacıyla Samba 3.0 dosya ve yazıcı paylaşım hizmeti çalıştırılmıştır. Bu mimaride temel amaç, farklı kaynaklardan (ağ trafiği ve sistem kayıtları) elde edilen verileri birleştirerek alarm doğruluğunu yükseltmektir. 2. Üç Aşamalı Otomatik Analiz ModeliTehdit analizi ve yanıt sürecinin otomatikleştirilmesi, aşağıda detayları verilen üç ardışık aşama üzerinden gerçekleştirilmiştir	Ağ Trafiği
Korelasyon	Coral8 CEP Engine	Suricata alarmlarını, önkoşul/sonuç ve zaman bazlı sorgularla otomatik olarak gruplayarak Saldırı Senaryosu Hipotezi oluşturur.	IDS Alarmları
Otomatik Doğrulama	OS Log Kayıtları ve Nesne Takibi	Korelasyon hipotezlerinin, İşletim Sistemi düzeyinde (süreç, dosya, ağ) gerçekleşen aktivitelerle karşılaştırılmasını sağlar.	OS Logları

2.1 Agılama Bileşeni: Suricata

Suricata, açık kaynaklı, yüksek performanslı bir Saldırı Tespit/Önleme Sistemidir (IDS/IPS). Temel özellikleri, otomasyon mimarisi için uygun bir veri kaynağı olmasını sağlamaktadır:

- **Paralel İşleme (Multi-threading):** Birden fazla CPU çekirdeğini eş zamanlı kullanarak paket işleme performansını en üst düzeye çıkarır.

- **Protokol Tanıma:** Uygulama Katmanı Protokolü (ALP) tanıma yeteneği ile derin paket incelemesi yapar.

- **Çıktı Entegrasyonu:** Standart JSON/Eve formatında çıktılar üreterek Coral8 gibi otomasyon sistemlerine kolayca entegre edilebilir.

2.2 Korelasyon Bileşeni: Coral8 CEP Motoru

Korelasyon, saldırı alarmları arasındaki ilişkileri, yani bir saldırının sonucunun sonraki bir saldırının önkoşulunu oluşturup oluşturmadığını keşfetmeye odaklanır. Coral8 CEP (Karmaşık Olay İşleme) Motoru, bu korelasyon mantığını çalıştırmak için kullanılmıştır.

Coral8, sürekli sorguları çalıştıran ve veri akışlarını analiz eden bir sistemdir. Bu çalışmada, IDS alarmlarını korele eden SQL tabanlı sorgu ifadesi Şekil 1. de verilmiştir:

Şekil 19: IDS Alarmlarını Korele Eden SQL Sorgusu

Şekil 1. de ki sorgu, bir önceki alarmın sonuç kümesi (ExpandedConseqSet) ile sonraki alarmın önkoşul kümesinin (PrereqSet) ortak özniteliklerini paylaştığı ve zaman sırasına uyduğu durumları tespit ederek bağlantılı saldırı senaryolarını bulur.

2.3 Otomatik Doğrulama: OS Log Kayıtları ile Güçlendirme

Yalnızca IDS alarmları ve geleneksel korelasyon, yüksek oranda yanlış korelasyon (False Positive) içerebilir. Bu problemi çözmek için, Korelasyon hipotezinin doğruluğu İşletim Sistemi (Operating System, OS) Logları ile karşılaştırılarak sıfıra yakın yanlış pozitif oranı hedeflenmiştir.

- **Doğrulama Mekanizması:** Korelasyon hipotezinde T_{1} olayının sonucunun (T_{1}'in sonucu olan nesnenin) gerçekten de T_{2} olayının önkoşulunda kullanılıp kullanılmadığı OS loglarından kontrol edilir.

- **Nesne Takibi:** Ubuntu 9.04 üzerinde süreç (process) ve dosya (file) gibi OS düzeyindeki nesneler ve bunların bağımlılık ilişkileri (process forking, file reading vb.) izlenmiştir.

- **Yanıtı Tetikleme:** Bu OS düzeyindeki doğrulama, ancak doğru olduğu kanıtlanan alarmlar için bir sonraki Otomatik Yanıt adımını (örneğin, güvenlik duvarına engelleme kuralı gönderme) tetikler.

BULGULAR

Bu bölümde, OS düzeyinde doğrulama ile entegre alarm korelasyon mimarisinin etkinliğini kanıtlamak amacıyla tasarlanan deneysel senaryonun kritik sonuçlarının anlatılması hedeflenmektedir.

1. Deneysel Senaryo ve Üretilen Alarmlar

Deneysel ortamda, zafiyetli Samba 3.0 servisini barındıran bir sunucu hedef alınmıştır. Senaryo, uzaktan erişim zafiyeti sömürüsü, kötü amaçlı DDoS(Distributed Denial of Service) yazılımının yüklenmesi ve saldırı başlatılması adımlarını içermiştir.

2. Yalın Korelasyonun Sınırlılığı (Bulgu 1)

Sadece IDS alarmları ve geleneksel önkoşul-sonuç mantığı kullanılarak yapılan ilk korelasyon uygulamasında, elde edilen korelasyon grafiği senaryo dışı birçok yanlış korelasyon ilişkisi (False Correlation) gösterdi. Bu sonuç, IDS alarmlarının yüksek yanlış pozitif oranı nedeniyle yalnızca ağ tabanlı verilere güvenmenin, saldırının gerçekliğini ve bağlamını anlamada yetersiz kaldığını göstermiştir. Bu durum, analistlere hatalı bir saldırı stratejisi resmi sunar.

3. OS Logları ile Otomatik Doğrulamanın Etkisi (Bulgu 2)

Yanlış korelasyonları gidermek amacıyla, Korelasyon Hipotezleri OS düzeyindeki log kayıtları ve nesne bağımlılıkları ile otomatik olarak doğrulanmıştır. Bu süreçte, kritik alarmlara karşılık gelen OS-düzeyi nesneler (süreç ID'leri, dosyalar) tespit edilmiştir.

Doğrulama, önceki alarmın sonuç nesnesinden (örneğin, bir shell süreci) sonraki alarmın önkoşul nesnesine (örneğin, DDoS daimonu süreci) bir bağımlılık yolu olup olmadığını kontrol etmiştir.

- Sonuç: Bu doğrulama adımı sonrasında, yanlış korelasyonların büyük bir çoğunluğu elenmiştir. Elde edilen yeni Saldırı Korelasyon Grafiği (ACG), gerçek saldırı adımlarını temiz ve doğru bir şekilde yansıtmıştır.

- Kanıt: Bu başarı, önerilen mimarinin yanlış pozitif oranını önemli ölçüde azalttığını ve olay yanıt otomasyonu için kritik öneme sahip güvenilir bir Otomatik Analiz katmanı sunduğunu kanıtlamıştır.

TARTIŞMA VE SONUÇ

Siber tehdit algılama ve olay yanıt otomasyonunda, Suricata gibi açık kaynak araçlarının kullanılması ve alarm korelasyonunun OS logları ile otomatik doğrulanması, sistemin verimliliğini kritik düzeyde artırmaktadır. Bu model, analist müdahalesine gerek kalmadan, alarmların güvenilirliğini doğrulayan ve olayın gerçekliğinden emin olmayı sağlayan güvenilir bir Otomatik Analiz katmanı sunar. Deneysel sonuçlar, OS düzeyinde bağımlılık takibinin alarm korelasyon yöntemiyle entegre edildiğinde yanlış korelasyonları önemli ölçüde azaltabileceğini kanıtlamıştır. Gelecek çalışmalarda bu güvenilir analiz katmanı üzerine, Tam Otomatik Yanıt (Full SOAR) senaryolarının (örneğin, doğrulanan saldırgan IP'lerini otomatik olarak Firewall/WAF'ta engelleme) inşa edilmesi planlanmaktadır.

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MAKROİQTİSADİ QEYRİ-SABİTLİK VƏ İNFİLYASİYANIN TƏNZİMLƏNMƏSİ

Vahid Hacıbəy oğlu Abbasov

i.e.d., professor, Bakı Dövlət Universiteti, İqtisadiyyat kafedrası

E-mail: vahid.abbasov.56@mail.ru

Orcid: 0009-0009-3313-0665

Təhminə Hamlet qızı Səfərli

Doktorant, Bakı Dövlət Universiteti, İqtisadiyyat kafedrası

E-mail: tahminabdu@gmail.com

Xülasə

Məqalədə bazar fəaliyyətinin qarşılıqlı təsiri nəticəsində makroiqtisadi qeyri-sabitliyin yaranmasına, mikroiqtisadi səviyyədə tələb və təklifin dəyişməsi ilə bütün bazarlarda qiymətlərə və satış həcminə birbaşa təsir etməyə başlayan daxili və xarici amillərin təsir maxanizləri açıqlanır. Makroiqtisadi qeyri-sabitliklərin aradan qaldırılması üçün qisa, orta və uzunmüddətli dövrlərdə geniş təkrar istehsalın davamlı inkişaf şərtlərinə əməl olunmasını nəzərdə tutan stabil, dinamik xərclər və gəlirlər siyasətinin formalaşdırılması, əmtəə və xidmətlər bazarında lazımi istehlak məhsullarının əldə olunması, maddi, maliyyə və insan resurslarından məqsədəyönlü istifadə edilməsi məsələlərinə diqqət yetirilir. Xarici investisiyaları cəlb edilməsi başlanan iqtisadi proseslərin mili inkişafın davamlılığına və dayanıqlığına güclü təməl yaratması, əmtəə və xidmətlərin bazar təklifinin durmadan artırılması ilə yerli sahibkarlıq subyektlərinin inkişafına və rentabelliyinə şərait yaratma imkanları, gözlənilən infilyasiya mühitinin xərclərin sahəvi strukturundan asılılıq şəraitləri nəzərdən keçirimişdir.

Açar sözlər: qeyri-sabitliklər, rəqabət, iqtisadi rayonlar

Giriş

Ümumi makroiqtisadi qeyri-sabitliklərin aradan qaldırılması və makroiqtisadi tarazlığın təmin edilməsi iqtisadi nəzəriyənin ən mühüm qanunauyğunluqlarından biri olub, əmtəə və xidmətlər bazarında yarana biləcək tsiklik proseslərlə əlaqədardır. Makroiqtisadi səviyyədə təsir göstərən qiymət siyasəti ümumi və fərdi qeyri-sabitliklərin aradan qaldırılmasına yönəldilməklə, institusional fəaliyyətlərlə həyata keçirilir. Makroiqtisadi qeyri-sabitliklərin baş verməsi əmtəə və xidmətlər, fiziki və əqli əmək, pul və maliyyə öhdəlikləri bazarında tsiklik proseslərin təsirinə məruz qalaraq istehsal və məcmu istehlakın, məcmu tələb və məcmu təklifin, məcmu xərclər və məcmu gəlirlərin, məcmu maddi və məcmu maliyyə axınlarının balanslaşdırılmasına nail olunmasından ibarət iqtisadi proseslərin səmərəli təşkili və idarə olunmasını tələb edir. Mikro səviyyədə fəaliyyət göstərən təsərrüfat subyektləri tərəfindən qiymətlərin süni şəkildə artırılması aralıq və son istehlak xərclərinin artmasına, bu da öz növbəsində fərdi və milli gəlirlərin azalması prosesi ilə müşaiyyət olunaraq səmərəlilik səviyyəsinə və infilyasiyaya mənfi təsir edəcəkdir.

Bütövlükdə milli iqtisadiyyatın səmərəli fəaliyyətinin təmin olunması makroiqtisadi səviyyədə sosial-iqtisadi inkişafın ən mühüm və fundamental problemlərindən biri kimi, ümumi makroiqtisadi tarazlığa nail olunmasını, makroiqtisadi qeyri-sabitliklərin aradan qaldırılmasını tələb edir ki, bu da öz növbəsində maddi, maliyyə və insan resurslarından, iqtisadi tənzimlənmənin dövlət və bazar mexanizmlərdən necə, daha səmərəli istifadə olunması məsələlərinə diqqət yetirilməsinə əsaslanmaqla infilyasiyanın tənzimlənməsindən ibarətdir.

1. Makroiqtisadi qeyri-sabitliyin yaranmasına səbəb olan amillər

Ümumi makroiqtisadi qeyri-sabitliklər dedikdə milli təsərrüfatçılıq sisteminin bütün struktur elementlərində, bölmələrində, sahələrində fərdlərin maraqlarının ortaq optimal hədlərə nail oluna bilməməsi və onların iqtisadi davranışında müşahidə olunan ümumi sistemlilik əlaqələrinin pozulması başa düşülür. Belə qeyri-sabitliklərin aradan qaldırılması üçün isə qisa, orta və uzunmüddətli dövrlər üçün geniş təkrar istehsalın davamlı inkişaf şərtlərinə əməl olunmasını nəzərdə tutan stabil xərclər və gəlirlər siyasətinin formalaşdırmaqla, əmtəə və xidmətlər bazarında lazımi istehlak məhsullarının əldə olunması, maddi, maliyyə və insan resurslarından məqsədəyönlü istifadə edilməsinə zərurət yaranmaqdadır.

Azərbaycan Respublikasının dövlət müstəqilliyi elan olunması ilə əlaqədar olaraq, 1991-1997-ci illər ərzində bir tərəfən milli valyutamız olan manat"ın dövriyyəyə buraxılması və keçmiş ittifaq dövlətləri ilə iqtisadi əlaqələrimizin, qarşılıqlı maliyyə öhdəliklərimizin yerinə yetirilməsində, bazar iqtisadiyyatı adlanan yeni sosial-iqtisadi sistemə keçidlə əlaqədar həyata keçirilən özəlləşdirmə prosesinin obyektiv və subyektiv çətinlikləri, ikinci bir tərəfdən də Ermənistan Respublikasının tarixi torpaqlarımıza ərazi iddiası ilə başladığı elan olunmamış müharibə ilə əlaqədar maliyyə bazarında yaranmış böhranlı vəziyyət infilyasiya şoklarının yaranmasına rəvac vermişdir.

Bu zaman qiymətlər çox sürətlə artmağa başlayaraq əmək haqqı artımlarını kəskin üstələməklə, istehsal fəaliyyəti kəskin geriləmələrlə müşaiyyət olunmaqla əmək bazarında işsizlik sürətlə artaraq, daha gəlirli və digər sahələrlə müqayisədə nisbətən az yeni dəyər yaradan ticarət sektoruna maraq üstünlük təşkil etməyə başladı. Məşğulluqda əsas rol oynayan iri istehsal müəssisələri nəinki mənfəət əldə etmək, əksinə zərərlə işlədiklərinə görə fəaliyyətlərini dayandırmağa məcbur oldular. Bütün bunlar sahələrarası təsərrüfat əlaqələrinin pozulmasına, barter sövdələşmələrinə üstünlük verilməsi ilə xarici-iqtisadi əlaqələrin tənəzülə uğraması ilə müşaiyyət olunmağa başlamışdır. Yaranmış böhranlı vəziyyətdən çıxmağın yeganə yolu isə yeni istehsal sahələri yaratmaq və məşğulluğu artırmaq üçün investisiya fəaliyyəti üçün maliyyə mənbələrinə nail olmaqdan ibarət idi.

Bütün bu qeyd olunanlar yalnız xarici investisiyaları cəlb etməklə onun rentabelliyi, davamlılığı və dayanıqlığı üçün güclü təməl yaratmaqla kifayətlənməyib, həm də əmtəə və xidmətlərin bazar təklifinin durmadan artırılması ilə yerli sahibkarlıq subyektlərinin inkişafına şərait yaratmaqdadır.

Maliyyə imkanlarından yararlanmada müasir və müstəqil Azərbaycan Respublikası tarixində baş verən əhəmiyyətli hadisələrdən biri kimi, 1994-cü il sentyabrın 20-də Azərbaycan Respublikası Dövlət Neft Şirkəti ilə dünyada tanınmış 6 ölkənin 10 şirkəti arasında Xəzər dənizinin Azərbaycan sektorunda "Azəri", "Çıraq" və "Günəşli" yataqlarının dərinlikdə yerləşən hissəsinin birgə işlənməsi və neft hasilatının pay bölgüsü haqqında "Əsrin müqaviləsi" imzalanmışdır.

Bu müqavilələrin imzalanması ilə Azərbaycan nəinki iqtisadi dividendlər qazandı, eyni zamanda regional səviyyədə siyasi zəmanət və müstəqilliyə qarant əldə etdi. Azərbaycanın əldə etdiyi uğurların, nailiyyətlərin bünövrəsində, təbii ki, enerji layihələrindən qaynaqlanan güclü iqtisadiyyat durur. Məhz gələcəyə hesablanmış bu uğurlu enerji siyasətinin təməli Ümummilli Lider Heydər Əliyev tərəfindən qoyulmuşdur (7).

Amerikalı iqtisadçı və yazıçı, Pulitzer mükafatı laureatı, neft və qaz sənayesinə dair kitabların, o cümlədən iqtisadiyyat üzrə ən yaxşı məşhur "Neft, pul və güc üçün mübarizənin qlobal tarixi" adlı kitab üçün Ekkls Mükafatını qazanan müəllif kimi tanınmış Daniel Howard Yergin Heydər Əliyevi həm də məharətli taktika ustası və mükəmməl bir strateq olaraq dəyərləndirmişdir (8).

Xarici qüvvələr tərəfindən Ermənistana hərbi-siyasi dəstəyin göstərildiyi şəraitdə tarixi ərazilərimizin işğala məruz qaldığı, hakimiyyət dairələrində fərqli iqtisadi-siyasi idarəetmə konsepsiyalarının təzəcə formalaşdığı, texnoloji və hərbi ehtiyacların zəif təmin olunduğu, işsizlik və infilyasiyanın yeni sahibkarlıq və biznes mühitinin inkişafında yaratdığı dağıdıcı prosesləri dəf etmək üçün taktiki və strateji baxımdan siyasi-iqtisadi müstəqilliyini yenidən bərpa etmiş Azərbaycan Respublikasında

mühüm əhəmiyyət kəsb edən dəyişiklikləri həyata keçirmək zərurəti yaranmışdır. Milli iqtisadiyyatımız və bütövlükdə Cənubi Qafqaz regionu üçün strateji hədəflərin müəyyənləşdirilməsində uzaqgörən mühüm tədbirlərin həyata keçirilməsi ilə, qısa müddət içərisində neft hasilatı və satışı sahəsində beynəlxalq miqyasda tanınmış tərəfdaşların ölkəmizdə iri həcmli investisiyalara başlaması üçün zəruri olan etimadı təmin etdi.

İqtisadi sistemlərdə qeyri-təkmil rəqabətin və əmtəə və xidmətlər bazarına xarici amillərin nizamlanmayan təsiri şəraitində müəyyənləşən qeyri-sabitliklər ümumi makroiqtisadi tarazlıqların pozulmasına zəmin yaratmaqla süni qiymət artımlarına səbəb olacaqdır. Aralıq və son istehlak sektorunda xüsusi əhəmiyyət kəsb edən yanacaq-enerji resurslarına tətbiq olunan tarif və qeyri-tarif qiymətlərinin səviyyəsinin artırılması zəncirvari bir proses olaraq, digər əmtəə və xidmətlərin qiymətində də artıma səbəb olacaqdır ki, bu iqtisadiyyatda ümumi tarazlığın pozulması ilə müşaiyyət olunaraq infilyasiya səviyyəsinin artmasına şərait yaradacaqdır.

Lakin inflyasiya səviyyəsindən asılı olaraq bütün dövrlərdə əmtəələrin qiymətləri bahalanmıya bilər, yəni inflyasiya səviyyəsinin sürətlə artdığı dövrdə bəzi əmtəələrin qiymətləri qalxa, bəzilərininki sabit qala, digərlərininki isə hətta aşağı düşə bilər. Bunlar da tələblə təklif arasındakı nisbətin və qiymət elastikliyinin müxtəlifliyi ilə əlaqədardır (Qrafik 1).

Azərbaycanda son 27 ilin (1996-2023) müxtəlif dövrlərində inflyasiyanın səviyyəsinin yüksək olmasına baxmayaraq sənaye məhsullarının istehsalçı qiymət indeksi kənd təsərrüfatı məhsullarının istehsalçı qiymət indeksindən yüksək olmuşdur. Belə ki, 2018-ci ildə kənd təsərrüfatı məhsullarının istehsalçı qiymət indeksi 1,02-dən 1,08-ə qədər dəyişmişdirsə, sənaye məhsullarının istehsalçı qiymət indeksi isə daha yüksək artım indeksinə malik olaraq 1,16-dan 1,31-ə qədər kəskin kəmiyyət dəyişikliyinə uğramışdır (2).

Kənd təsərrüfatı məhsullarının istehsalçı qiymət indeksi isə əvvəlki illərdən nisbətən yüksək olaraq, 2022-ci ildə 1,15-dən 1,16-ya qədər dəyişsə də, sənaye məhsullarının istehsalçı qiymət indeksi 1,84-dən 2,21-ə qədər daha yüksək templərlə artmışdır. Ölkə üzrə istehlak qiymətləri indeksi isə 2018-2022-ci illər ərzində 1,02-dən 1,14-ə qədər artmışdır ki, bu da mövsümi şəraitlərlə əlaqədar istehlak qiymətlərinin səviyyəsində yaranmış qısamüddətli dalğalanmalarla əlaqələndirilə bilər.

Ümumi istehlak qiymətlərinin və kənd təsərrüfatı məhsullarının istehsalçı qiymət indekslərinin səviyyəsindəki qiymət dəyişiklikləri 2023-cü ildə stabil artımlarla müşaiyyət olunan dəyiklikləre məruz qalsa da, sənaye məhsullarının istehsalçı qiymət indeksləri 2022 ilin 2,21 səviyyəsindən 2023-cü ildə 0,84 səviyyəsinə qədər azalmışdır. Bunun da səbəbi sənayedə uzunmüddətli borclanmalara tətbiq olunan yüksək faizlər şəraitində, xərclərə olan tələbin zəifləməsi ilə baş verməsi müşahidə olunmaqdadır.

Buna görə də qiymətlərin artmasını daimi bir proses kimi qəbul etmək mümkündür. Çünki bu, bütün bazarları əhatə edir və bütövlükdə iqtisadiyyat üçün səciyyəvi olmaqla, maddi-texniki resursların yeniləşməsinə və inovativ texnolojiyaların tətbiq olunmasında elmi-texniki fəaliyyətlərə yönəldilən xərclərin durmadan artırılması və bunun müqabilində də qiymətlərin yüksəlməsi ilə əlaqədardır. Qiymətlərin bahalanması nəticəsində tələblə təklif arasındakı tarazlığın pozulması müşahidə olunmaqla ümumi makroiqtisadi müvazinətliyin yenidən pərpa olunması zərurəti meydana çıxır.

2. Makroiqtisadi sabitliyin və infilyasiyanın tənzimlənməsində maliyyə amilinin rolu

Qiymət artımlarını bütün hallarda inflyasiyanın baş verməsi kimi qəbul etmək düzgün sayıla bilməz, çünki məhsulların keyfiyyətinin yaxşılaşması, istehsalın maddi amillərini formalaşdıran xammallar və materialların dəyərinin artması, istehlak əmtəələrinə tələbin dəyişməsi və s. nəticəsində də qiymətlər arta bilər. Konkret şəraitlərdən və məkanlardan asılı olaraq inflyasiyanın baş vermə prosesinin

mexanizminin tələb inflyasiyası və xərclər inflyasiyasının timsalında iki modelini açıqlamaq mümkündür. Tələb inflyasiyası 2005-2019-cu illərdə sərəmcanda qalan ümumi gəlirlərin nisbətən stabil dinamika əsasında, 2020-2023-cü illərdə isə qeyri-stabil dinamika əsasında kəskin artdığı şəraitdə, hər hansı istehsalın məhsullarına və xidmətlərə məcmu tələbin real həcmi ilə müqayisədə daha artıq tempə malik olması səbəbindən yaranmışdır (Qrafik 2). Qrafikdən göründüyü kimi sərəmcanda qalan ümumi gəlirlərin tərkibində əmək ödənişlərinin həcmi daha stabil artım templərinə malik olmuşdur.

Bu isə onu deməyə əsas verir ki, müqayisə olunan dövrlərdə faktiki olaraq son istehlak xərclərinin tərkibində əmək ödənişlərindən fərqli olaraq, xammallar və materiallara, hətta bəzən nəzərdə tutulmayan müxtəlif növ nəqliyyat xidmətlərinə, tarif və qeyri-tarif ödənişlərinə əlavə xərclər yönəldilmişdir. Azərbaycanın nəqliyyat sektorunda yük və sərnişin daşımalara çəkilən xərclərin tərkibində cəmi yük daşımalara çəkilən xərclər 1995-2018-ci illərdə orta illik artım 1,2 dəfə, 2018-2022-ci illər ərzində 2 dəfə artsa da, 2022-2023-cü illər ərzində isə 1,5 dəfəyə qədər azalmışdır (Qrafik 3).

Cəmi sərnişin daşımalara çəkilən xərclərin məbləği isə fərqli dəyişikliklərlə müşahidə olunmuşdur. Belə ki, 1995-2019-cu illərdə qeyd olunan xərclərin məbləği 28,6 dəfə artaraq 55,7 mln manatdan 1593,3 mln manata qədər yüksəlmişdir. COVİD-29 pondemiyası dövrünün meydana gəlməsi ilə sərnişin daşımalarda yaranmış məhdudiyyətlərlə əlaqədar olaraq, 2019-2021-ci illər ərzində istehlak xərclərinin həcmi 1,4 dəfə azalaraq 1,11 mln manat təşkil etsə də, 2023- cü ildə bu göstərici 2,21 mln manata,yaxud da 2 dəfəyə qədər artmışdır.

Bütün ölkə üzrə 2023-cü ilə məhsul buraxılışının 75,7 %-i Bakı şəhəri və Abşeron-Xızı iqtisadi rayonlarının, qalan 24,3 %-i isə digər iqtisadi rayonların payına düşmüşdür. Orta hesabla digər 12 iqtisadi rayonlarda hər iqtisadi rayon üzrə məhsul buraxılışının xüsusi çəkisi isə 2,02 % təşkil etmişdir ki, bu da əhalinin ərazi məskunlaşmasında ciddi uyğunsuzluqların yaranması ilə müşaiyyət olunmaqdadır(9).

Qeyd olunan uyğunsuzluqlar nəqliyyat sektorunda sərnişin və yükdaşımaların strukturunda, gəlir və xərslərin iqtisadiyyatın real və qeyri-real sektorları arasında qeyri-normal paylanması ilə müşaiyyət olunaraq, tələb və təklif arasında tarazlığın pozulmasına, eyni zamanda tələb infilyasiyasının yaranmasına şərait yaratmaqdadır.

İqtisadi rayonlar və inzibati ərazi vahidləri üzrə əhalinin gəlirlərin qeyri-proporsional paylaşması bütövlükdə əhalinin müxtəlif sosial qrupları üzrə həyat səviyyəsi indeksinin köməyilə aralıq və son istehlak əmtəələrinin daxil olduğu minimum istehlak səbəti qiymətlərinin dəyişməsinə, regional səviyyədə yoxsulluğun azaldılması və məşğulluğun artırılması ilə əlaqədar sosial siyasətin yürüdülməsinə, nisbi və real iqtisadi artıma şərait yarada bilən dövlət-özəl tərəfdaşlığına əsaslanan ortaq sahibkarlıq layihələrinin reallaşmasına, dövlətin sənaye və aqrar siyasətinin həyata keçirilməsində mühüm əhəmiyyət kəsb edən bir sıra məsələlər, o cümlədən innovasiyalar və infrastruktur layihələrinin işlənməsi, həyata keçirilməsi ilə bağlı bir sıra dayanıqlı inkişaf məqsədlərinin həyata keçirilməsində mühüm rol oynamaqdadır.

Digər bir tərəfdən müqayisə olunan dövrdə bütün ölkə üzrə əhalinin gəlirlərinin 66,7 %-nin də Bakı şəhəri və Abşeron-Xızı iqtisadi rayonlarının payına düşməsi məşğulluq və işsizliyin normal səviyyədə

təmin olunması məsələlərinə də neqativ təsir göstərməklə, iqtisadi rayonlar və inzibati ərazi vahidləri üzrə əhalinin gəlirlərində qütbləşməni dərinləşdirməkdədir (1).

Azərbaycan BMT-yə üzv olan dövlətlərin 2015-ci ilin 25–27 sentyabr tarixində keçirilən "Dayanıqlı İnkişaf Sammitində" 2016–2030-cu illər üçün təsdiqlənmiş "Dayanıqlı İnkişaf Məqsədlərinə" qoşulmuşdur. Bu İnkişaf Məqsədlərinin icrasının institutsional və siyasi baxımdan kompleks yanaşma tələb etdiyi nəzərə alınaraq Prezident İlham Əliyev 06 oktyabr 2016-cı il tarixində "Azərbaycan Respublikasının Dayanaqlı İnkişaf üzrə Milli Əlaqələndirmə Şurasının Yaradılması Haqqında" fərman imzalamış və Şuranın fəaliyyətinə elmi müəssisələrin cəlb edilməsi məqsədəuyğun hesab etmişdir (2).

İqtisadi rayonlar üzrə məhsul buraxılışının tərkibində Bakı şəhəri və Abşeron-Xızı iqtisadi rayonlarının xüsusi çəkisinin yüksək olması 2003-2023-cü illər bu ərazilərdə məskunlaşan əhalinin hər nəfərinə düşən məhsul buraxılışının həcmində də fərqli göstəricilərə malikdir. Şərqi Zəngəzur iqtisadi rayonu üzrə iqtisadiyyatın əsas sahələrində məhsul buraxılışının hər nəfərə düşən həcmi 2020-2023-cü illər ərzində 30,9 dəfə artaraq, 13,9 min manata çatmışdır (Qrafik 6).

Qrafik 6. İqtisadi rayonlar üzrə məhsul buraxılışının hər nəfərə düşən həcmi,manatla

Belə ki, Bakı şəhəri üzrə məskunlaşan əhalinin hər nəfərinə düşən məhsul buraxılışının həcmi müqayisə olunan dövrdə yüksək artım templəri ilə müşaiyyət olunmaqdadır. Hər nəfərə düşən məhsul buraxılışının həcmi 2024-cü ildə 40,0 min manat təşkil etsə də, 2022-ci ildəki 45,4 min manatla müqayisədə 11,9 % azalmışdır. Bakı şəhəri üzrə hər nəfərə düşən məhsul buraxılışının həcmi Naxçıvan Muxtar Respublikası ilə müqayisədə 12 dəfə, Gəncə-Daşkəsən iqtisadi rayonu ilə müqayisədə 8,6 dəfə, Mərkəzi Aran və Dağlıq Şirvan iqtisadi rayonları üzrə 9,6 dəfə, Mil-Muğan və Quba-Xaçmaz iqtisadi rayonları üzrə 8,8 dəfə, Lənkəran-Astara iqtisadi rayonu üzrə isə 14,6 dəfə aşağı olmuşdur. Nəzərə almaq lazımdır ki, Lənkəran-Astara iqtisadi rayonu üzrə əhalinin sıxlığı Quba-Xaçmaz və digər iqtisadi rayonlara nisbətən 2 dəfədən çoxdur (3).

Azərbaycanda dayanıqlı sosial-iqtisadi inkişafı təmin etmək və işğaldan azad olunmuş ərazilərin bərpasına dair həyata keçirilən milli inkişaf proqramlarında nəzərdə tutulmuş tədbirlər, daima olaraq dövlətin diqqət mərkəzindədir. Torpaqlarımızın işğaldan azad edilməsi Azərbaycan Respublikasının Prezidenti İlham Əliyevin siyasi-hərbi və iqtisadi fəaliyyətində ən mühüm tarixi hadisəsidir.

İşğaldan azad edilən ərazilərdə quruculuq işlərinin aparılması intensiv xarakter almaqda davam edir. Milli iqtisadiyyatın prioritet sahəsi olaraq, dayanıqlı inkişafa nail olmaq üçün investisiya qoyuluşlarının həyata keçirilməsi ilə bağlı tədbirlər artıq öz bəhrəsini verməkdədir. Belə ki təkcə ölkə üzrə ümumi yatırımların məbləği ötən il 20,3 milyard manat təşkil edib ki, bu illik müqayisədə 2 milyard manat və ya 11% çoxdur.

Ən kəskin artım işğaldan azad edilmiş Xocalı rayonunda baş vermişdir, belə ki rayona sərmayə qoyuluşu 304 milyon manat, başqa sözlə 1404 dəfə artmışdır. Məlumat üçün bildirək ki, rayona ötən il ərzində 304 milyon 224 min manat yatırım edilmiş, 2022-ci ildə bu rəqəm cəmi 217 min manat olmuşdur (5).

Məhz investisiyalaşma sahəsində görülən tədbirlərin nəticəsidir ki, Şərqi Zəngəzur iqtisadi rayonu üzrə məhsul buraxılışının hər nəfərə düşən həcmi 2020-2024-cü illər ərzində 28,9 dəfəyə qədər artmışdır ki, bu da işğaldan azad olunmuş ərazilərdə məskunlaşma və quruculuq-bərpa işlərinin sürətlənməsinə şərait yaradacaqdır.

İstehsal təyinatlı məhsullara tətbiq olunan topdansatış qiymətləri və pərəkanda ticarət sektorunda tətbiq olunan pərəkanda satış qiymətləri arasında yaranmış fərqliliklər də infilyasiya səviyyəsinə ciddi təsir göstərə bilər. İstehsalda istifadə olunan xammal və materialların qiymətlərinin dəyişməsi əmtəələrin maya dəyərinə təsir edirsə, digər bir tərəfdən istehsaldan sonrakı tədarük, qablaşdırma, sertifikatlaşdırma, anbar, nəqliyyat və s. xərclərlə müəyyən olunan topdansatış qiymətlərinin səviyyəsi

müəyyən edilir. Bu qiymətlərin dəyişməsi topdansatış və pərakəndə satış bazarlarında yaranan rəqabətlilik, daxili bazarın qorunması, müəyyən əmtəələrə subsidiya siyasətinin tətbiq olunması və s. təsirlərə məruz qalaraq, aralıq və son əmtəələrə süni qiymət dəyişməsi ilə əlaqədar olub infilyasiyanın sürətini artıra bilər.

İqtisadi islshatların aparıldığı dövrlərdən başlayaraq, qiymətləri qaldırmaq yolu ilə daha çox mənfəət əldə etmək uğrunda sahibkarların apardıqları mübarizə aqrar sahədə, hasilat və emal sənayesində azad rəqabəti məhdudlaşdırmış, habelə pul tədavülü və qiymətəmələgəlmə sistemində nisbi sabitliyi qismən də olsa təmin etmişdir.

Obyektiv səbəblərdən bazar iqtisadiyyatı qanunauyğunluqlarına birbaşa tabe olmayan aqrar sahədə, xammalları və yarımfabrikatları emal edən sənaye sahələrində mövsimi şəraitlərin təsiri ilə vaxtaşırı baş verən ifrat istehsal dövründə qiymətlərin artması müşahidə olunmasa da, ticarət infrastrukturuna aid olan saxlama anbarlarının mükəmməl səviyyədə olmaması və düzgün yönəldilməməsi nəticəsində, istehlak əmtəələrinin bazara daxil olmalarında zəruri prporsionallıqlar gözlənilməməsi nəticəsində qiymət artımlarının müşahidə olunması qaçılmazdır. İstehsalda baş verən dəyişikliklər birbaşa qiymətlərə, bu isə pul tədavülünə təsir göstərməklə pul emissiyasına səbəb ola bilər.

Əmtəə və xidmətlər bazarında tələbi stimullaşdırmadan, birtərəfli qaydada investisiyaların birbaşa təklifin stimullaşdırılmasına yönəldilməsi, qiymətlərin aşağı düşməsi ilə müşaiyyət olunaraq bazar subyektlərinin maliyyə öhdəliklərinin yerinə yetirilməsində problemlər yaratmaqla müşahidə oluna bilər.

Məcmu tələb sabit qalmaqla, məcmu təklif artdıqda qiymətlər azalmağa doğru dəyişir və bununla əlaqədar olaraq təklifin deflyasiyası baş verir ki, bu da geniş təkrar istehsalın həyata keçilməsində investisiyaların məhdudlaşmasına səbəb olacaqdır. Lakin məcmu tələblə məcmu buraxılışın həcmi, məşğulluq və qiymətlər arasındakı nisbətlərin öyrənilməsi ilk baxışda təsəvvür olunduğu kimi o qədər də sadə məsələ olmadığı kimi, aralıq istehlakla son istehlak arasında nisbi asılılıqlara da təsir göstərə bilər.

Nəticə

İstehsal təyinatlı məhsullara tətbiq olunan topdansatış qiymətləri və pərəkanda ticarət sektorunda tətbiq olunan pərəkanda satış qiymətləri arasında yaranmış fərqliliklər infilyasiya səviyyəsinə ciddi təsir göstərə bilər. İstehsalda istifadə olunan xammal və materialların qiymətlərinin dəyişməsi əmtəələrin maya dəyərinə təsir edirsə, digər bir tərəfdən istehsaldan sonrakı tədarük, qablaşdırma, sertifikatlaşdırma, anbar, nəqliyyat və s. xərclərlə müəyyən olunan topdansatış qiymətlərinin səviyyəsi müəyyən edilir. Bu qiymətlərin dəyişməsi topdansatış və pərakəndə satış bazarlarında yaranan rəqabətlilik, daxili bazarın qorunması, müəyyən əmtəələrə subsidiya siyasətinin tətbiq olunması və s. təsirlərə məruz qalaraq, aralıq və son əmtəələrə süni qiymət dəyişməsi ilə əlaqədar olub infilyasiyanın sürətini artıra bilər.

İqtisadiyyatın real və qeyri-real sektorları arasında gəlir və xərslərin qeyri-normal paylanması nəqliyyat sektorunda sərnişin və yükdaşımaların strukturunda tələb və təklif arasında tarazlığın pozulması, eyni zamanda tələb infilyasiyasının yaranması ilə müşaiyyət olunmaqdadır. İqtisadi rayonlar və inzibati ərazi vahidləri üzrə əhalinin gəlirlərinin qeyri-proporsional paylaşması, bütövlükdə əhalinin müxtəlif sosial qrupları üzrə həyat səviyyəsi indeksinin köməyilə aralıq və son istehlak əmtəələrinin daxil olduğu minimum istehlak səbəti qiymətlərinin dəyişməsinə, regional səviyyədə yoxsulluğun azaldılması və məşğulluğun artırılması ilə əlaqədar sosial siyasətin yürüdülməsinə, nisbi və real iqtisadi artıma şərait yaradacaqdır.

MACROECONOMIC INSTABILITY AND INFLATION REGULATION

Vahid Hajibey oglu Abbasov

D.Ed., Professor, Baku State University, Department of Economics

E-mail: vahid.abbasov.56@mail.ru

Tahmina Hamlet gizi Safarli

Doctoral student, Baku State University, Department of Economics

E-mail: tahminabdu@gmail.com

Summary

The article describes the mechanisms of influence of internal and external factors that, as a result of the mutual influence of market activity, lead to the emergence of macroeconomic instability, and at the microeconomic level, changes in supply and demand directly affect prices and sales volumes in all markets. In order to eliminate macroeconomic instability, attention is paid to the formation of a stable, dynamic cost and income policy that provides for compliance with the conditions for sustainable development of large-scale reproduction in the short, medium and long term, the acquisition of necessary consumer products in the goods and services market, and the purposeful use of material, financial and human resources. The economic processes that have begun to attract foreign investments create a strong foundation for the sustainability and stability of national development, the opportunities for creating conditions for the development and profitability of local business entities by constantly increasing the market supply of goods and services, and the dependence of the expected inflation environment on the sectoral structure of expenses have been considered.

Keywords: instability, competition, economic regions

Conclusion

The differences between the wholesale prices applied to production-oriented products and the retail prices applied in the retail trade sector can have a serious impact on the level of inflation. While changes in the prices of raw materials and materials used in production affect the cost of goods, on the other hand, the level of wholesale prices determined by post-production procurement, packaging, certification, warehousing, transportation, etc. costs is determined. Changes in these prices are subject to the effects of competition in the wholesale and retail markets, protection of the domestic market, application of subsidy policies for certain goods, etc., and may increase the rate of inflation due to artificial price changes for intermediate and final goods.

The abnormal distribution of income and losses between the real and unreal sectors of the economy is accompanied by a disruption of the balance between supply and demand in the structure of passenger and freight transportation in the transport sector, as well as the emergence of demand-side inflation. The disproportionate distribution of income across economic regions and administrative territorial units will create conditions for changes in the prices of the minimum consumer basket, which includes intermediate and final consumer goods, through the standard of living index for various social groups of the population as a whole, the implementation of social policies related to poverty reduction and employment increase at the regional level, and relative and real economic growth.

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dos. S.A. Qaraşova

Bakı Dövlət Universiteti

Diplomatiya və müasir inteqrasiya

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UKRAYNANIN SUVERENLİK PROBLEMİ ABŞ-RUSİYA MÜNASİBƏTLƏRİNDƏ

Xülasə

Ukrayna münaqişəsi XXI əsrin beynəlxalq münasibətlər sistemində güc siyasətinin, suverenlik və beynəlxalq hüquq prinsiplərinin real dəyərini yenidən gündəmə gətirdi. ABŞ və Rusiya arasında bu münaqişə fonunda formalaşan qarşıdurma qlobal təhlükəsizlik arxitekturasının əsas dayaqlarını sarsıtdı və beynəlxalq təşkilatların effektivliyini ciddi şəkildə zəiflətdi. ABŞ-ın Ukraynaya hərbi, iqtisadi və siyasi dəstəyi, Rusiyanın isə öz geosiyasi maraqlarını müdafiə etmək cəhdləri, dünya düzənində yeni çoxqütblü reallığın formalaşmasına səbəb oldu. Münaqişənin nəticəsində suverenlik anlayışı sadəcə hüquqi deyil, həm də iqtisadi və strateji güc amili ilə ölçülməyə başladı. Bu proses Cənubi Qafqaz regionuna da birbaşa təsir göstərdi. Xüsusilə 2025-ci ildə ABŞ-ın vasitəçiliyi ilə Ermənistan və Azərbaycan arasında sülh müqaviləsinin paraflanması və TRIPP layihəsinin işə düşməsi regionda yeni iqtisadi və siyasi sabitlik müstəvisi yaratdı. TRIPP çərçivəsində Azərbaycan öz tranzit və enerji mərkəzi statusunu gücləndirərək suverenliyini daha dayanıqlı iqtisadi əsaslar üzərində möhkəmləndirdi. Beləliklə, Ukrayna böhranı qlobal güc balansının dəyişməsini və regional suverenlik modellərinin yenidən qurulmasını şərtləndirdi.

Açar sözlər: Ukrayna münaqişəsi, ABŞ-Rusiya münasibətləri, suverenlik, Cənubi Qafqaz, TRIPP layihəsi.

Giriş

Ukrayna münaqişəsi beynəlxalq münasibətlər sistemində güc balansının, beynəlxalq hüququn və suverenlik prinsipinin praktik tətbiqinin sınağa çəkildiyi ən mühüm hadisələrdən biridir. Bu münaqişə ABŞ və Rusiya arasında strateji rəqabətin yeni mərhələsini açaraq, qlobal təhlükəsizlik arxitekturasında dərin dəyişikliklərə səbəb olub. NATO-nun genişlənməsi, enerji təhlükəsizliyi, silahlanma yarışı və beynəlxalq təşkilatların təsir imkanlarının məhdudluğu kimi amillər yeni dünya düzəninin formalaşması prosesini daha da mürəkkəbləşdirib. Beləliklə, Ukrayna böhranı təkcə regional münaqişə deyil, həm də beynəlxalq münasibətlər nəzəriyyəsində güc siyasəti, normativ hüquq və kollektiv təhlükəsizlik anlayışlarının yenidən qiymətləndirilməsini tələb edən qlobal fenomenə çevrilib. Azərbaycan Respublikası üçün isə Ukrayna münaqişəsinin aktuallığı ilk növbədə suverenlik və ərazi bütövlüyü prinsiplərinin beynəlxalq səviyyədə necə müdafiə olunduğu ilə bağlıdır. Münaqişə göstərdi ki, beynəlxalq sistemdə güc amili hələ də siyasi qərarların əsas determinantıdır və beynəlxalq hüquq tez-tez selektiv şəkildə tətbiq olunur. Azərbaycanın öz ərazi bütövlüyünü bərpa etdiyi postmünaqişə dövründə bu təcrübə həm diplomatik manevr imkanlarının, həm də təhlükəsizlik siyasətinin formalaşmasında mühüm əhəmiyyət daşıyır. Ukrayna böhranı həmçinin Azərbaycanın balanslaşdırılmış xarici siyasətinin, yəni Qərb və Rusiya arasında praqmatik neytrallığın qorunmasının nə qədər vacib olduğunu bir daha göstərir.

Münaqişəyə qədər ABŞ-Rusiya münasibətlərinin strateji xarakteri

Avromaydan hadisələri və Krımın ilhaqından sonra, başqa sözlə 2014-2021-ci illər arasında ABŞ-Rusiya münasibətləri xüsusilə Ukrayna böhranının başlanması ilə kəskin şəkildə dəyişdi və qarşılıqlı etimadın minimuma endiyi, strateji rəqabətin isə açıq şəkildə artdığı bir dövrə çevrildi. 2014-cü ilin fevralında Ukraynada hakimiyyət dəyişikliyi və ardınca Krımın Rusiya tərəfindən ilhaqı ABŞ üçün postsovet məkanında təhlükəsizlik sisteminin sarsılması kimi qiymətləndirildi. Vaşinqton bu addımı beynəlxalq hüququn pozulması kimi dəyərləndirdi və Rusiyaya qarşı sanksiya siyasətinə başladı. Bu hadisə iki ölkə arasında artıq uzun müddətdir yığılıb qalan gərginliyin açıq formaya keçməsinə səbəb oldu. Krım böhranı həm NATO-nun Şərqə genişlənməsinin Rusiya üçün doğurduğu narahatlıqları aktuallaşdırdı, həm də ABŞ-ın postsovet məkanında təsir imkanlarını qorumaq istəyi ilə Moskvanın özünü regional güc kimi təsdiqləmək cəhdləri arasındakı ziddiyyətləri kəskinləşdirdi. Bu dövrdə münasibətlərin əsas xarakteri "qarşılıqlı strateji şübhə" ilə müəyyən olunurdu. Rusiya, ABŞ-ın "rəngli inqilablar" vasitəsilə postsovet ölkələrində təsirini genişləndirdiyini iddia edir, ABŞ isə Kremlin qonşu ölkələrin suverenliyini məhdudlaşdırmaq və öz təsir dairəsini bərpa etmək istədiyini düşünürdü. 2014-2016-cı illərdə ABŞ-ın tətbiq etdiyi sanksiyalar Rusiyanın enerji, maliyyə və müdafiə sektorlarına yönəldi və bu, Rusiya iqtisadiyyatında struktur dəyişikliklərinə səbəb oldu [5]. Rusiya, öz növbəsində, ABŞ mallarına qarşı əks tədbirlər gördü və "idxalı əvəzləmə" siyasətinə keçdi. Bu proseslər iki ölkə arasında strateji əlaqələrin hərbi və iqtisadi baxımdan tamamilə məhdudlaşdığını göstərirdi.

2016-cı ildə ABŞ prezident seçkilərinə Rusiya müdaxiləsi iddiaları münasibətləri daha da gərginləşdirdi. ABŞ kəşfiyyat orqanlarının hesabatına əsasən, Rusiya seçki kampaniyalarına kibertəsir və dezinformasiya vasitəsilə müdaxilə etmişdi. Bu iddialar ABŞ ictimaiyyətində Rusiyaya qarşı mənfi rəyin formalaşmasına, Konqresdə isə sanksiyaların sərtləşdirilməsinə gətirib çıxardı. 2017-ci ildə qəbul edilən "CAATSA" (Countering America's Adversaries Through Sanctions Act) qanunu Rusiyanı "ABŞ-ın əsas rəqiblərindən biri" kimi tanıdı [11]. Bu mərhələdə ABŞ-Rusiya münasibətləri faktiki olaraq diplomatik müstəvidə məhdudlaşdı və ikitərəfli əməkdaşlıq yalnız silahların nəzarəti və Suriya kimi konkret regional məsələlərlə məhdud qaldı.

Donald Tramp administrasiyasının ilk illərində münasibətlərin yumşalacağına dair gözləntilər yaransa da, bu reallaşmadı. Trampın Rusiya ilə fərdi səviyyədə dialoqa meyli olsa da, ABŞ Konqresi və təhlükəsizlik qurumları Rusiyaya qarşı sərt siyasəti davam etdirdi. NATO-nun Şərq Cinahında hərbi mövcudluğunun artırılması, Ukraynaya ölümcül silahların verilməsi və Baltik regionunda hərbi təlimlərin intensivləşməsi Moskva tərəfindən təxribat kimi qəbul edildi. Rusiya buna cavab olaraq öz hərbi strategiyasını yenilədi, Qərb sərhədlərində əlavə qoşun kontingentləri yerləşdirdi və nüvə caydırıcılığı siyasətini ön plana çıxardı. 2019-cu ildə ABŞ-ın INF (Orta Mənzilli Nüvə Qüvvələri) müqaviləsindən çıxması münasibətləri daha da zədələdi [8]. Vaşinqton Rusiyanı müqavilənin şərtlərini pozmaqda günahlandırırdı, Moskva isə ABŞ-ın raket sistemlərini Avropada yerləşdirməsini təhlükə kimi qiymətləndirirdi. Bu hadisə nüvə balansının qorunması mexanizmlərini zəiflətdi və qarşılıqlı etimadı azaldan mühüm amilə çevrildi. Strateji sabitlik müzakirələri də bu mərhələdə formal xarakter daşıyırdı və tərəflər bir-birini beynəlxalq təhlükəsizliyə təhdid kimi təqdim edirdilər. 2019-2020-ci illərdə iki ölkə arasında rəqabət artıq yalnız hərbi və siyasi deyil, həm də texnoloji və informasiya sahələrinə keçdi. ABŞ Rusiyanı "kibertəhlükə" kimi xarakterizə edərək, kiberhücumlara qarşı milli strategiyasını yenilədi. "SolarWinds" hadisəsi kimi kiberhücumlar ABŞ-Rusiya münasibətlərini daha da pisləşdirdi. Eyni zamanda, Arktika, energetika və kosmos sahələrində də rəqabət artdı. ABŞ Rusiya qazının Avropadakı payını azaltmaq üçün "Nord Stream 2" layihəsinə qarşı diplomatik və iqtisadi basqılar tətbiq etdi. Rusiya isə bunu ABŞ-ın enerji bazarlarında üstünlük əldə etmək cəhdi kimi dəyərləndirdi [2].

2021-ci ildə Co Bayden administrasiyası dövründə ABŞ-Rusiya münasibətləri yenidən "soyuq müharibə ritorikasına" qayıtdı. Bayden Rusiyanı "avtoritar rejim" kimi xarakterizə etdi və demokratiya ilə avtoritarizm arasında qlobal mübarizədə Rusiyanı əsas opponentlərdən biri kimi göstərdi [6]. Bu

mərhələdə ABŞ, NATO ilə koordinasiyalı şəkildə Ukraynaya hərbi və texniki dəstəyini artırdı, Rusiya isə bu yardımları öz milli təhlükəsizliyinə təhdid kimi qəbul etdi. Beləliklə, strateji qarşıdurma artıq açıq şəkildə sistemli xarakter aldı. ABŞ-Rusiya münasibətlərinin bu dövrdəki əsas xüsusiyyəti, diplomatiyanın "idarə olunan gərginlik" mexanizminə çevrilməsidir. Yəni tərəflər birbaşa müharibədən qaçmağa çalışsalar da, siyasi, iqtisadi və informasiya təzyiqlərini davam etdirirdilər. BMT, G20 və digər beynəlxalq platformalarda dialoq cəhdləri olsa da, tərəflər bir-birini beynəlxalq sabitliyi pozmaqda ittiham edirdi. Vaşinqton "demokratik dəyərləri qorumaq" adı altında geosiyasi rəqabəti gücləndirir, Moskva isə bunu Qərbin ideoloji ekspansiyası kimi qiymətləndirirdi.

Münaqişənin ikitərəfli münasibətlərə təsirləri və Ukraynanın suverenlik problemi

2022-ci ilin fevralında Rusiyanın Ukraynaya genişmiqyaslı hərbi müdaxiləsi ABŞ-Rusiya münasibətlərində yeni, kəskin qarşıdurma mərhələsini başladı. Vaşinqton bu hücumu beynəlxalq hüququn və dövlət suverenliyinin açıq şəkildə pozulması kimi qiymətləndirdi və dərhal Ukraynaya hərtərəfli siyasi, iqtisadi və hərbi dəstək göstərməyə başladı. Rusiya isə bu əməliyyatı "xüsusi hərbi əməliyyat" adlandıraraq NATO-nun Şərqə genişlənməsini və Ukraynanın Qərblə hərbi əməkdaşlığını milli təhlükəsizliyinə təhdid kimi əsaslandırdı. Qısa müddət ərzində ABŞ və onun müttəfiqləri Rusiyaya qarşı ən sərt iqtisadi sanksiyaları tətbiq etdilər, Rusiyanın maliyyə sistemi SWIFT-dən kənarlaşdırıldı, texnologiya ixracı məhdudlaşdırıldı və yüzlərlə şirkət bazarı tərk etdi. Beləliklə, münasibətlər artıq yalnız gərgin deyil, tammiqyaslı qarşıdurma vəziyyətinə keçdi. Hərbi müstəvidə ABŞ Ukraynaya "lend-liz" prinsipi əsasında milyardlarla dollarlıq silah yardımı ayırdı, o cümlədən HIMARS raket sistemləri, hava hücumundan müdafiə kompleksləri və kəşfiyyat dəstəyi təqdim etdi. Bu, faktiki olaraq Ukraynanı NATO standartlarına uyğun bir müttəfiq səviyyəsinə qaldırdı. Rusiya bu yardımları Qərbin dolayı şəkildə müharibəyə cəlb olunması kimi dəyərləndirdi və strateji silah proqramlarını gücləndirdi [7; 10]. 2022-ci ilin sonuna doğru ABŞ-Rusiya diplomatik münasibətləri minimum səviyyəyə endi, bir çox səfirlik əməkdaşları geri çağırıldı və qarşılıqlı etimad tamamilə itdi. Eyni zamanda, Rusiya ABŞ-ın rəhbərlik etdiyi sanksiya blokunu "iqtisadi müharibə" kimi təqdim etdi və Çin, İran, Hindistan kimi ölkələrlə strateji tərəfdaşlığı genişləndirməyə başladı.

2023-cü il ərzində ABŞ-Rusiya münasibətləri "soyuq müharibə 2.0" adlandırılan bir vəziyyətə daxil oldu [9]. ABŞ administrasiyası Rusiyanı qlobal təhlükəsizlik üçün birbaşa təhdid kimi xarakterizə etdi, NATO-nun müdafiə xərcləri isə rekord həddə çatdı. Finlandiya və İsveçin NATO-ya üzv qəbul edilməsi Rusiyanın strateji təcridini daha da dərinləşdirdi. Eyni zamanda, ABŞ Avropa İttifaqı ilə birgə enerji asılılığını azaltmaq üçün likvid qaz ixracını artırdı, bu isə enerji sahəsində Rusiya ilə rəqabəti daha sərtləşdirdi. Moskva isə Avropa ilə əlaqələrini minimuma endirərək Avrasiya İqtisadi İttifaqı, BRICS və Şanxay Əməkdaşlıq Təşkilatı kimi strukturlar üzərindən yeni iqtisadi və siyasi istiqamətlərə yönəldi. 2024-cü ilə gəldikdə ABŞ-Rusiya münasibətləri artıq təkcə ikitərəfli ziddiyyətlərdən ibarət olmayıb, həm də qlobal siyasi sistemin qütbləşməsini əks etdirirdi. Vaşinqton liberal-demokratik modelin müdafiəsini öz beynəlxalq missiyası kimi təqdim edir, Moskva isə "Qərb hegemoniyasına qarşı mübarizə" ritorikasını ideoloji əsas kimi istifadə edirdi. Diplomatik kanalların məhdudluğu, strateji sabitlik üzrə danışıqların dayanması və nüvə ritorikasının artması dünya miqyasında yeni təhlükələr doğururdu. Ukrayna müharibəsi iki dövlətin uzunmüddətli rəqabətində artıq simvolik bir arenaya çevrilmişdi: ABŞ üçün bu, beynəlxalq qayda sisteminin qorunması, Rusiya üçün isə öz geosiyasi müstəqilliyinin təminatı məsələsi idi.

2025-ci ilin yanvarında Donald Trampın ikinci dəfə ABŞ prezidenti seçilməsi münasibətlərin dinamikasına yeni, lakin ziddiyyətli ton gətirdi. Trampın xarici siyasət yanaşması əvvəlki kimi daha realist və transaksion xarakter daşıyırdı; o, Avropaya olan təhlükəsizlik xərclərini azaltmaq və NATO üzvü ölkələrin daha çox məsuliyyət götürməsini tələb etməyə başladı. Rusiya bu dəyişiklikləri müsbət siqnal kimi qəbul etsə də, Ukrayna məsələsində ABŞ-ın dəstəyinin azalması Qərb blokunda gərginlik yaratdı. Tramp administrasiyası müharibənin "dondurulmuş münaqişə" formatında saxlanmasını

məqsədəuyğun hesab edirdi, bu isə Avropada ABŞ-ın liderlik roluna dair suallar doğurdu [4]. Bu günə qədərki dövrdə Trampın rəhbərliyi altında iqtisadi sahədə məhdud dialoqun bərpası ehtimalı artsa da, siyasi etimad bərpa olunmadı. ABŞ şirkətləri Rusiyada fəaliyyətini genişləndirməsə də, enerji bazarlarında dolayı əlaqələr canlandı. Bununla yanaşı, ABŞ Konqresi Trampın Rusiya ilə "yumşaq siyasət"ini tənqid edərək yeni nəzarət mexanizmləri qəbul etdi. Bu, daxildə siyasi qütbləşməni artırdı və ABŞ-ın xarici siyasətində qeyri-müəyyənlik yaratdı. Rusiya isə bu qeyri-müəyyənlikdən istifadə edərək postsovet məkanında təsirini gücləndirməyə, Qafqaz və Orta Asiyada yeni diplomatik təşəbbüslər irəli sürməyə başladı. Cari dövrdə isə ABŞ-Rusiya münasibətləri həm qarşılıqlı şübhə, həm də məhdud praqmatizm üzərində qurulub. Tramp administrasiyası bir tərəfdən Ukrayna müharibəsinin uzanmasının iqtisadi yükünü azaltmaq istəyir, digər tərəfdən Çinin yüksəlişini əsas təhlükə kimi prioritetləşdirir. Bu səbəbdən Moskva ilə münasibətlər "idarə olunan balans" çərçivəsində saxlanılır. Rusiya isə bu fürsətdən istifadə edərək Vaşinqtonla birbaşa qarşıdurmadan qaçır, lakin NATO-nun Şərq cinahında hərbi fəallığını diqqətlə izləyir.

Son hadisələr fonunda Ukraynanın suverenliyi məsələsi beynəlxalq gündəmdə əsas problem olaraq qalır. Müharibə nəticəsində Ukraynanın ərazi bütövlüyü ciddi şəkildə pozulmuş, Donetsk, Luqansk, Zaporojye və Xerson vilayətlərinin statusu faktiki olaraq Rusiya nəzarətinə keçmişdir. ABŞ və Qərb dövlətləri Ukraynanın suverenliyini tam bərpa etməyin yeganə yolunun Rusiya qüvvələrinin geri çəkilməsi olduğunu bildirir, lakin Moskva bu tələbi qəbul etmir və yeni sərhədləri "tarixi reallıq" kimi tanıtmağa çalışır. Bu, beynəlxalq hüququn effektivliyinə və BMT sisteminin nüfuzuna ciddi zərbə vurmuşdur. Ukraynanın suverenliyi problemi təkcə hərbi deyil, həm də siyasi və iqtisadi ölçülərə malikdir. Müharibə Ukraynanın dövlət institutlarını zəiflədib, iqtisadiyyatını xarici yardımdan asılı vəziyyətə salıb. ABŞ və Avropa İttifaqı tərəfindən təmin edilən milyardlarla dollarlıq dəstək Ukraynanı ayaqda saxlayır, lakin bu, onun suveren qərarvermə imkanlarını məhdudlaşdırır. Ümumiləşdirsək, Ukrayna müasir beynəlxalq sistemdə "de-fakto müstəqil, lakin de-yure asılı" dövlətə çevrilmişdir.

Cənubi Qafqaz üçün imkanlar və çağırışlar: suverenlik müstəvisində

2025-ci ilin avqustunda Cənubi Qafqazda uzun illər davam edən gərginliklər yeni bir mərhələyə qədəm qoydu. Ermənistan və Azərbaycan arasında 2020-ci il müharibəsindən sonra davam edən postkonflikt prosesləri müxtəlif vasitəçilik təşəbbüslərinə baxmayaraq, uzun müddət nəticəsiz qalmışdı. Rusiya bu müddətdə özünü əsas vasitəçi kimi təqdim etsə də, həm Ukrayna müharibəsindəki resurs itkisi, həm də beynəlxalq təcrid şəraiti onun vasitəçilik rolunu zəiflətdi. Nəticədə Moskvanın "sülhməramlı" missiyası real təsir gücünü itirdi və regionda etimad itkilərinə səbəb oldu. Məhz bu zəiflik fonunda ABŞ diplomatiyası Cənubi Qafqazda fəallaşdı. 2025-ci ilin avqustunda Donald Trampın vasitəçiliyi və şahidliyi ilə Ermənistan və Azərbaycan arasında sülh müqaviləsinin paraflanması bu tarixi prosesin dönüş nöqtəsi oldu. Bu hadisə illərdir təxirə salınan sülhün reallığa çevrilməsi baxımından, regionun siyasi arxitekturasını əsaslı şəkildə dəyişdirdi. Müqavilənin paraflanması yalnız iki dövlət arasında müharibənin bitməsi deyil, həm də regional münasibətlərin yeni fazaya keçidi anlamına gəlirdi. ABŞ-ın vasitəçiliyi Moskvanın uğursuzluğunu qabarıq şəkildə nümayiş etdirdi və Cənubi Qafqazda təsir balansının dəyişməsinə səbəb oldu. Tramp administrasiyası üçün bu diplomatik qələbə həm geosiyasi, həm də simvolik əhəmiyyət daşıyırdı: ABŞ özünü yenidən "qlobal sülhün memarı" kimi təqdim etdi [1; 3]. Vaşinqtonun bu prosesdə əsas məqsədi regionda Rusiya və İran təsirini məhdudlaşdırmaq, enerji və nəqliyyat dəhlizlərini Qərb bazarları ilə əlaqələndirmək idi. Ermənistan isə uzun illər Rusiya orbitində qaldıqdan sonra ilk dəfə Qərblə balanslı siyasətə yönəldi. Azərbaycan üçün isə sülh müqaviləsi müharibədən sonra əldə edilən strateji üstünlüyün siyasi baxımdan möhkəmləndirilməsi, legitimləşdirilməsi və regionda öz suverenliyinin tam təmin edilməsi demək idi.

Sülh prosesi ilə paralel olaraq ABŞ tərəfindən təşviq olunan "Trans-Regional Infrastructure and Prosperity Partnership" (TRIPP) layihəsi regionun iqtisadi gələcəyi üçün yeni perspektivlər açdı. Bu layihə Zəngəzur dəhlizini və Orta Dəhlizi birləşdirərək, Cənubi Qafqazı Qara dəniz və Aralıq dənizi

vasitəsilə Avropa bazarlarına bağlamağı hədəfləyir. TRIPP çərçivəsində Türkiyə, Azərbaycan, Ermənistan və Gürcüstanın iştirakı ilə nəqliyyat-logistika infrastrukturu modernləşdiriləcək, ABŞ və Avropa maliyyə institutlarının sərmayələri cəlb ediləcək. Bu, regionun təkcə iqtisadi deyil, həm də siyasi müstəqilliyini gücləndirəcək. Rusiyanın təsir dairəsinin daraldığı, İranın isə regional nəqliyyat zəncirindən kənarda qaldığı bu yeni geoiqtisadi düzən, Cənubi Qafqaz dövlətləri üçün real suverenlik imkanlarını genişləndirir. Bununla belə, sülh və inkişaf perspektivləri ilə yanaşı, Cənubi Qafqaz üçün yeni çağırışlar da meydana çıxır. ABŞ-ın fəallaşması və Qərb kapitalının artan təsiri regionda geosiyasi rəqabətin yeni formasını yaradır. Moskva və Tehran bu prosesi öz milli maraqlarına təhdid kimi qiymətləndirir və TRIPP layihəsinə qarşı dezinformasiya kampaniyaları aparır. Eyni zamanda, Ermənistan daxilində ruspərəst və revanşist siyasi elitalar arasında Qərbə yönəlmiş yeni kursa qarşı müqavimət var. Azərbaycanda isə sülhdən sonra regionda liderlik mövqeyinin saxlanması, iqtisadi üstünlüyün davamlı inkişafla möhkəmləndirilməsi və təhlükəsizlik balansının qorunması dövlət siyasətinin prioritetlərinə çevrilib.

Bu baxımdan, suverenlik məsələsi hələ də Cənubi Qafqaz üçün həm ən böyük imkan, həm də ən ciddi sınaq olaraq qalır. Ermənistan üçün bu, Moskvanın siyasi himayəsindən çıxmaq və Qərblə real tərəfdaşlıq qurmaq anlamına gəlir. Azərbaycan üçün isə regional layihələrdə əsas tranzit və enerji mərkəzi statusunun qorunması ilə bərabər, müstəqil qərarvermə imkanlarını gücləndirmək deməkdir. Cənubi Qafqaz dövlətləri ilk dəfədir ki, böyük güclərin təsiri altında deyil, qarşılıqlı maraqlara əsaslanan yeni regional əməkdaşlıq sisteminin formalaşmasına real töhfə verir. Əgər bu sistem sabitləşərsə, 2025-ci ilin avqustunda atılan addım yalnız bir sülh sənədinin deyil, bütöv bir regionun siyasi və iqtisadi azadlığının başlanğıcı kimi tarixə düşəcək.

Nəticə

Ukrayna münaqişəsi beynəlxalq münasibətlər sistemində güc siyasətinin hələ də dominant prinsip olaraq qalmasını bir daha sübut etdi. ABŞ və Rusiya arasında gedən rəqabət yalnız hərbi və iqtisadi sahələrdə deyil, həm də ideoloji və normativ səviyyədə qlobal sistemin gələcəyini müəyyənləşdirən əsas faktora çevrildi. Münaqişə göstərdi ki, beynəlxalq hüququn prinsipləri, xüsusilə də suverenlik və ərazi bütövlüyü məsələləri, böyük güclərin maraqları toqquşduqda selektiv şəkildə tətbiq olunur. ABŞ liberal-demokratik dəyərləri müdafiə adı altında öz təsir dairəsini genişləndirməyə, Rusiya isə bu prosesi Qərbin hegemonluğuna qarşı müqavimət kimi təqdim etməyə başladı. Bu, beynəlxalq münasibətlərdə sabitlikdən çox qeyri-müəyyənliyi artırdı və qlobal təhlükəsizlik sisteminin çoxqütblü, lakin qeyri-sabit xarakter aldığını göstərdi. Ukrayna böhranı həm də beynəlxalq təşkilatların effektivliyinin azaldığını, diplomatik mexanizmlərin hərbi güc qarşısında zəif qaldığını nümayiş etdirdi.

Cənubi Qafqaz kontekstində isə davam etməkdə olan Ukrayna münaqişəsi yeni reallıqlar doğurdu. Region ölkələri, xüsusilə Azərbaycan və Ermənistan artıq suverenlik və təhlükəsizlik məsələlərinə yalnız geosiyasi deyil, həm də strateji iqtisadi baxımdan yanaşmağa başladılar. ABŞ-ın vasitəçiliyi ilə əldə edilən Ermənistan-Azərbaycan sülh razılaşmasının paraflanması mərasimi regionda uzunmüddətli sabitlik üçün imkanlar açsa da, bu, eyni zamanda Rusiya və İran kimi güclərin təsir dairəsinin daralması ilə yeni balans mübarizəsinə səbəb oldu. TRIPP layihəsi və Qərb kapitalının regiona daxil olması Cənubi Qafqazı daha inteqrativ və müstəqil inkişaf yoluna yönəldə bilər, lakin bu prosesin uğuru dövlətlərin öz suveren qərarvermə qabiliyyətini qorumaq və daxili siyasi sabitliyi təmin etmək bacarığından asılı olacaq. Nəticə etibarilə, Ukrayna münaqişəsi yalnız Avroatlantik məkanın deyil, həm də Cənubi Qafqazın geosiyasi gələcəyini müəyyən edən əsas qlobal sınaqlardan birinə çevrilmişdir. TRIPP layihəsi Azərbaycanın suverenliyini iqtisadi və siyasi baxımdan daha da möhkəmləndirərək onu regionun əsas tranzit və enerji mərkəzinə çevirir. Bu layihə vasitəsilə Azərbaycan həm regional nəqliyyat şəbəkələrində qərarverici mövqeyini gücləndirir, həm də xarici təsirlərdən asılılığı minimuma endirərək strateji müstəqilliyini qoruyur.

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Доц. С.А. Гарашова

Бакинский Государственный Университет

Кафедра Дипломатии и современных

интеграционных процессов

Резюме

ПРОБЛЕМА СУВЕРЕНИТЕТА УКРАИНЫ В ОТНОШЕНИЯХ США И РОССИИ

Украинский конфликт вновь вывел на первый план значение политики силы, суверенитета и принципов международного права в системе международных отношений XXI века. Противостояние между США и Россией на фоне этой войны подорвало основы глобальной архитектуры безопасности и значительно ослабило эффективность международных организаций. Поддержка США Украины в военной, экономической и политической сферах, а также стремление России отстаивать собственные геополитические интересы привели к формированию новой многополярной реальности. В результате конфликт показал, что понятие суверенитета теперь определяется не только юридическими, но и экономическими и стратегическими факторами. Эти процессы оказали прямое влияние на регион Южного Кавказа. В частности, парафирование мирного договора между Арменией и Азербайджаном в августе 2025 года при посредничестве США и запуск проекта TRIPP открыли новую страницу экономической и политической стабильности региона. В рамках TRIPP Азербайджан укрепил свой статус основного транзитного и энергетического центра, тем самым усилив свою суверенность на основе устойчивых экономических механизмов. Таким образом, украинский кризис стал фактором трансформации глобального баланса сил и пересмотра региональных моделей суверенитета.

Ключевые слова: украинский конфликт, отношения США и России, суверенитет, Южный Кавказ, проект TRIPP.

Sabina Garashova

Ph.D. (Political Science),

Chair of Diplomacy and

Contemporary Integration Processes,

Baku State University

Summary

The Problem of Ukraine's Soverentity U.S.-Russia relations

The Ukraine conflict has once again highlighted the relevance of power politics, sovereignty, and the principles of international law in the 21st-century international relations system. The confrontation between the United States and Russia amid this war has undermined the foundations of global security architecture and significantly weakened the effectiveness of international organizations. The U.S. support for Ukraine in military, economic, and political spheres, combined with Russia's efforts to

defend its own geopolitical interests, has led to the emergence of a new multipolar reality. As a result, the concept of sovereignty has evolved beyond its purely legal meaning to encompass economic and strategic dimensions. These developments have had a direct impact on the South Caucasus region. Notably, the peace agreement between Armenia and Azerbaijan, paraphed in August 2025 under U.S. mediation, along with the launch of the TRIPP project, opened a new stage of regional economic and political stability. Through TRIPP, Azerbaijan has strengthened its position as a key transit and energy hub, thereby consolidating its sovereignty on a more sustainable economic basis. Thus, the Ukraine crisis has become a catalyst for reshaping the global balance of power and redefining regional models of sovereignty.

Keywords: Ukraine conflict, U.S.-Russia relations, sovereignty, South Caucasus, TRIPP project.

THE ROLE OF CIVIL SOCIETY IN ACHIEVING THE SUSTAINABLE DEVELOPMENT GOALS

Sevinc ALIYEVA

PhD, Senior Lecturer, Baku State University
E-mail: sevaaliseva@gmail.com
ORCID ID: 0009-0002-7216-7830
Ulvi HASANOV

Master's Student in Public Policy, Baku State University
E-mail: ulvi.hasanov.yashar@bsu.edu.az
ORCID ID: 0009-0000-0213-7826

Abstract

This article explores the role and functions of civil society institutions in achieving the Sustainable Development Goals (SDGs) within the framework of the 2030 Agenda for Sustainable Development. Drawing on United Nations reports, international policy documents, and national experiences, the study examines how civil society contributes to promoting social, economic, and environmental sustainability. The paper highlights civil society's participation as a key partner in policy implementation, advocacy, monitoring, and awareness-raising efforts. It also emphasizes the significance of cross-sectoral partnerships between the state, private sector, and non-governmental organizations in fostering inclusive and sustainable development. Particular attention is given to Azerbaijan's experience, where the cooperation between government institutions and civil society organizations demonstrates a successful model of shared responsibility and collective progress toward national priorities aligned with the SDGs. The findings suggest that strengthening civic participation and institutional collaboration is essential for achieving long-term sustainability and social cohesion.

Keywords: Sustainable Development Goals, civil society, Azerbaijan, United Nations, social development, public policy.

INTRODUCTION

The Sustainable Development Goals cover key areas of public and social activity – social, economic, and environmental. The seventeen Sustainable Development Goals adopted by the United Nations for 2030 reflect the main global challenges of our time and propose comprehensive solutions.

The purpose of this article is to analyse the role and functions of civil society institutions in achieving the Sustainable Development Goals, as well as to identify areas for their further participation in the implementation of the 2030 Agenda for Sustainable Development. The study is based on an analysis of international documents of the United Nations, reports on the implementation of the Sustainable Development Goals, and reviews of the practical activities of civil society at both the global and national levels.

Issues related to achieving the Sustainable Development Goals, as well as the search for effective tools and mechanisms for their implementation, are becoming the subject of active discussions among politicians, experts, scientists, and representatives of civil society at both the national and international levels.

Implementing the Sustainable Development Goals requires concerted efforts and investments from the state, the private sector, and civil society institutions, as their interaction ensures sustainable and balanced social development.

Civil society has played a significant role in the development of the Sustainable Development Goals from the very beginning. The formulation and subsequent adoption of the Sustainable Development

Goals were the result of a long and comprehensive consultative dialogue between the United Nations, states, and representatives of global civil society. Today, civil society is considered one of the state's key partners in achieving the Sustainable Development Goals.

It is recognized, both theoretically and practically, that the state and civil society represent interconnected elements of a single system. Social stability, progressive transformation, and sustainable development depend on the nature of their interactions, the degree of cooperation, and the ability to exercise mutual control.

Civil society is particularly important in the implementation of the social Sustainable Development Goals, as the so-called "third sector" is based primarily on civic initiatives from local communities aimed at developing education, science, healthcare, the environment, and social protection—areas directly linked to ensuring the social sustainability of society.

THE IDEA OF SUSTAINABLE DEVELOPMENT

Sustainable development of a country, region, or the entire world is development that meets the needs of the present generation without posing a threat to future generations. The idea of sustainable development seeks to find a balance between economic growth that can guarantee a high standard of living for both current and future generations and the need to protect and improve the environment. Sustainable development is a process of change in which the use of natural resources, investment, the advancement of science and technology, and the development of individuals occur in harmony and interconnectedness.

Sustainable development issues have become some of the most discussed globally in recent decades. This problem encompasses such important areas as ensuring gender equality and equity, eradicating poverty and hunger, ensuring sustainable economic growth, preserving the environment, developing quality education, and improving living standards. All of these aspects are universal in nature and affect all countries, and their successful resolution is possible only through global partnership and the joint development of strategies to achieve the Sustainable Development Goals. (Popolzina, P) (Popolzina, 2019).

The concept of "sustainable development" has been around for some time, but it was at the United Nations Conference on the Human Environment, held in Stockholm in 1972, that the global community first came together to discuss global challenges in environmental protection and development. As a result, fundamental principles for preserving and improving the natural environment were formulated, and the need to support people as the central participant in this process was emphasized (United Nations, 2021).

In 1992, at the United Nations Conference on Environment and Development, 178 heads of state adopted three key documents: the comprehensive action plan "Agenda 21," the Rio Declaration on Environment and Development, and the Statement of Principles for Sustainable Forest Management. These documents and principles were reaffirmed in 2002 at the World Summit on Sustainable Development in Johannesburg, which brought together tens of thousands of participants to attract the attention of the international community and take practical measures to improve the quality of life and conserve natural resources. The media were also recognized as important partners in education for sustainable development.

Participating states were encouraged to reconsider existing production and consumption patterns, commit to ensuring environmentally sound economic growth, and intensify joint efforts to develop transboundary cooperation and exchange expertise, technologies, and resources.

Three years later, the United Nations declared the Decade of Education for Sustainable Development (2005–2014). Its goal was to integrate the principles, values, and practical experience of sustainable

development into all levels of education and learning, so that everyone understands the essence of sustainable development and participates in its implementation at all levels of society (Institut du développement durable et des relations internationales [IDDRI], 2016).

The core idea of the concept of sustainable development is the need for harmonious interaction between nature, society, and the economy. The key strategic areas of sustainable development include:

For Society

- Human rights;
- Peace and security;
- Gender equality;
- Cultural diversity and intercultural understanding;
- Health;
- The fight against HIV and AIDS;
- Effective governance.

For the Environment:

- The rational use of natural resources (water, energy, agriculture, biodiversity);
- The fight against climate change;
- Rural development;
- Sustainable urban development;
- The prevention and mitigation of natural disasters;

For the Economy

- Poverty reduction;
- Strengthening responsibility and accountability;
- The development of a market economy.

The concept of sustainable development is based on five key principles:

- Humanity is capable of making development sustainable and long-term;
- Limits in the use of natural resources are relative;
- The basic needs of all people must be met and they must be able to strive for a more prosperous life;
- The lifestyle of people with greater material resources must be consistent with the planet's ecological capabilities, particularly in terms of energy consumption;
- The size and rate of population growth must be consistent with the productive potential of the Earth's global ecosystem.

Thus, sustainable development aims to meet the needs and aspirations of humanity. A sustainable development model based on the rational use of resources and environmental protection should serve not only today's society but also future generations.

THE NEED TO ENGAGE CIVIL SOCIETY IN ACHIEVING THE SUSTAINABLE DEVELOPMENT GOALS

The importance of civil society in addressing global challenges is demonstrated by the extensive work being carried out at the United Nations level. The UN's work in supporting civic space is based on three key principles: (United Nations Human Rights Council, 2016).

Participation: ensuring inclusive, diverse, safe, independent, and meaningful participation of civil society in decision-making processes in line with the 2030 Agenda for Sustainable Development, as well as facilitating inclusive, safe, and meaningful civil society participation in United Nations intergovernmental processes.

Protection: promoting the protection of civil society representatives at risk, including in cases of intimidation or harassment for collaborating with the United Nations.

Promotion: actively developing and strengthening open civic space, including creating legal and policy conditions that facilitate free public debate online and offline, and that provide civil society with the opportunity to freely associate and express their views.

The need for active civil society participation in achieving the Sustainable Development Goals is driven by the fact that "effective civic engagement fosters social cohesion and empowers people, including minorities and vulnerable groups, to be heard and participate in public processes."

It should be emphasized that the non-profit sector ranks seventh among the world's largest economies, just behind the United Kingdom and France, and ahead of countries such as Italy, Brazil, Russia, Spain, and Canada. It is a major employer and an effective mechanism for mobilizing public resources. Thus, the non-profit sector contributes not only to meeting the needs of the population but also to the creation of a favourable business climate, strengthening the stability of economic development, and fostering a political system based on the principles of democracy, transparency, and accountability, which, in turn, is essential for achieving the Sustainable Development Goals. embodies the ideals of responsibility, unity, and creativity, and its contribution to achieving the Sustainable Development Goals serves as proof that Azerbaijan is confidently moving forward, combining national interests with global challenges, while remaining true to its spiritual roots, values, and independent path of development (Lee & Moon, 2018).

THE ROLE AND FUNCTIONS OF CIVIL SOCIETY IN THE IMPLEMENTATION OF THE SUSTAINABLE DEVELOPMENT GOALS

Civil society plays a vital role in the implementation of the Sustainable Development Goals. As is well known, the most effective partnerships are those focused on specific objectives, in which each participant performs clearly defined functions. Therefore, defining the functions of civil society in achieving the Sustainable Development Goals is of particular importance.

First and foremost, civil society should support government agencies in implementing the Sustainable Development Goals at the national level by proposing and promoting initiatives. Civil society institutions are capable and called upon to initiate significant social change.

Civil society institutions can act as a bridge between the government and the public, communicating information about society's needs and demands to government agencies and transforming public feedback into socially significant initiatives. Thus, civil society can act as an advisor to government in achieving the Sustainable Development Goals. In countries with transition economies, it is often necessary to rely on the expertise and services of civil society institutions. Conducting both formal and informal consultations between government agencies and civil society representatives fosters mutual understanding, increases trust, and enhances the potential for further cooperation.

Civil society institutions also contribute to the achievement of the Sustainable Development Goals through the implementation of various socially oriented projects (Global Public Policy Institute [GPPi] & Konrad Adenauer Stiftung [KAS], 2016).

Civil society institutions help raise public awareness of the Sustainable Development Goals. However, some studies show that public awareness of these goals remains low. Today, not only the general public but also many government officials have a rather unclear understanding of the essence of sustainable development and the reasons why its achievement is a global priority. According to surveys, only 54% of respondents in Europe are aware of the Sustainable Development Goals and national plans for achieving them, while in African countries this figure is only 29%. Therefore, it is important for civil

society to take on the task of educating local authorities, donors, businesses, and colleagues about the 2030 Agenda and the Sustainable Development Goals.

Civil society plays a key role in monitoring and ensuring accountability for both government and the private sector. States are currently introducing voluntary national reports on the implementation of the Sustainable Development Goals. Civil society, in turn, prepares alternative reports that provide a more comprehensive understanding of existing challenges and achievements in SDG implementation.

One of the goals, SDG 17, calls for the development of global partnerships. Civil society institutions are an important tool for strengthening this cooperation. Currently, civil society coalitions exist that make a significant contribution to the promotion and implementation of the principles of the Sustainable Development Goals.

Thus, civil society institutions can act as initiators of social change, advisors, communicators, monitors, and instruments for strengthening partnerships at the national and global levels in achieving the Sustainable Development Goals.

In today's world, civil society institutions play a key role in achieving the Sustainable Development Goals, ensuring a balance between the interests of the state, the private sector, and the population. Their participation contributes to the effective implementation of the 2030 Agenda, strengthening social cohesion, transparency, and accountability of public institutions.

Civil society not only acts as an intermediary between the state and society but also serves as a source of initiatives, knowledge, and innovative approaches to addressing social and environmental challenges. Expanding the participation of civil society institutions in the implementation of the Sustainable Development Goals is a prerequisite for sustainable and inclusive development based on the principles of partnership, democracy, and justice (European Environmental Bureau [EEB], 2022).

THE ROLE OF CIVIL SOCIETY IN ACHIEVING THE SUSTAINABLE DEVELOPMENT GOALS IN AZERBAIJAN

In Azerbaijan, civil society is considered a critical factor in sustainable development, reflecting the people's active position and their desire for creativity, social justice, and progress. In the context of implementing the Sustainable Development Goals, the participation of civil society institutions has become an integral part of the national strategy aimed at strengthening social well-being, protecting the environment, and building a modern, inclusive, and prosperous state.

Over the years of independence, Azerbaijan has developed a unique model of interaction between the state and civil society, based on the principles of partnership, mutual trust, and shared responsibility for the country's future. The state places particular importance on the active involvement of non-governmental organizations, public associations, and initiative groups in processes aimed at implementing the 2030 Agenda for Sustainable Development. The establishment and development of the Agency for State Support to Non-Governmental Organizations is clear evidence of the state's systematic and consistent approach to cooperation with the civil society sector. Thanks to the activities of this agency, hundreds of projects aimed at addressing social, environmental, and educational issues have received support and been successfully implemented. Azerbaijan's civil society is actively involved in achieving national priorities that are fully aligned with the Sustainable Development Goals. Non-governmental organizations implement numerous initiatives in areas such as poverty eradication, gender equality, human rights protection, education, healthcare, and environmental protection. Particular attention is paid to the social integration of vulnerable groups and support for families and individuals with special needs. All of this demonstrates the civil society sector's high social responsibility and its commitment to the ideals of justice, humanism, and social progress (Trend News Agency, 2024) (Azerbaijan State Statistical Committee, n.d.).

Azerbaijani civil society also plays a key role in raising public awareness of the Sustainable Development Goals and their practical implementation. Thanks to the efforts of public organizations, the media, and volunteer movements, sustainable development ideas have become part of public discourse. Improving environmental awareness, promoting a healthy lifestyle, fostering a responsible attitude toward natural resources, and promoting social justice are all the result of the consistent work of civil society institutions inspired by the spirit of patriotism and national unity (United Nations in Azerbaijan, n.d.).

Civil society's participation in the restoration and development of Azerbaijan's liberated territories is particularly important. Following the Great Victory in the Patriotic War of 2020, NGOs, volunteers, youth, and environmental organizations actively engaged in Karabakh revival projects. Their activities are aimed at restoring social infrastructure and environmental rehabilitation.

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INCLUSIVE TOURISM: ACCESSIBILITY FOR PEOPLE WITH DISABILITIES

Irtaza NAWAZ

Senior Lecturer, Tashkent State University of Oriental Studies, Uzbekistan
E-mail: Irtaza.joiya@yahoo.com
ORCID ID: 0009-0004-1794-7740
Marjona AMONOVA

Research Assistant, Tashkent State University of Oriental Studies, Uzbekistan
E-mail: amonova994@gmail.com
ORCID ID: 0009-0007-6943-5829

Abstract

This article addresses the issue of inclusive tourism, focusing on the availability of tourism infrastructure and services for people with disabilities. The relevance of this topic is driven by the need for sustainable development in the tourism industry, which advocates for creating and providing equal opportunities for all categories of tourists and the principles of social equality. The aim of the study is to identify barriers and opportunities for improving accessibility in the tourism sector and to determine the role of digital technologies and public policy in promoting the principles of 'Tourism for All'. The research employs an analysis of scientific publications from 2010 to 2025, statistical data from the World Tourism Organisation (UNWTO), and a comparative review of the best international practices.

Keywords: Inclusive tourism, accessibility, people with disabilities, digital technologies, sustainable development, tourism for all.

INTRODUCTION

A rising area of study and application, inclusive tourism reflects the global push for sustainability, equality, and universal accessibility. The World Health Organisation estimates that 16% of the world's population, which is around 1.3 billion people, lives with a handicap. However, there are very few accessible tourist destinations for individuals with disabilities. For instance, according to the VisitBritain report on 'Accessible and Inclusive Tourism', roughly 30% of rooms (hotels, etc.) in the UK have some form of accessibility (e.g., step-less entry, and at least one room for the disabled). This difference demonstrates the pressing need for a structural development in the way the travel and tourism sector plans and provides its services.

The concept of '*Tourism for All*', promoted by the World Tourism Organisation (UNWTO), emphasises that travel is a human right and that accessible tourism benefits not only people with disabilities but also elderly travellers, families with young children, and individuals with temporary mobility restrictions. Accessibility is also a key element of *Sustainable Development Goals of the UN 2030 Agenda* – Goal 10 (Reduced Inequalities) and Goal 11 (Sustainable Cities and Communities). Here, inclusive tourism can be considered as a crucial component of sustainable development, boosting destination competitiveness, social equity, and economic diversification, not only a social concern. Also, it should be mentioned that a few destinations and facilities are equipped to serve tourists with disabilities, notwithstanding global attempts to create standards and guidelines aimed at enhancing accessibility in the tourism industry.

The primary barriers are insufficient social and policy support, a lack of specialised services, low awareness among tourism staff, and a lack of physical and informational accessibility. These elements severely limit this group's travel options and prevent them from being socially included.

It is well known that in recent decades tourism has emerged as one of the most profitable economic sectors. In 2024, 10.9 trillion US dollars, or 10% of the world economy, was generated by travel tourism, according to the World Organisation's EIR's most current data (ODO, 2024). The value to the local

economy could be added by travellers with disabilities, who frequently travel with family members or friends, in addition to the fact that they used to spend more money and stay longer than other tourists. However, permanent obstacles, which include a lack of infrastructure, inadequate staff training, poor, trustworthy information on accessible destinations, and restricted digital inclusion, prevent this potential from being fully realised.

The main goal of this study is to identify the major barriers and possibilities for the growth of inclusive tourism and the function of institutional mechanisms and digital technologies in enhancing accessibility within the tourism industry.

The following research goals are established in order to accomplish this goal:

i. To examine regional and worldwide patterns in the growth of inclusive travel.

ii. To determine the informational, attitudinal, and infrastructure obstacles to accessibility.

iii. To analyse how digital change may support inclusive travel.

iv. To create proposals for incorporating accessibility concepts into sustainable travel plans.

The study keeps its main focus on the elaboration of inclusive tourism in the context of sustainable development and global digitisation. It also examines how social, economic, and technological factors impact the accessibility of tourism services for people with disabilities.

MATERIALS AND METHODS

This study explores the main challenges, opportunities, and drivers of inclusive tourism elaboration within the context of sustainable development and digital transformation. The research employs a qualitative and analytical approach, comparing government practices and analysing secondary data from reports and statistics provided by leading international organisations.

The report, which spans the years 2010 to 2025, examines the impact that accessibility guidelines, legislative frameworks, and technological advancements have on the tourism industry. The exploratory research aims to provide a comprehension of inclusive tourism by integrating information from academic and institutional sources.

When discussing the information sources used for the article's statistics, both domestic and foreign sources were consulted:

i. World Tourism Organisation (UNWTO, 2023, 2025);

ii. World Health Organisation (WHO, 2023);

iii. World Travel and Tourism Council (WTTC, 2024).

Academic literature was collected from various databases, such as Cyberleninka, Google Scholar, and Scopus, using search terms like ‘*inclusive tourism*’, ‘*sustainable tourism*’, and ‘*Tourism for All*’.

Each document and dataset was evaluated based on its credibility, publication date, and relevance. The primary focus was on official papers and well-known global organisations’ research. Because of the fact that this study is more conceptual and exploratory, quantitative data were compiled descriptively and highlighted key trends instead of running statistical tests. Hence, all materials used in the study were freely available. There was no private or confidential information used or examined. The study complies with academic integrity standards, guaranteeing openness, accurate citation, and intellectual property recognition. Thus, the analytical approach used provides evidence-based understanding of the term *'inclusive tourism*' and its significance for both sustainable and digital transformation in the tourism industry.

FINDINGS

In today's travel, making trips comfortable and accessible for all is a tremendous economic opportunity and a social requirement. The study mentioned several times that about 1.3 billion individuals worldwide who live with disabilities (WHO, 2023) constitute a sizable yet underdeveloped portion of the travel industry. Although accessibility still varies significantly from region to region, there have been clear improvements, especially in developed countries.

In the study of one of the factors of sustainable development, it is impossible not to mention the UN Agenda for Sustainable Development 2030, where Goals 10 (Reduced Inequalities) and 11 (Sustainable Cities and Communities) most accurately convey the significance of inclusive tourism. Achieving these goals is facilitated by involving more people in both cultural and economic life, bringing people together, and promoting equal development around the world. Frequently, improvements in one aspect of life contribute to the development of others. For example, inclusive tourism initiatives will support large-scale changes and infrastructure improvements that will be used not only to attract more visitors, but also by local families and seniors. Therefore, a concept which is becoming increasingly popular in modern tourism management research is created by such kind of investments in availability across the world.

As stated by HTF Market Intelligence, the accessible tourism industry is expected to double its value by 2032 (HTF, 2025). However, it is not possible to realise the economic potential of inclusive tourism if there is no government policy support. For example, countries like Japan, Australia, and Spain used to have more competitive destinations and higher satisfaction rates because of their comprehensive legal frameworks. Based on the examples above, it is proposed that a policy be agreed upon and implemented, which is a vital element of market growth.

There are three different approaches worldwide for the development of inclusive tourism:

i. ***Regulatory Model:*** This approach uses laws and enforcement, seen in the EU and Japan;

ii. ***Market-Driven Model:*** Here, innovations will be given priority if there is a demand and a benefit - North America;

iii. ***Emerging Hybrid Model:*** This approach is a mix of the previous two, meaning that when laws do not exist, innovations take over, and vice versa.

Best success requires a combination where we can observe both technology, social awareness, and policy; however, these three methods taught a couple of valuable lessons.

In general, we should observe inclusive tourism as a pivotal part of sustainable economic growth rather than just a charitable effort. Creativity, uniqueness, and adaptability are opened up by the weave of accessibility, technology, and policy in the global tourism industry.

DISCUSSION AND CONCLUSION

At present, when the whole world is focused on sustainable development, the prospect of equalising the rights of each individual in all areas of life, including tourism, seems the most important. Accessibility is a fundamental human right, not simply one of the elements of economic competitiveness, highlighted in the report. About 1.3 billion people with disabilities worldwide struggle with travel opportunities, which are complicated by issues related to infrastructure, awareness, and attitudes, according to findings. From an economic perspective, inclusive tourism is a fast-growing sector. Frequently, customers with special needs are ready to pay for their comfort and quality of service due to their disposable income. Thus, this sector, which aims to make travel cosy, should be considered the most beneficial investment in the future.

Currently, a vital factor in every field of life, including the tourism industry, is digital transformation. Independent travel and expanded participation options for tourists are promoted by innovative tools: artificial intelligence, AR, smartphone applications, and accessible booking platforms. Nevertheless, one of the challenges in developing countries is digital inequality, which remains even nowadays. If we want to liquidate this gap and maintain sustainable development in the foreseeable future, governments, independent businesses, and international organisations must work together. Innovative tools (artificial intelligence, AR, smartphone applications, and accessible booking platforms) encourage independent travel as well as increase the options for participation of tourists. These technologies not only contribute to the increased convenience but also lead to the sustainability and responsible tourism practices by enhancing visitor experiences and making them more accessible (Nawaz & Iqbal, 2025).

In summary, the transition to inclusive tourism should be viewed not only as a moral obligation but also as a strategic necessity for sustainable development worldwide. Also, destinations that focus on accessibility will be in a favourable position from a socio-economic perspective, offering a comfortable visit both for local residents and visitors, and boost their global reputation.

Recommendations

i. Monitoring systems need to be established by governments, so that they would be able to follow the UN Tourism's recommendations for inclusive tourism and make accessibility a key part of their national tourism goals.

ii. To make their services more convenient and accessible, tourism businesses ought to invest in employee training and digital tools.

iii. Educational institutions should include inclusive tourism management in their programs to build professional skills.

iv. The main focus of technology developers should be on creating open and compatible accessibility standards.

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CYCLICAL NATURE OF ECONOMIC DEVELOPMENT: FROM CLASSICAL CONCEPTS TO MODERN MODELS

Lachin ABISHLI,

PhD in Economics, Associate Professor, Department of "Economics,"

Baku State University,

E-mail: abishli@bsu.edu.az

ORCID: 0000-0001-8597-0185

Elmar DADASHEV

Lecturer, Department of "World Economy," Doctoral Candidate, Department of "Economics," Baku State University,

E-mail: elmardadashov@bsu.edu.az

ORCID: 0000-0002-3316-332X

Abstract

The cyclical nature of economic development remains one of the most fundamental subjects in macroeconomics, reflecting the periodic fluctuations of economic activity around a long-term growth trend. This paper aims to trace the evolution of theories of business cycles — from classical and Keynesian interpretations to modern real business cycle (RBC) and dynamic stochastic general equilibrium (DSGE) models — and to assess their analytical and practical relevance. The study relies on a comprehensive literature review, theoretical synthesis, and comparative analysis of endogenous and exogenous approaches to economic fluctuations. The findings highlight how modern macroeconomic modeling integrates microfoundations, expectations, and financial frictions while retaining the cyclical essence first observed in early classical thought. The paper concludes by emphasizing the importance of integrating financial, institutional, and behavioral aspects into future macroeconomic modeling frameworks.

Key words: economic cycles, business cycle theory, RBC, DSGE, Kondratiev waves, macroeconomic fluctuations, endogenous growth.

Introduction

Economic cycles — systematic expansions and contractions in aggregate economic activity — are a defining feature of capitalist economies. Since the late eighteenth century, economists have debated whether such cycles arise from intrinsic structural mechanisms or external shocks. Classical economists such as Adam Smith and David Ricardo viewed economic growth as a predominantly linear process driven by capital accumulation, productivity, and specialization, where deviations were largely accidental. It was only in the nineteenth and early twentieth centuries that cyclical dynamics began to receive formal theoretical treatment, notably in the works of Marx, Juglar, and Kondratiev. The evolution of business cycle theory mirrors the development of macroeconomics itself. From the descriptive “long waves” of Kondratiev (1925) and the investment–employment dynamics of Keynes (1936), the field has progressed toward microfounded equilibrium frameworks such as RBC and DSGE models. This transition reflects the growing sophistication of macroeconomic thought and the increasing reliance on quantitative modeling for policy design. Yet, despite theoretical advances, the essence of cyclical behavior — recurrent, nonlinear, and often unpredictable — remains a core empirical challenge.

The purpose of this paper is threefold: (1) to review key theoretical approaches to business cycles; (2) to systematize models according to historical and methodological principles; and (3) to assess their relevance in explaining contemporary macroeconomic fluctuations.

Materials and Methods

The study is based on a qualitative and conceptual methodology. A comprehensive literature review was conducted across historical, neoclassical, and modern schools of economic thought. The analytical framework classifies models by:

(1) their historical phase — from classical to Keynesian to modern RBC/DSGE;

(2) their methodological orientation — exogenous versus endogenous sources of cycles; and

(3) their explanatory mechanisms — technological shocks, demand variations, and financial dynamics.

Comparative analysis was used to synthesize key characteristics: cycle phases, causes, and modeling techniques. The paper deliberately focuses on theoretical integration rather than econometric estimation, as the goal is to trace intellectual evolution rather than to test a specific model empirically. Data sources include peer-reviewed journal articles, institutional working papers (NBER, IMF, World Bank), and canonical economic literature. The limitations of this method include the absence of direct statistical validation and potential generalization across heterogeneous macroeconomic systems.

Findings

Classical foundations and long-wave theories

Classical economists such as Smith, Ricardo, and Mill described economic growth as a function of capital accumulation, labor division, and technological progress. Cyclicality, when recognized, was viewed as exogenous — the result of wars, harvest failures, or financial crises. The systematic study of long-term cyclical movements was introduced by Nikolai Kondratiev (1925), who proposed the existence of 40–60-year "long waves" driven by technological revolutions and major structural shifts. Later theorists, including Joseph Schumpeter, emphasized the role of innovation clusters in generating these waves. Richard Goodwin (1967) extended this approach with a nonlinear macro-dynamic model linking income distribution and employment, capable of producing endogenous oscillations without exogenous shocks — an early precursor of modern cyclical endogeneity.

Transition to Keynesian and neoclassical schools

The Keynesian revolution (Keynes, 1936) reframed economic cycles as outcomes of aggregate demand fluctuations and investment expectations. Keynesian models inspired the development of multiplier–accelerator frameworks (Samuelson, 1939) and emphasized fiscal and monetary stabilization policies. By contrast, the "new classical" school, led by Lucas (1977) and Sargent (1978), argued that cycles result from rational responses to information and policy shocks. The emergence of the **Real Business Cycle (RBC)** paradigm (Kydland & Prescott, 1982) marked a turning point: it explained fluctuations as optimal intertemporal responses to real (mainly technological) shocks, assuming fully rational agents and frictionless markets.

Modern DSGE and hybrid approaches

In the late 1990s and 2000s, the **Dynamic Stochastic General Equilibrium (DSGE)** framework emerged as the synthesis of microfoundations, rational expectations, and stochastic disturbances. DSGE models incorporate multiple types of shocks — technology, preferences, fiscal, financial — and allow for nominal rigidities and frictions. These models replicate "stylized facts" of cycles, such as comovements of output, consumption, and investment, and have become standard in central banks (Smets & Wouters, 2007; Christiano et al., 2005).

Recent developments extend the paradigm to include financial cycles (Gertler & Kiyotaki, 2010), behavioral expectations (De Grauwe, 2012), and bounded rationality. The global financial crisis of 2008 revealed the limitations of purely equilibrium-based models, leading to hybrid frameworks integrating macro-financial linkages, debt accumulation, and expectations dynamics (Minsky, 1986; Borio, 2012).

A summarized typology of business cycle models:

Approach	Core Idea	Typical Causes	Representative Models
Classical / Long Waves	Technological or industrial shifts	Technological revolutions, sectoral change	Kondratiev, Schumpeter
Keynesian / Neoclassical	Demand fluctuations, expectations	Investment, consumption, fiscal shocks	Keynes, Samuelson
New Classical / RBC	Rational reactions to real shocks	Technology, labor productivity	Kydland & Prescott
Modern DSGE	Stochastic shocks, microfoundations	Supply, demand, financial, expectations	Smets & Wouters, Christiano et al.
Post-Keynesian / Financial	Endogenous credit and leverage cycles	Debt, expectations, financial markets	Minsky, Borio

Discussion and Conclusion

The evolution of business cycle theory reflects the broader trajectory of macroeconomic thought — from descriptive empiricism to mathematical formalism and, more recently, to structural realism. Classical insights into long waves emphasized the technological and institutional nature of cyclical processes. Neoclassical and Keynesian theories formalized the short- and medium-term dynamics, leading to policy-relevant macro-models. Modern RBC and DSGE frameworks integrate stochastic shocks and microfoundations, allowing quantitative policy simulation but often criticized for excessive abstraction.

Contemporary macroeconomics increasingly recognizes the need to reintroduce financial, institutional, and behavioral components into cycle theory. The integration of financial accelerator mechanisms (Bernanke, Gertler & Gilchrist, 1999), credit constraints, and heterogeneous agents provides a richer understanding of real-world dynamics. Furthermore, the incorporation of bounded rationality and adaptive expectations may bridge the gap between theoretical precision and empirical realism. From a policy perspective, understanding cyclical phases is vital for designing countercyclical fiscal and monetary instruments. Technological shocks call for innovation policy; financial shocks — for prudent regulation; and demand shocks — for timely stabilization. The cyclical perspective remains essential for anticipating turning points and mitigating macroeconomic volatility.

In conclusion, the cyclical nature of economic development represents both a theoretical and practical challenge. Its explanation evolved from exogenous waves to endogenous dynamics embedded in complex macroeconomic systems. Future research should focus on integrated models combining real, financial, and behavioral dimensions, thereby enhancing the explanatory and predictive power of modern macroeconomics.

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INTERNATIONAL EXPERIENCE IN LEGAL REGULATION OF THE DIGITAL ECONOMY, THE FORMATION OF AN OPTIMAL MODEL FOR AZERBAIJAN

Ikram JABRAILOV

Associate Professor, Department of Finance and Management, Baku State University
E-mail: ikramjabrailov@bsu.edu.az
ORCID ID: 0009-0007-9971-0406
Kamran SHUKUROV

Master's student of the Department of Economics, Baku State University
E-mail: shukurov.kamran.aliabas@bsu.edu.az

Abstract

The paper examines international models of legal regulation of the digital economy. It provides a comparative analysis of institutional and legal mechanisms, regulatory frameworks, and public policies adopted by various countries during the transition to a digital economy. Particular attention is paid to the experiences of the European Union, the United States, and Asian countries, where issues of market transparency, e-commerce, data protection, taxation, and digital entrepreneurship are explored. The results show that for Azerbaijan, an adaptive mixed model is the most promising, combining the EU's legal transparency, the US's innovation-oriented flexibility, and the strategic management practices of East Asia.

Keywords: digital economy, legal regulation, international experience, e-commerce, data protection.

INTRODUCTION

The digital economy has formed a new global model of economic relations. The spread of information technologies, e-commerce, cryptocurrencies, digital financial services, and artificial intelligence has profoundly changed how economies are governed. These processes demand renewed legal frameworks and the creation of specific mechanisms for regulating digital economic relations. International practice shows that legal approaches to the digital economy vary across countries depending on their economic and political systems. The digital economy is now a key driver of global transformation, encompassing not only the use of digital technologies in production and services but also a new logic of interaction among markets, governments, and citizens (Schwab, 2022).

The rise of digital platforms, artificial intelligence, blockchain, and fintech services has created an urgent need to modernize legal regulation. Governments face challenges ranging from personal data protection and cybersecurity to the taxation of cross-border digital transactions. As noted by the OECD (2020), the regulation of the digital economy is not merely a legal category but a strategic tool of economic policy. The relevance of this study lies in the fact that, amid digital transformation, the regulatory framework defines the boundaries of innovation, competitiveness, and user trust.

MATERIALS AND METHODS

The empirical basis includes:

- EU legal acts (GDPR, DMA, DSA);
- U.S. legislation and Federal Trade Commission (FTC) reports;
- Chinese regulations on digital economy promotion;
- Singapore's Personal Data Protection Act (PDPA);
- Analytical reports from OECD, UNCTAD, and the World Bank.

Methodologically, the study employs interdisciplinary, comparative, and adaptive approaches:

- Interdisciplinarity combines economic, legal, and institutional dimensions.
- Comparability involves analyzing common criteria such as state intervention, data protection, market freedom, and innovation support.
- Adaptivity focuses on identifying models applicable to transition economies like Azerbaijan.

The comparison was carried out across four key dimensions:

- Regulatory philosophy (the role of the state and degree of self-regulation);
- Institutional structure (regulatory bodies and mechanisms),
- Regulatory framework (laws and acts), and
- Economic outcomes (impact of regulation on digital growth).

FINDINGS

European Union: Centralized Regulatory Model

The EU model is based on the rule of law and the protection of citizens' rights. The General Data Protection Regulation (GDPR, 2018) has become the global benchmark for data protection. The Digital Markets Act (DMA) and Digital Services Act (DSA), both effective since 2022, restrict the market power of digital giants and promote transparency in online services. The EU model features a clear institutional structure (European Commission, European Data Protection Board), strict sanctions, and a strong focus on user rights. This has increased consumer trust and limited corporate abuse, though excessive regulation may slow innovation.

United States: Liberal Regulatory Model

The American model emphasizes minimal government intervention and relies heavily on market mechanisms. Regulation is mainly implemented through antitrust and consumer protection laws. The Federal Trade Commission (FTC) monitors competition and addresses abuses but does not interfere in digital entrepreneurship itself. This system fosters innovation and startup growth, making the U.S. a global digital leader (Google, Amazon, Meta, Tesla). However, it also generates issues of monopolization and unequal access to digital services.

China and East Asia: Mixed Model

In China, the state acts both as regulator and strategic investor. The 2021 "Regulations on the Promotion of the Digital Economy" govern e-commerce, fintech, and data processing. Authorities such as the MIIT and the Cyberspace Administration oversee platforms and prevent abuse. China's model is characterized by state support for major tech firms (Alibaba, Huawei, Tencent), strong cybersecurity strategies, and data sovereignty principles. Singapore demonstrates a more balanced approach, creating a transparent and innovation-friendly legal environment through the PDPA, which protects personal data while enabling business flexibility.

DISCUSSION AND CONCLUSION

Comparative analysis reveals several patterns.

First, the level of state intervention correlates with policy priorities: the EU focuses on fairness and security, the U.S. on innovation and market freedom, and China on strategic governance. Second, regulatory efficiency depends not only on laws but also on public trust. The EU model fosters trust via transparency, while the U.S. relies on entrepreneurial initiative. Third, the digital economy requires hybrid regulation that guides rather than restricts innovation. Hence, many countries, including South Korea, the UAE, and Singapore, implement mixed frameworks.

For Azerbaijan, adopting an adaptive hybrid model would be optimal. This should ensure:

- data protection and digital sovereignty;

- support for private investment and startups;
- legal recognition of digital contracts, e-documents, and fintech tools;
- harmonization with EU and OECD standards.

Such adaptation would integrate Azerbaijan's digital economy into global ecosystems while maintaining domestic legal stability. Ultimately, the synthesis of international practices—EU transparency, U.S. innovation, and Asian strategic coordination—can provide Azerbaijan with a sustainable, competitive, and secure digital future.

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The preferred spelling of the word "acknowledgment" in America is without an "e" after the "g". Avoid the stilted expression "one of us (R. B. G.) thanks ...". Instead, try "R. B. G. thanks...". Put sponsor acknowledgments in the unnumbered footnote on the first page.

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URBAN–RURAL POLARIZATION AND INEQUALITY OF OPPORTUNITIES: SOCIOLOGICAL PERSPECTIVES ON CONTEMPORARY DIVIDES

Sadiq NAGIZADA

Graduate of MA in International Relations and Diplomacy, Baku State University
E-mail: sadiqnagizada@bsu.edu.az
ORCID ID: 0009-0003-2002-9548
Nihad GASIMOV

Master's Student in European Politics and Policy Affiliation, School of Politics and International Relations (SPIRe), University College Dublin (UCD)
E-mail: nihad.gasimov@ucdconnect.ie
ORCID ID: 0009-0000-7467-1024

Abstract

Recent changes in society have made the urban-rural divide more obvious and important to study. This significant social call is marked by deep polarization in values and unequal opportunities. While cities usually lean more liberal, promoting diversity and progressive attitudes, rural areas tend to be conservative, upholding traditional values. This paper explores this divide through a sociological lens, focusing on how polarization affects social cohesion and access to resources. In addition, the paper also examines the role of inequality in education, economy, and politics, showing that this division is evident not just in social values, but in economic growth, educational access, and stability. This paper investigates how the separation has grown and why it persists and suggests a need for policy attention to promote equality and integration.

Keywords: Urban-rural divide, social polarization, political polarization, liberalism, conservatism, inequality, opportunity gap, social cohesion.

INTRODUCTION

The growing divide between urban and rural areas is a major challenge globally. It's not just about geography, but also about culture and social identity. Urban areas, often multicultural and progressive, contrast with rural regions, which are more traditional and conservative (Johnston, 2021). Cities attract migrants seeking jobs and education, which means a higher concentration of youth and innovation, while rural regions often experience aging populations and loss of skilled, physically strong labor. This split leads to different values, lifestyles, and unequal opportunities in education, employment, and public services (Zahl-Thanem, 2024). Such differences create social and political tension that impacts national cohesion. Understanding these divides sociologically helps explain the effects on democracy and social stability. This paper explores the causes and consequences of urban-rural polarization and opportunity inequality.

SOCIAL POLARIZATION AND VALUES

Urban populations tend to hold liberal values such as support for gender equality, immigration, and minority rights (Kaufman, 2021). Moreover, multiculturalism and diversity are celebrated, which encourages openness to new ideas and lifestyles. For instance, Social movements often begin in cities, spreading liberal opinions on social justice, LGBTQ+ rights, and environmental protection. They also generally have higher education levels and diverse cultural experiences (Pew Research Center, 2018). In contrast, rural communities often emphasize traditional family roles, national identity, and conservative politics (Wilkinson, 2018). This polarization influences voting behaviors and contributes to political fragmentation which is visible in many democracies, reflecting deeper social cleavages (Agnew & Shin, 2020).

INEQUALITY OF OPPORTUNITIES

Economic and educational inequalities widen the divide. Urban areas typically provide better access to higher education and job markets dominated by knowledge and technology sectors (NOU, 2020). Rural regions face limited educational facilities, fewer high-skilled jobs, and lower incomes, reinforcing social stratification (Newbold & Brown, 2015). This limits career choices and contributes to migration toward cities as youth students from rural areas move to cities for education but do not return, weakening rural communities over time (McCan, 2019). Such disparities make equal opportunity across regions difficult to achieve.

Economic inequality is also shaped by industry and job availability. Cities usually have more dynamic economies, allowing for startups, tech companies, and service industries to grow. The concentration of jobs and resources attracts further talent and investment, creating a cycle that rural areas struggle to compete with. In addition, healthcare access in rural areas often lags behind, resulting in differences in life expectancy and overall well-being (NOU, 2020).

The divide influences social mobility, meaning the chance to change one's economic situation is not equal for all (Newbold & Brown, 2015). Youth who leave rural areas rarely return, leaving behind aging populations and shrinking community resources (McCan, 2019). Women in rural areas may face extra barriers to education and employment, deepening the gap with urban counterparts. This loss causes social fragmentation and undermines rural resilience (Newbold & Brown, 2015).

POLITICAL AND SOCIAL IMPLICATIONS

This polarization also affects trust in political institutions. Rural residents may feel neglected by policymakers focusing on urban priorities, leading to political disenchantment and populist movements (Jennings & Stoker, 2016). Urban residents, in contrast, may support policies on social justice and climate change that rural communities view as threats to their way of life (Guilluy, 2016). The differing economic interests and social values create persistent tensions challenging social integration.

Urban-rural divisions also affect international relations, as migration and development patterns set standards for other nations (Pew Research Center, 2018). Rural regions may resist globalization, protecting traditional identities and local markets (Wilkinson, 2018). Cultural organizations, schools, and civil groups can help bridge gaps, but success requires coordinated effort from national and local leadership (McCan, 2019).

CONCLUSION

The urban-rural divide is a multifaceted problem driven by polarization in values and unequal access to opportunities. It has significant political and social consequences, threatening democratic cohesion. Policies addressing disparities in education, infrastructure, and economic development are essential to bridge the gap. Policymakers must consider the unique needs of rural regions, learning from local voices and adapting development plans. Encouraging dialogue between urban and rural populations can reduce misunderstandings and promote national unity. Future research should continue exploring solutions for sustainable social integration. These research highlights not only the problems but also the potential for solutions through trust, empathy, and effective public policy.

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LEGAL FRAMEWORK AND MECHANISMS OF MIGRATION MANAGEMENT IN THE REPUBLIC OF AZERBAIJAN

Zemfira AKHMADOVA

PhD, Associate Professor, Baku State University,
E-mail: zemfira6321@gmail.com
ORCID ID: 0009-0002-4414-5116

Abstract

At the end of the 20th and the beginning of the 21st century, Azerbaijan faced intense migration flows at a time when its economic base was in a state of crisis. This situation required new approaches to migration policy.

The article analyzes the characteristics of migration processes in Azerbaijan, the most important directions of migration management, the main tools of its legal regulation, as well as the statuses of refugees, internally displaced persons, and labor migrants.

The main directions of the state migration policy of the Republic of Azerbaijan are examined. This was a result of the adoption of the State Migration Policy Concept, the State Migration Program, and the establishment of the State Migration Service.

Keywords: migration processes, migration policy, migration management, legal regulation, law, categories of migration.

INTRODUCTION

Migration processes have accompanied the entire history of humanity, evolving over time. Today, migration is a phenomenon influenced by various factors and has a significant impact on individual countries and regions. In the modern world, migration plays an important role in the socio-economic development of states, labor market organization, and international cooperation. The acceleration of globalization, the growing demand for labor, and expanding educational opportunities make migration processes increasingly complex and multifaceted. Azerbaijan is also part of these global trends, and migration regulation in the country is carried out both through national legislation and international legal instruments.

The legal and regulatory framework for migration in the country is aimed at protecting the rights of migrants, ensuring lawful and orderly management of migration processes, and implementing them in accordance with international standards. Migration includes both the internal movement of citizens and the entry and stay of foreigners in the country. In this context, the legal framework defines the rights and responsibilities of migrants and creates the conditions for the effective implementation of the state's socio-economic and administrative policies.

The regulatory framework is shaped by the interaction between national legislation and international legal instruments. As a result, migration regulation in Azerbaijan contributes to the protection of migrants' rights, the lawful and effective management of migration processes, and the maintenance of the country’s socio-economic stability.

MATERIALS AND METHODS

This article uses official government documents, relevant legal and regulatory acts, and migration statistics. Scientific articles, analytical materials, and online resources were also utilized.

Data collection was carried out through document analysis, and the methodological basis of the study was grounded in institutional and policy analysis approaches. The focus was on examining the structure of regulatory institutions, their powers, and the effectiveness of the implemented migration policy.

LEGAL REGULATION OF MIGRATION

The modern era, beginning from the last quarter of the 20th century, is often referred to as the "age of migration," emphasizing the particularly important role that migration processes play in regional and global development. Azerbaijan is also experiencing migration-related challenges.

The issues caused by internal migration in our republic are mainly linked to the outflow of the population from rural areas to cities. The primary reason for this was the relatively weak development of the regions in the country prior to 2008. Because of the adoption and implementation of three state programs related to the socio-economic development of the regions, significant progress has been achieved: regional socio-economic infrastructure has improved considerably, many new jobs have been created, and the level of employment has increased.

In Azerbaijan, the legal regulation of migration is carried out not only on the basis of national legislation but also in accordance with international legal instruments. The legal foundations of migration regulation are reflected in the Constitution and the following laws of the Republic of Azerbaijan:

- "On Arrival, Departure and Passports," dated 14.06.1994;
- "On the Legal Status of Foreign Citizens and Stateless Persons," dated 13.03.1996;
- "On Registration at the Place of Residence and Stay," dated 04.04.1996;
- "On the Approval of the Regulation on Identity Documents of Stateless Persons Permanently Residing in the Republic of Azerbaijan and Foreign Citizens Residing in the Territory of the Republic of Azerbaijan for More Than 30 Days," dated 30.12.1997;
- "On Citizenship of the Republic of Azerbaijan," dated 30.09.1998;
- "On Immigration," dated 22.12.1998;
- "On the Status of Refugees and Internally Displaced Persons," dated 21.05.1999;
- "On Labor Migration," dated 28.10.1999;
- "On the Approval of the Migration Code," dated 02.07.2013, and others.

Within the framework of national legislation, the main documents regulating migration define the rights and obligations of migrants, their legal status, as well as the rules governing both internal and international migration. The legal regulation of migration in the country is aimed at protecting the rights of migrants, ensuring lawful and orderly management of migration processes, and implementing them in accordance with international standards. Migration encompasses both the internal movement of citizens and the entry and stay of foreign nationals in the country. In this context, the legal framework establishes the rights and responsibilities of migrants and creates the necessary conditions for the effective implementation of the state's socio-economic and administrative policies.

The main legal framework is the Constitution of the Republic of Azerbaijan (1995), which recognizes the right of every person to freedom of movement and guarantees the right to enter and leave the country. For example, citizens may leave the country at any time; however, certain restrictions may be applied within the law, such as travel bans imposed by a court decision. The Constitution also outlines principles for the protection of the rights of foreigners [3].

The Law "On the Legal Status of Foreign Citizens and Stateless Persons" (1998) regulates in detail the rights of foreigners to stay, work, and reside in the country. According to this law, a foreign citizen must obtain the appropriate work permit and register in the country before beginning any employment.

According to the Law "On Labor Migration," any legal or natural person in the country has the right to employ a foreign national based on a special permit issued by the Ministry of Labor and Social Protection of the Population of the Republic.

Azerbaijan has acceded to the UN International Convention on the Protection of the Rights of All Migrant Workers and Members of Their Families, the European Social Charter, and has ratified a few International Labour Organization (ILO) instruments. All new developments related to labor migrants

are implemented in accordance with Azerbaijan's international obligations under the conventions and agreements it has signed.

The Law "On Migration," adopted in 2013, provides a systematic framework for the regulation of migration processes. This law defines the duration of legal stay for migrants in the country, procedures for registration, work permits, and social rights.

CATEGORIES OF MIGRATION

In Azerbaijan, migration is mainly divided into four primary categories:

Internal migration involves the permanent or temporary movement of citizens within the country, from one region to another. This process is primarily driven by socio-economic factors such as job opportunities, regional development, and access to education and healthcare services. From a legal standpoint, internal migration does not require special permission. However, when relocating to a new place of residence, citizens must register in the relevant system, which allows government agencies to track population movements and plan regional social services accordingly.

International migration refers to the arrival of foreign nationals in Azerbaijan, their residence, employment, and study in the country. This type of migration can be either permanent or temporary and is regulated through various types of visas and permits. Foreigners enter the country for tourism, education, or employment purposes and are issued appropriate visas. From January to June 2025, the Ministry of Internal Affairs and the State Migration Service registered 1,709 individuals who arrived in Azerbaijan for permanent residence and 1,092 individuals who left the country [5].

Internally Displaced Persons and Refugees have rights defined by law, including access to asylum, social assistance, education, and healthcare services. The state provides them with temporary or permanent housing. Between 1988 and 1994, Armenia carried out ethnic cleansing of Azerbaijanis from Armenia and occupied Azerbaijani territories. As a result, Azerbaijan became home to over one million refugees and internally displaced persons [6].

Labor migration is particularly associated with attracting a foreign workforce from neighboring countries to Azerbaijan and makes a significant contribution to the country's economic development, meeting labor market demands, and ensuring the effective operation of the labor market. From a legal standpoint, labor migration is regulated by law, and a foreign national can only work after obtaining the appropriate work permit. The employer is required to sign an employment contract and fulfill obligations related to wages, taxes, and social insurance.

Labor migration, migration management, and the legal framework are closely interconnected and play a key role in protecting migrants' rights, maintaining the socio-economic stability of the state, and ensuring effective implementation of legislation.

MAIN DIRECTIONS OF MIGRATION POLICY

The most important directions in managing migration processes are as follows:

1. Development of migration management. This helps to effectively utilize the potential of migration development in the interests of the state, society, and individual citizens.

2. Support for migration. This ensures minimal time loss during the free movement of people across territories and safe and convenient travel in accordance with the relevant permits.

3. Migration regulation. It enables the state and society to monitor who enters and leaves the country and helps prevent unlawful activities.

4. Management of forced migration. It assists people in escaping life-threatening and emergency situations and subsequently returning to their places of residence [2, p.109].

The main directions of the state migration policy of Azerbaijan are: ensuring control over migration processes within Azerbaijan and preventing illegal migration; encouraging Azerbaijani compatriots living abroad to resettle in Azerbaijan and assisting the return of emigrants; promoting the immigration of qualified specialists and other foreign workers needed in the Azerbaijani labor market; and simplifying entry and residence procedures for foreign citizens conducting business in Azerbaijan [5].

CONCLUSION

The main cause of migration in Azerbaijan is related to political reasons: the deportation of Azerbaijanis from Armenia in 1918-1920, 1947–1953, and 1987-1991; the occupation of 20% of Azerbaijan's territory by Armenians, which resulted in about 1 million people becoming refugees; and the collapse of the USSR, all of which led to large migration flows from Azerbaijan and significant demographic changes in the country. Overall, during these years, about 850,000 people left Azerbaijan, while up to 500,000 immigrated [2, p.89]. This, in turn, created an unstable economic situation in the country characterized by inflation, economic crisis, declining living standards, and mass unemployment, which became the cause of labor and international migration.

In 2006, by order of the President of the country, the State Migration Program was approved, and in 2007, the State Migration Service of the Republic of Azerbaijan was established. One of the key tasks of the Migration Service became the creation of a unified database and a modern automated control system in the field of migration. The Unified Migration Information System (UMIS) contains data on categories of migrants and migration-related events. These include the registration of procedures for granting permanent or temporary residence status, citizenship issues, preventive work to combat illegal migration, and more.

At the current stage, the legal regulation of migration in Azerbaijan is carried out based on national legislation and international legal norms. Migration management, the rights and obligations of migrants, and the protection of refugees and internally displaced persons are systematically regulated. Nevertheless, further work is needed to simplify legislation, digitize procedures, and strengthen social integration. This is important both for ensuring national security and for protecting the rights of migrants.

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By

QURAT-UL AIN

Department of Economics, The University of Punjab, Pakistan

Email: quratulaneshoaib@gmail.com

ZUNAIRA KHALID

Economics Department, The University of Lahore, Pakistan

Email: khalidzunaira007@gmail.com

Dr. Aribah Aslam

Head of Department, The University of Lahore, Pakistan

Email: aslam.aribah7@gmail.com

Abstract

Institutional quality remains a cornerstone of economic progress, shaping the business climate, governance efficiency, and long-term fiscal stability of nations. In the digital era, strong institutions are more crucial than ever for achieving sustainable development, a fact underscored by recent global recognition, including the 2024 Nobel Prize in Economics. Effective institutions play a vital role in addressing fiscal imbalances and promoting steady economic growth, especially in developing countries grappling with high debt burdens. This study empirically examines the influence of institutional quality on public debt dynamics using panel data from 116 countries over the period 2000–2022. An Institutional Quality Index is constructed through Principal Component Analysis (PCA) to capture the multidimensional nature of governance. After conducting necessary pre-estimation diagnostics to ensure data validity, the analysis applies the two-step System GMM estimation technique to manage endogeneity and dynamic persistence. The findings reveal that stronger institutional quality significantly contributes to lower public debt levels. Moreover, debt persistence indicates that current debt levels are strongly shaped by past fiscal conditions. The results also show that higher tax revenues are associated with reduced debt, while rising unemployment, inflation, and government expenditure tend to aggravate debt pressures. These insights underscore the importance of institutional reforms and prudent fiscal management in achieving long-term debt sustainability worldwide.

Keywords: Public debt, Institutional quality, System GMM

JEL Codes: H63, O43, C33

1. Introduction

According to the International Monetary Fund (IMF) 2024 report, global public debt is expected to exceed $100 trillion in 2024 and continue to increase, nearing 100 percent of GDP by 2030. Several countries, including Sri Lanka, Zambia, and Ghana, have defaulted on sovereign debt and are undergoing restructuring efforts (Jones, 2022). While nations like Kenya, Pakistan, the Maldives, and Argentina remain at risk due to high borrowing costs (Jones, 2022). Emerging market defaults are

expected to rise over the next decade, driven by heavy debt burdens and high borrowing costs. Innovative governance-linked bonds are emerging as tools to manage defaults sustainably. Both developing and developed economies face significant debt challenges. Elevated debt levels can expose an economy to macroeconomic shocks and volatility and raise the likelihood of default. It also constrains private sector growth, discourages capital investment, weakens economic performance, diminishes tax revenues, and contributes to inflation. (Burriel et al., 2020; Dimakou, 2015; Woo & Kumar, 2015; Sargent & Wallace, 1981). Addressing debt sustainability is vital, particularly for developing nations facing severe debt burdens, as it is crucial to restoring fiscal stability and ensuring long-term economic growth. These developments raise a key question: *what drives public debt ratios?* While various factors contribute to a nation's debt burden, achieving fiscal discipline is impossible without robust institutions to support it.

Research indicates that robust institutions, including government effectiveness, regulatory quality, the rule of law, and control of corruption, play a vital role in managing public debt effectively and addressing financial crises. Countries with inclusive institutions are more prone to increased risk of debt accumulation (Cerra et al., 2008). In Sweden, good governance and political system effectively overcame the 1991-1993 financial crisis (Jonung, 2009). Political institutions are critical in understanding the likelihood of defaults on external and domestic debt obligations, as they shape governance, policy consistency, and fiscal accountability (Van Rijckeghem & Weder, 2008). In a similar vein, Acemoglu et al. (2001) and Acemoglu (2004) stress the critical significance of institutions in promoting economic growth, whereas Alesina and Tabellini (1990) explore how political conflict shapes fiscal deficits. Heimberger (2023) highlights the importance of institutions in explaining disparities between bond returns and economic growth, while Woo (2003) examines the interplay between economic, political, and institutional factors and their influence on budget deficits. Extensive research suggests that the effect of corruption on economic performance is shaped by the institutional context in which it occurs (Shleifer & Vishny, 1993; La Porta et al., 1999; Méon & Sekkat, 2005; Aidt, 2009; Méon & Weill, 2010; De Rosa et al., 2010). Consequently, the quality of a nation's institutions significantly impacts its fiscal and debt management as well as its overall governance.

This leads to the second question: *How do institutions affect government debt?* Institutions significantly influence government debt by shaping fiscal rules, economic systems, and policies, with classical and Keynesian perspectives offering distinct insights. Classical economists, such as David Ricardo, viewed public debt as a burden, arguing it crowds out private investment, reduces savings, and poses long-term risks to national wealth. The Ricardian equivalence hypothesis argues that individuals anticipate future taxation to repay debt, ignoring any net wealth effect from government borrowing (Barro, 1979; Tsoulfidis, 2007). In contrast, Keynesians highlight the potential of government debt to stimulate aggregate demand and reduce unemployment during downturns, particularly when it is directed toward public spending and targeted programs, which can also mitigate income inequality (Fengze, 2023; Jong-Il & Dutt, 1996). Institutions like central banks play a pivotal role in managing debt sustainability, determining interest rates, and influencing the cost of debt servicing, as seen in Canada, where monetary policy significantly impacts long-term government bond yields (Das & Akram, 2020). Fiscal rules influence how economies respond to high debt, necessitating careful management to avoid inflation and stagnation (Balassone et al., 2004). Overall, classical views emphasize the risks of debt, while Keynesian approaches focus on its economic benefits, with institutions playing a critical role in balancing these outcomes.

Strong institutions are crucial in managing government debt effectively and ensuring fiscal sustainability. Studies demonstrate that institutional quality, particularly governance indicators like political stability, regulatory quality, and the rule of law, significantly curtail excessive debt accumulation. Conversely, poor governance often correlates with higher debt levels due to inefficiencies and reduced GDP growth (Tarek & Ahmed, 2017). Debt offices in New Zealand and Ireland have minimized the long-term costs of debt service by aligning borrowing needs with fiscal stability. For

emerging economies, strong debt management frameworks can reduce macroeconomic risks, including vulnerability to inflation and external shocks (Wheeler, 2004). Additionally, institutional mechanisms like debt laws and fiscal rules improve state-level debt performance by limiting over-borrowing and enhancing financial stability (Velazquez, 2006). Strong institutions provide a framework for better coordination between monetary and fiscal policies, ensuring efficient debt issuance, cost control, and market confidence, which are essential for sustainable economic development and crisis resilience (Montiel, 2012).

Weak institutions exacerbate the challenges of debt management, rising inefficiencies, fiscal instability, and costs. Poor governance, characterized by corruption, lack of transparency, and inadequate regulatory frameworks, directly correlates with higher levels of debt accumulation. In regions like the MENA countries, weak institutional indicators, such as low regulatory quality and absence of the rule of law, significantly increase debt burdens, often through decreased GDP growth and inefficient resource allocation (Tarek & Ahmed, 2017). In transition economies, weak institutions fail to effectively manage public debt, as governance issues like poor control of corruption lead to unsustainable debt trajectories. Efforts to finance institutional improvements often result in increased debt without immediate economic benefits (Nguyen & Luong, 2021). Furthermore, low fiscal credibility and transparency increase borrowing costs, as investors demand higher interest rates due to perceived risks (Johnson & Kriz, 2005). Weak institutional frameworks also make governments more vulnerable to fiscal dominance, where monetary policy becomes constrained by unsustainable debt levels, leading to inflationary pressures and exchange rate instability (Ize, 1987). Ultimately, these factors underscore the critical need for institutional reforms to ensure effective debt management and fiscal sustainability.

The third and final question asks: *How do institutions shape public debt under fiscal rules? Are such rules effective only in countries with strong institutions?* Institutions shape public debt dynamics, and fiscal rules serve more effectively in countries with strong institutional frameworks. Fiscal rules, when effectively enforced, help restrain public debt by imposing clear expenditure and borrowing limits. For example, studies in the European Union have shown that numerical fiscal rules reduce the cost of debt servicing and enhance fiscal discipline, particularly when paired with strong institutional oversight (Stawiarska, 2023; Park & Kim, 2024). EU nations differ from non-EU nations because, besides adhering to their national fiscal rules, they are also subject to supranational fiscal regulations (Davoodi et al., 2022). Classic theoretical work, like “Public Principles of Public Debt” by Prest and Buchanan (1959), highlights that fiscal constraints support accountability and help prevent overreliance on debt financing, particularly in democracies where short-term political incentives can drive excessive borrowing. In contrast, countries lacking fiscal rules often experience adverse debt dynamics, exacerbated by weak institutions. Poor governance, low regulatory quality, and corruption undermine fiscal discipline, leading to higher borrowing costs and unsustainable debt accumulation. The work of North (1990) in "Institutions, Institutional Change, and Economic Performance" provides a theoretical basis for this phenomenon, arguing that institutions shape economic behavior by reducing uncertainties and transaction costs, which, when absent, leave fiscal policy vulnerable to short-term pressures. Empirical evidence from transition economies demonstrates that institutional weaknesses directly correlate with increased debt burdens, especially in contexts with high corruption and low transparency (Nguyen & Luong, 2021). Further, in countries without fiscal rules, the absence of institutional constraints allows for pro-cyclical fiscal policies, which amplify economic instability. The findings of Kudrin et al. (2023) suggest that such countries often fail to stabilize debt during periods of growth, leading to greater vulnerabilities in recessions (Kudrin et al., 2023). Additionally, Velazquez (2006) highlights how weak subnational fiscal institutions in Mexico resulted in over-borrowing and macroeconomic risks, reinforcing the critical role of institutional quality in debt management (Velazquez, 2006). Overall, robust institutions enable the effective implementation of fiscal rules, providing a foundation for sustainable debt management. In their absence, weak governance, short-term political incentives, and fiscal indiscipline lead to higher debt levels and greater macroeconomic

instability. The theoretical contributions of Buchanan and North, combined with modern empirical findings, underscore the importance of institutional reforms to manage public debt effectively.

This research is significant because it provides fresh empirical evidence regarding the impact of institutional quality on public debt. The study's novelty lies in its use of the institutional index incorporating all six governance indicators: control of corruption, government effectiveness, regulatory quality, rule of law, political stability, absence of violence/terrorism, and voice and accountability, constructed using Principal Component Analysis (PCA). The results indicate that institutional quality significantly impacts the debt level. Inclusive institutions have a high risk of debt accumulation.

The study aims to investigate the impact of institutional quality on public debt accumulation on global datasets of 116 countries for 2000-2022. Using the Generalized Method of Moments, the analysis accounts for dynamic dependencies in public debt, isolates the causal impact of institutions, and highlights the differing roles of fiscal rules in various governance settings. This approach not only strengthens the empirical rigor of the study but also provides a nuanced understanding of how institutional frameworks interact with fiscal policies to influence public debt outcomes.

The structure of the study is as follows: Section 2 reviews the comprehensive literature on the subject matter, Section 3 details the data, model, and methodology, Section 4 presents the empirical findings, and the final section provides the conclusion and policy implications.

2. Literature Review

Institutional quality significantly impacts public debt by influencing its sustainability, management, and broader economic implications. High-quality institutions can mitigate the adverse effects of public debt, while poor institutional frameworks may exacerbate debt issues. The relationship between institutional quality and public debt is multifaceted, involving governance, regulatory frameworks, and economic policies. Despite the importance of the critical role played by institutional quality in driving economic stability by addressing the public debt, only limited empirical studies have been conducted to examine the direct association between public debt and institutional quality at the global level.

Earlier studies regarding the subject matter emphasized the institutional foundations of fiscal transparency and debt control. For instance, Alesina and Tabellini (1990) argued that improved performance of country-level institutional quality can enhance financial market transparency, thereby reducing public debt. More recent studies, such as Woo and Kumar (2010), found that a 10% increase in the debt-to-GDP ratio, on average, slows down the economy's annual real GDP per capita growth by 0.2%. Panizza and Presbitero (2014) studied OECD countries and found an inverse relationship between public debt and economic growth. Tarek and Ahmed (2017) analyzed data from MENA countries over the period 1996–2015 using the GLS random effects method. Their findings revealed that most governance indicators exhibit a negative relationship with public debt. Additionally, they observed that inflation contributes to higher levels of debt accumulation, while public debt demonstrated persistence over time. Sani et al. (2019) investigated 46 Sub-Saharan African countries from 2000 to 2014 using a GMM estimation approach. The study highlighted that institutional quality significantly influences economic growth both directly and indirectly. Moreover, public debt was found to have a substantial impact on economic growth, with governance indicators playing a crucial role in mitigating the adverse effects of public debt on economic performance. Blanchard (2019) emphasized the importance of institutional reforms in ensuring debt sustainability and fostering economic growth.

Mehmood et al. (2021), examining Pakistan's data from 1996 to 2018 using OLS estimation and quantile regression approaches, concluded that political stability, government effectiveness, and the rule of law negatively and significantly affect public debt. On the other hand, factors such as voice and accountability, regulatory quality, and control of corruption show a positive and significant relationship with public debt. Nguyen and Luong (2021) examined panel data from 27 transition countries from 2000

to 2018 using OLS, random effects, and two-step GMM methods. The results showed that extractive institutions lead to higher debt accumulation in these countries, while improvements in tax revenue mitigate the debt burden. Kemoe and Lartey (2021) examined panel data from 44 Sub-Saharan African countries. They concluded that the adverse impact of public debt on economic growth diminishes with improved institutional quality. Mehmood et al. (2022) examined the South Asian region from 2002 to 2018 using the panel ARDL approach. They concluded that governance indicators like control of corruption and political stability have a significant inverse relationship with public debt. Conversely, government effectiveness and the rule of law have a significant direct relationship with public debt. Nutassey et al. (2023) examined 40 Sub-Saharan African countries from 2010 to 2019, employing GMM concluded that a significant negative relationship exists between public debt and political institutions. Kongo (2023) examined that in Kenya, better institutional quality enhances public debt sustainability by promoting transparency and accountability, which are crucial for effective fiscal management. Ramzan et al. (2023) analyzed data from Pakistan spanning 1996 to 2020. Their study revealed that public debt positively correlates with economic growth in the short term. However, in the long run, high-quality institutions are crucial in mitigating the adverse effects of public debt on growth, underscoring the importance of governance in fostering sustainable economic development.

Ojeka et al. (2024) examined 47 Sub-Saharan countries from 1996 to 2021 using a two-step system GMM and Driscoll-Kraay regression. They concluded that strong institutions enable countries to utilize debt more effectively by promoting efficient resource allocation and encouraging additional investment. Ullah et al. (2024) employed Japan's time-series data from 1996 to 2017. The study found a significant correlation between the quality of institutions at the country level and public debt in Japan, indicating that better governance can lead to lower public debt levels. This relationship holds in both the long term and the short term. Cooray and Özmen (2024) analyzed the impact of institutional quality on public debt in EU and non-EU countries, which varies across different countries and debt levels. Examine the data span from 2010 to 2022, employing the Logistic Quantile Regression (LQR) and Recentered Influence Function (RIF) method. In the EU, political stability and control of corruption significantly reduce debt, whereas these factors are less impactful in non-EU countries. In developing economies, the interaction between institutional quality and public debt can narrow income inequality, suggesting that institutions play a role in ensuring that debt-financed spending benefits lower-income groups (V. B. Nguyen, 2024). While institutional quality generally supports better debt management and economic outcomes, the specific effects can vary based on the country's context and the particular institutional factors at play. In some cases, certain institutional aspects like the Rule of Law and Control of Corruption may have complex or even counterintuitive effects on public debt, as seen in Japan (Ullah et al., 2024).

This body of literature underscores the intricate relationship between institutional quality and public debt, emphasizing how effective governance and robust institutional frameworks can mitigate the adverse effects of public debt and foster economic stability. Notably, a significant portion of existing studies focuses on the interplay between debt and institutions concerning economic growth, often using governance indicators from the Worldwide Governance Indicators (WGI) dataset individually at the country level. While these studies provide valuable insights, they fall short of capturing the broader and more cohesive impact of institutional quality on public debt dynamics. This study addresses this gap by employing a composite institutional quality index, offering a more comprehensive and multidimensional approach to institutional measurement. Furthermore, rather than examining the indirect pathways through which institutions affect debt via economic growth, this research directly investigates the causal relationship between institutional quality and public debt. By doing so, it provides a more nuanced understanding of how institutional strength shapes fiscal outcomes and public debt sustainability, bridging an important gap in the existing literature.

3. Data, Model, and Methodology

3.1 Data

This study empirically examines the direct relationship between public debt and institutional quality using the global dataset comprising 116 countries over the period 2000–2022 (annual). Countries were selected based on data availability to construct a balanced panel dataset. The full list of countries is provided in the appendix. Table 1 provides a detailed description of all the variables included in the model.

Table 1: Variables Description

Variables	Description	Symbol	Source
Debt	General Government Gross Debt, % of GDP	DBT_{it}	IMF
Government spending	Government expenditure, % of GDP	$GEXP_{it}$	IMF
Revenue	Tax Revenue, % of GDP	TAX_{it}	IMF
Economic Growth	GDP per capita, constant 2015 US$	$lnGDP_{it}$	WDI
Inflation	Inflation, GDP deflator (% annual)	INF_{it}	WDI
Unemployment	Unemployment rate, % of the total labor force (modeled ILO)	UEM_{it}	WDI
Trade	Trade, Sum of exports and imports (% of GDP)	TRD_{it}	WDI
Savings	Gross savings, Gross national income less total consumption, plus net transfers (% of GDP)	SAV_{it}	WDI
Institutional Quality	Index constructed using PCA based on six governance indicators	IQ_{it}	WGI

The institutional quality index is constructed using the WGI's six governance indicators, i.e., Control of Corruption, Government Effectiveness, Political Stability and Absence of Violence/Terrorism, Regulatory Quality, Rule of Law, Voice and Accountability. All the dimensions for governance indicators are in percentile rank. The index is constructed using the PCA technique. The first principal component was retained based on an eigenvalue of 5.25, which explains approximately 87.56% of the total variance in the dataset. As shown in Table 2, all six governance indicators load positively and relatively uniformly on the first component, confirming the presence of a strong common latent factor. This supports the index's validity as a comprehensive proxy for institutional quality, aligning with best practices for dimensionality reduction and empirical analysis.

Table 2. PCA Loading for Institutional Index (Component 1)

Governance Indicator	**First Principal Component Loading**
Government Effectiveness (GE)	0.4183
Rule of Law (RL)	0.4257
Regulatory Quality (RQ)	0.4124
Voice and Accountability (VA)	0.3940

Political Stability (PS)	0.3764
Control of Corruption (CC)	0.4205

3.2 Estimation model

To empirically examine the determinants of public debt across 116 countries from 2000 to 2022, the following baseline estimation model is specified:

$$DBT_{it} = \alpha + \beta_1 LDBT_{it-1} + \beta_2 IQ_{it} + \beta_3 lnGDP_{it} + \beta_4 TAX_{it} + \beta_5 GEX_{it} + \beta_6 INF_{it} + \beta_7 UEM_{it} + \beta_8 TRD_{it} + \beta_9 SAV_{it} + \varepsilon_{it}$$

In the above equation, α is the intercept of the equation, ε_{1it} shows the error term, $\beta's$ are the coefficients of the independent variables. ln shows the natural log. The subscript it indicates that the variable varies across cross-sectional units i and periods t. This study includes 116 cross-sectional units over 23 years.

The hypotheses for this study are grounded in theoretical and empirical literature, outlining the expected relationships between public debt and key explanatory variables. Government expenditure (GEX) is anticipated to have a positive impact on public debt, as higher spending increases borrowing needs (Woo, 2003). Conversely, tax revenue (TAX) is expected to reduce debt levels by boosting fiscal capacity (Checherita-Westphal & Rother, 2012). Inflation (INF) may have mixed effects, with moderate inflation reducing real debt while high inflation increases borrowing costs (Sargent & Wallace, 1981). Higher unemployment (UEM) is linked to increased debt through higher welfare spending and reduced tax revenue (Afonso & Jalles, 2013), while trade openness (TRD) is hypothesized to reduce debt by enhancing economic growth (Rodrik, 1998). Similarly, higher GDP per capita (lnGDP) is expected to lower debt due to stronger fiscal capacity (Barro, 1990), and improved institutional quality (IQ) is hypothesized to reduce debt by fostering fiscal discipline (Acemoglu & Robinson, 2012). Finally, higher savings rates (SAV) are anticipated to negatively affect public debt by reducing the need for external borrowing (Loayza et al., 2000).

The model is estimated using the Two-Step System Generalized Method of Moments (System GMM). System GMM has been widely used in public debt studies to address endogeneity concerns and dynamic relationships (Arellano & Bond, 1991; Blundell & Bond, 1998). Public debt is inherently persistent, and the inclusion of its lagged levels introduces endogeneity, making ordinary least squares (OLS) and fixed-effects estimations biased and inconsistent. System GMM resolves this issue by utilizing internal instruments (lagged levels and first differences of the explanatory variables), ensuring unbiased and consistent parameter estimates. The technique effectively addresses potential endogeneity between public debt and its explanatory variables, particularly institutional quality and fiscal variables (e.g., government expenditure and tax revenue). By incorporating lagged values, it captures the dynamic nature of public debt, allowing the analysis to account for path dependency.

The estimation employs the Arellano-Bover/Blundell-Bond framework, which combines moment conditions for the first differences and level equations. The validity of the instruments is assessed using the Hansen test of overidentifying restrictions.

4. Empirical Results and Discussion

This section delves into the empirical findings of the study, examining the relationship between institutional quality and public debt sustainability across a global dataset of 116 countries spanning 2000 to 2022. By employing the Generalized Method of Moments (GMM) two-step system estimation technique, the analysis aims to address endogeneity concerns and provide robust insights. The results not only highlight the significant role of institutional quality in shaping debt dynamics but also shed

light on how variations in governance, transparency, and policy frameworks influence a country's ability to manage and sustain public debt levels effectively.

Table 3: Descriptive Statistics

Variable	Obs	Mean	Std. dev.	Min	Max
DBT_{it}	2,668	55.00	37.22	0.1	349.9
GDP_{it}	2,668	14778.64	19467.92	262.1848	112417.9
TAX_{it}	2,668	28.55	12.10	0.6368772	63.86255
GEX_{it}	2,668	30.87	11.89	2.489422	66.8228
INF_{it}	2,668	7.60	52.73	-25.12814	2630.123
UEM_{it}	2,668	7.77	5.90	0.12	37.852
TRD_{it}	2,668	83.97	50.18	2.698834	442.62
SAV_{it}	2,668	22.01	10.30	-36.41072	60.23566
IQ_{it}	2,668	-5.06E-10	1.00	-2.003897	1.651028

Descriptive statistics provide a concise summary of key economic variables, offering insights into the underlying patterns within the data. Table 3 highlights critical indicators such as debt-to-income ratios, GDP, taxation, and inflation across 2,668 observations. The debt-to-income ratio (DBT_{it}) shows an average of 55.0, with significant variation, ranging from 0.1 to 349.9, indicating stark financial disparities. GDP averages $14,778.64, yet its wide range—from $262.18 to $1,12,417.9 reflects large-scale differences in economic size. Tax revenue (TAX_{it}) and government expenditure (GEX_{it}) average 28.5% and 30.8%, respectively, with noticeable variation, demonstrating diverse fiscal policies. Inflation (INF_{it}) reveals an average of 7.6%, but extreme values—ranging from -25.1% to 2,630.1%—signal deflationary and hyperinflationary pressures. Similarly, unemployment rates (UEM_{it}) fluctuate widely, from near-zero levels (0.12%) to severe levels (37.8%). Trade as a percentage of GDP (TRD_{it}) shows significant openness, with an average of 83.9%, while savings (SAVit) present an average of 22%, albeit with cases of dissaving as low as -36.4%. The Index of Quality (IQ_{it}) standardizes regional performance with values around 0. These descriptive statistics reveal vast economic disparities and highlight potential areas requiring targeted policy intervention to promote stability and growth.

4.1 Graphical Analysis

Figure 1. Mean Institutional Quality vs. Mean Debt

This scatterplot depicts the relationship between the mean institutional quality index (x-axis) and the mean public debt-to-GDP ratio (y-axis). The fitted line's negative slope indicates a significant negative association, suggesting that countries with stronger institutions experience lower levels of public debt. This result underscores the critical role of institutional quality in enhancing fiscal discipline and debt management.

Figure 2. Mean Tax vs. Mean Debt

This scatterplot illustrates the relationship between the mean tax-to-GDP ratio (x-axis) and the mean public debt-to-GDP ratio (y-axis) for 116 countries from 2000 to 2022. The negative slope of the fitted line indicates an inverse relationship, suggesting that countries with higher average tax revenues tend to have lower levels of public debt. This finding aligns with the theory that stronger fiscal capacity, reflected in higher tax collection, can reduce reliance on debt financing.

Table 4. Multicollinearity Test Results

Variables	VIF
TAX_{it}	8.92
GEX_{it}	8.41
GDP_{it}	2.70
IQ_{it}	2.59
TRD_{it}	1.19
SAV_{it}	1.15
UEM_{it}	1.11
INF_{it}	1.02
Mean VIF	3.39

Source: Author's construction using STATA 17.0

Before delving into regression analysis, it is crucial to ensure that multicollinearity does not distort the estimates. Table 4 summarizes the Variance Inflation Factor (VIF) values for the explanatory variables in the model. Among the variables, TAX_{it} and GEX_{it} exhibit relatively higher VIF values of 8.92 and 8.41, respectively, suggesting a potential overlap in their explanatory power. However, these values remain below the commonly accepted threshold of 10, indicating that multicollinearity is not severe enough to warrant immediate concern. Other variables, such as GDP_{it} (2.70) and IQ_{it} (2.59), show moderate collinearity, while variables like TRD_{it}, SAV_{it}, UEM_{it}, and INF_{it} have VIF values close to 1, reflecting minimal multicollinearity. The mean VIF for the model stands at 3.39, further reinforcing the acceptability of the variables for inclusion in the analysis. In summary, while some degree of multicollinearity is present, it does not pose a significant issue, ensuring that the regression estimates remain reliable and interpretable.

Table 5: Breusch-Pagan Test Result

	chi2(1)	Prob > chi2
H_0 = No Heteroskedasticity H_1 = Heteroskedasticity exists	2944.49	0.0000

Source: Author's construction using STATA 17.0

The Breusch-Pagan test is used to check for heteroskedasticity, which occurs when the variability of errors in a regression model is not constant. In this case, the test results show $chi^2 = 2944.49$ and a p-value = 0.0000. Since the p-value is less than 0.05, we reject the null hypothesis (H_0) that assumes homoskedasticity. This confirms that heteroskedasticity exists in the model. Heteroskedasticity can lead to unreliable conclusions, so adjustments are necessary for accurate analysis. This ensures the suitability of using the GMM estimation method to address the heteroskedasticity issue.

4.2 Two-Step System GMM Estimation Results

Table 6 below summarizes the results of the two-step system GMM estimation, assessing the impact of institutional quality and other variables on public debt sustainability. Key diagnostic tests for model validity and instrument strength are also presented to ensure robustness.

Table 6: Dynamic Panel-Data Estimation Results

Variable	Coefficient	Std. Error	p-value
$DBT_{(-1)}$	0.1939	0.0573	0.001
GDP_{it}	0.0059	0.0014	0.000
Tax_{it}	-2.6218	0.8803	0.003
GEX_{it}	1.4274	0.5605	0.011
INF_{it}	0.6160	0.1965	0.002
UEM_{it}	8.7591	2.1465	0.000
TRD_{it}	-0.3121	0.2044	0.127
SAV_{it}	0.9790	0.6265	0.118
IQ_{it}	-53.6656	20.7251	0.010
Constant	452.3877	189.2399	0.017

	Statistic	p-value
AR (1)	-2.30	0.021
AR (2)	0.77	0.439

Sargan Test	103.65	0.000
Hansen Test	19.76	0.138

Source: Author's estimation using STATA 17.0

Out of the nine variables included in the model, seven variables show a significant impact on the level of debt accumulation. Trade and Savings show no significant impact on the level of debt.

The positive and significant coefficient (0.1939, p = 0.001) lag of debt indicates that past debt levels have a persistent impact on current debt accumulation. This suggests that countries with higher debt levels in the past are more likely to experience sustained debt accumulation in the future. Nguyen and Luong (2021) observed similar persistence in debt levels among transition economies, attributing it to structural inefficiencies and weak fiscal adjustments. On the other hand, Reinhart and Rogoff (2010) argued that debt persistence is less pronounced in high-income countries, where stronger fiscal policies counteract debt accumulation.

The positive and highly significant (0.0059, p = 0.000) relationship between debt and GDP indicates that economic growth contributes marginally to reducing public debt. A growing GDP provides a broader fiscal base, improving a country's ability to manage its debt sustainably. Checherita-Westphal and Rother (2010) demonstrated that GDP growth supports debt sustainability, particularly in European economies. The results are consistent with Lee et al. (2017), Baum et al. (2012), and Bökemeier and Greiner (2014).

The negative and significant (-2.6218, p = 0.003) effect of tax on public debt implies that higher tax revenues help reduce public debt levels by enabling governments to fund expenditures without borrowing excessively. This aligns with Gnangnon (2022), who found that tax reforms in emerging markets significantly reduced debt burdens. In contrast, Oppong et al. (2023) noted that in some sub-Saharan African economies, increased taxation led to lower economic activity, undermining fiscal stability.

Government Expenditure has a positive and significant coefficient (1.4274, p = 0.011), which highlights that higher government spending exacerbates public debt levels, especially when expenditure is not matched by proportional revenue generation. Afonso and Jalles (2012) observed similar trends, arguing that poorly targeted government spending fuels unsustainable debt growth. Alternatively, some scholars, like Blanchard and Perotti (2002), suggested that well-targeted expenditures, such as on infrastructure, can enhance economic growth and offset debt.

Inflation has a statistically significant positive effect (0.6160, p = 0.002) on debt levels. Higher inflation may erode fiscal discipline by increasing interest rates and debt servicing costs. This finding resonates with Nguyen et al. (2022), who linked inflationary pressures to rising debt in developing economies. Conversely, Sargent and Wallace (1984) argued that moderate inflation could help reduce real debt burdens by eroding nominal liabilities.

A positive and significant coefficient (8.7591, p = 0.000) of unemployment implies that higher unemployment rates contribute substantially to debt accumulation, likely due to increased welfare spending and reduced tax revenues. Similar trends were noted by Checherita-Westphal et al. (2010), who emphasized that labor market inefficiencies strain fiscal resources.

Trade has a negative but statistically insignificant coefficient (-0.3121, p = 0.127), indicating a weak direct impact of trade openness on debt sustainability in the sample. Oppong et al. (2023) similarly found limited effects of trade openness on debt in sub-Saharan Africa. In contrast, Sachs and Warner (1995) argued that greater trade openness reduces debt burdens by fostering export-led growth.

Savings has a positive coefficient (0.9790, p = 0.118), but it is not statistically significant, suggesting that savings rates do not directly influence debt levels in this dataset. This is consistent with findings from Loayza et al. (2000), who noted that savings impact debt only indirectly through investment channels. However, Modigliani (1986) found a strong link between national savings and reduced debt levels in high-income countries.

Institutional quality has a significant negative impact (-53.6656, p = 0.010) on public debt, emphasizing that strong governance frameworks play a critical role in debt sustainability. This finding aligns with Kongo (2023), who demonstrated the debt-mitigating effects of transparency, the rule of law, and corruption control. In contrast, Acemoglu and Robinson (2001) highlighted that institutional reforms take significant time to yield fiscal benefits, which may not be immediately reflected in debt metrics.

From a diagnostic perspective, the Arellano-Bond AR (1) test confirms the absence of first-order autocorrelation (p = 0.021), while the AR (2) test (p = 0.439) suggests no evidence of second-order autocorrelation, ensuring model consistency. The Hansen test (p = 0.138) supports the validity of the chosen instruments, a critical aspect for robustness in GMM estimation techniques.

5. Conclusion

In conclusion, the study provides valuable insights into the intricate relationship between public debt and institutional quality, considering a comprehensive global dataset spanning from 2000 to 2022. The Institutional Quality Index has been constructed using Principal Component Analysis, comprising six governance indicators sourced from World Governance Indicators. It comprises Control of Corruption, Government Effectiveness, Political Stability and Absence of Violence/Terrorism, Regulatory Quality, Rule of Law, Voice and Accountability. The results reveal a significant negative relationship between institutional quality and public debt, indicating that stronger institutions are associated with lower levels of public debt. This underscores the crucial role of robust governance structures in managing national finances efficiently. Additionally, the application of GMM estimation, along with AR (1), AR (2) corrections, and Hansen-Sargan tests, strengthens the reliability of these findings, addressing potential endogeneity concerns.

The pre-estimation tests, such as the Breusch-Pagan test for heteroskedasticity and the Variance Inflation Factor (VIF) analysis, further support the robustness of the model, ensuring that multicollinearity and other issues are appropriately accounted for. Moreover, the significance of institutional quality in shaping public debt dynamics is a noteworthy policy implication. Governments with weaker institutions may find it more challenging to control debt levels, and this could amplify economic vulnerabilities over time. In conclusion, the findings of this study strongly emphasize that improving institutional quality plays a crucial role in ensuring the sustainability of public debt. The results point to the significant link between strong institutions and better fiscal management, suggesting that nations with robust governance structures tend to experience lower levels of public debt. This highlights the urgent need for focused reforms in governance, especially in areas such as transparency, accountability, and the reduction of corruption, to reduce the risks associated with excessive debt. Strengthening these institutional frameworks can not only improve financial discipline but also enhance the overall economic resilience of countries, especially in times of financial stress.

In terms of policy recommendations, the study highlights the importance of strengthening institutional frameworks in developing and emerging economies. Governments should prioritize improving the transparency, efficiency, and accountability of public financial management systems, as these are closely linked to better debt management outcomes. Additionally, fostering a culture of good governance and enforcing strong legal frameworks can help limit the misuse of public resources, further reducing the burden of public debt. Lastly, policymakers should focus on enhancing the capacity of financial institutions to manage and monitor debt, ensuring that borrowing remains sustainable in the long run.

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Səfərova Afət Ağa Əli qızı

BDU-nun Diplomatiya və müasir inteqrasiya prosesləri kafedrasının dosenti, siyasi elmlər üzrə fəlsəfə doktoru

Transxəzər Beynəlxalq Nəqliyyat Marşrutu (TXBNM) Orta Ticarət Dəhlizinin inkişafı kontekstində

afa.sfrva.19@gmail.com

Orcid: 0000-0001-5422-5748

X Ü L A S Ə

Ölkələrin, xalqların və xüsusən də iqtisadiyyatların tam qarşılıqlı asılılığı dövründə geosiyasət yeni ittifaqlar qurmaq və təsir dairələrini müəyyən etmək deyil, bu ölkələri, xalqları və iqtisadiyyatları birləşdirən marşrutlara nəzarət etməkdən ibarətdir. Bu gün ixrac və idxal üçün alternativ marşrutlar mövzusu o qədər populyardır ki, bunun niyə yarandığını və bu marşrutların nə olduğunu izah etməyin mənası yoxdur. Orta dəhliz Mərkəzi Asiyadan Xəzər dənizi vasitəsilə Azərbaycana uzanır və Rusiya ərazisindən yan keçməklə ya Gürcüstan limanlarına, ya da Bakı-Tbilisi-Qars xətti ilə Türkiyəyə qədər davam edir. Bu gün Orta Dəhlizə yüksək marağın səbəbi Ukraynadakı müharibə və Avropa Birliyinin anti-Rusiya sanksiyalarının Rusiya ərazisindən keçən Aİ-yə gedən marşrutu praktiki olaraq bağlamasıdır. Layihənin bütün iştirakçılarının onu həyata keçirmək üçün siyasi iradəsi var. Onların hamısı ikitərəfli və çoxtərəfli görüşlər zamanı Transxəzər Beynəlxalq Nəqliyyat Marşrutunu (TİTR) və Orta Dəhlizi inkişaf etdirmək əzmində olduqlarını təsdiqləyirlər.

Açar sözlər: Transxəzər Beynəlxalq Nəqliyyat Marşrutu, Orta Dəhliz, "Bir kəmər, bir yol", Azərbaycan, Çin, Qazaxıstan, Türkiyə, Gürcüstan

Safarova Afet Agha Ali

Ph(D) on political sciences, Associate professor of the Department of modern integration process of Baku State University

THE TRANS-CASPIAN INTERNATIONAL TRANSPORT ROUTE (TCITR) IN THE CONTEXT OF THE DEVELOPMENT OF THE MIDDLE TRADE CORRIDOR

S U M M A R Y

Geopolitics in the era of total interdependence of countries, peoples and especially economies is not so much about building new alliances and defining spheres of influence as it is about controlling the routes connecting these countries, peoples and economies. Today the topic of alternative routes for export and import is so popular that there is no point in explaining why it arose and what these routes are. The middle corridor runs from Central Asia through the Caspian Sea to Azerbaijan and continues either to Georgian ports or to Turkey along the Baku-Tbilisi-Kars line, bypassing Russian territory. Today, the high interest in the Middle Corridor is due to the fact that the war in Ukraine and the anti-Russian sanctions of the European Union have practically blocked the route to the EU passing through Russia. All project participants have the political will to implement it. All of them, during bilateral and multilateral meetings, confirm their determination to develop the Trans-Caspian International Transport Route (TITR) and the Middle Corridor.

Keywords: Trans-Caspian International Transport Route, Middle Corridor, "One Belt, One Road", Azerbaijan, China, Kazakhstan, Turkey, Georgia

Giriş

Son illərdə dünya arenasında baş verən qlobal dəyişikliklər və Avrasiya qitəsində ticarət-iqtisadi əlaqələrinin transformasiyası bir sıra layihələrə marağı artırıb. Bu gün bir sıra səbəblərdən həyata keçirilməsi mümkün olmayan hesab edilən bu layihələri reallaşdırmaq istəyi, Rusiya-Ukrayna müharibəsinin başlamasından sonra baş verən hadisələr tərəfindən dəstəklənir.

Antirusiya sanksiyaları, əvvəlki iqtisadi zəncirlərin qırılması, siyasi mərkəzlərin yeni bölgələrə köçməsi və bir çox digər amillər Mərkəzi Asiya regionundakı ölkələrin fəaliyyətinin aktivləşməsinə birbaşa təsir göstərdi. Bu vəziyyətdə, yaranmış şəraitdə sərfəli alternativ nəqliyyat marşrutları üçün imkan pəncərəsi görən ölkələrin diqqətini çəkməsi təəccüblü deyil. Bu baxımdan, son bir ildə Transxəzər qaz kəmərinə (TXQK) olan marağın kəskin artması da təbii haldır; bu kəmər, bütün Avrasiya məkanında strateji əhəmiyyətə malik enerji layihələrindən biri halına gəlib.

Rusiyanın bu gün sanksiyalar altında olması və bir sıra ölkələrin onunla ticarət-iqtisadi əməkdaşlığını məhdudlaşdırması səbəbindən, Mərkəzi Asiya dövlətləri və Çin Rusiyadan yan keçərək Avropaya mallarının ixracını artırmaq üçün yeni imkanlar axtarırlar. Rusiyanın dominant mövqedə olduğu və nəqliyyat yolunun böyük hissəsinə nəzarət etdiyi Şimal Nəqliyyat Dəhlizinə və Hind okeanı vasitəsilə keçən ənənəvi dəniz yoluna ən perspektivli alternativ Mərkəzi Asiyadan Avropaya malların tədarükü üçün yaradılmış Orta Dəhlizdir. Bu dəhliz həmçinin Transxəzər Beynəlxalq Nəqliyyat Marşrutu adı ilə də tanınır. Orta Dəhlizin keçdiyi əsas ölkələr, xüsusilə Azərbaycan, Çin, Gürcüstan, Qazaxıstan və Türkiyə üçün bu marşrut Rusiyadan yan keçən alternativ Avrasiya ticarət marşrutuna olan beynəlxalq maraqdan faydalanmaq imkanı verəcək.

Orta Dəhliz təxminən qədim İpək Yolunun marşrutunu izləyir. Tarixi ticarət yolu Xəzər dənizinin cənubundan və Fars (müasir İran) ərazisindən keçsə də, Orta Dəhliz İrandan yan keçərək Qazaxıstan və Türkmənistan limanlarından istifadə edərək yükləri Xəzər dənizi vasitəsilə Azərbaycana daşıyır. Oradan yüklər Gürcüstanın yük limanları və ya Türkiyə ərazisi vasitəsilə Avropaya göndərilir.

Orta Ticarət Dəhlizinin İnkişafının Aktuallığı

7 oktyabr 2023-cü il tarixində baş verən faciəli hadisələr Yaxın Şərqdə gərginliyin artmasına səbəb oldu və bunun nəticəsində Qırmızı dənizdə husi hücumlarının sayı artdı. Bundan əlavə, Rusiyaya qarşı tətbiq olunan çoxsaylı beynəlxalq sanksiyalar, ən populyar qlobal gəmiçilik marşrutlarının getdikcə daha etibarsız hala gəldiyini ortaya qoydu. Rusiyada qərb istiqamətində yük daşımalarının dəmir yolu tranziti, Ukraynaya tammiqyaslı müdaxilənin başlanması ilə kəskin şəkildə azaldı. Nəticədə, daha az tanınan marşrut olan Orta Dəhliz, beynəlxalq bazarlar üçün yaşamağa qadir alternativ ola bilər.

Qırmızı dəniz və Süveyş kanalı beynəlxalq gəmiçilik və ticarət üçün mühüm qovşaq nöqtələridir. Təxminlərə görə, dünya ticarətinin 15 faizə qədər hissəsi Süveyş kanalından keçir, həmçinin dünya konteyner daşımalarının 30 faizə qədər hissəsi [4]. Noyabr ayından etibarən husilər Qırmızı dəniz və Aden körfəzində ticarət və hərbi gəmilərə qarşı təxminən 60 hücum həyata keçiriblər. Davam edən hücumlara baxmayaraq, gəmiçilik şirkətləri hələ də bu marşrut üzrə fəaliyyət göstərirlər. Lakin bu şirkətlərin bir çoxu gəmilərə və heyətə olan təhlükələri kompensasiya etmək üçün minlərlə dolları aşan fövqəladə əlavələr də daxil olmaqla, əlavə ödənişlər tətbiq edirlər.

Digər şirkətlər Süveyş kanalı vasitəsilə marşrutdan tamamilə qaçmaq üçün addımlar atırlar, hətta bu, tranzit müddətinin uzanmasına və daha yüksək xərclərə səbəb olsa da. Analitiklər qiymətləndirir ki, Qırmızı dəniz və Süveyş kanalı vasitəsilə keçən adi konteyner yükdaşımalarının

təxminən 90 faizi Cənubi Afrikadakı Düzgün Ümid burnunu əhatə etmək üçün yönləndirilib. Şərqi Asiyadan Avropaya göndərişlər indi əlavə 10 gün tranzit müddəti ala bilər. Bəzi şirkətlər hətta yükünü çatdırmaq üçün hava daşımalarına müraciət edirlər. Bu metod tranzit müddətini əhəmiyyətli dərəcədə azaldır və daha təhlükəsizdir, lakin hava daşımalarının xərci ənənəvi Süveyş marşrutundan 15 dəfə baha ola bilər.

Rusiya əleyhinə sanksiyalar və Şimal Dəhlizindən istifadə etməyə artan istehsaçlıq bu marşrut üzrə daşımaların həcminin əhəmiyyətli dərəcədə azalmasına səbəb olub. 2023-cü il ərzində Qərb daşımalarının həcmi Şimal Dəhlizi marşrutu üzrə əvvəlki illə müqayisədə 51 faiz azalıb. Orta Dəhliz hər iki marşruta daha təhlükəsiz, qısa və əlverişli alternativ təklif edə bilər.

Orta Dəhliz vahid nəqliyyat marşrutu deyil, daha çox qarşılıqlı əlaqəli yol, dəmir yolu və dəniz marşrutları şəbəkəsidir. Son üç onillikdə bir sıra infrastruktur layihələri Orta Dəhlizin modernləşdirilməsinə və naviqasiya üçün tranzit vaxtının azaldılmasına kömək etdi. Çinin Bir Kəmər-Bir Yol Təşəbbüsü çərçivəsində kütləvi investisiyalarla yanaşı, Avropa Birliyi də Orta Dəhlizə əhəmiyyətli miqdarda sərmayə qoyub [7].

Orta Dəhlizi təşkil edən Avrasiya ölkələri mövcud infrastrukturun yaxşılaşdırılmasına xeyli vaxt və resurslar sərmayə qoyublar. 2022-ci ilin sonunda Qazaxıstan, Gürcüstan, Azərbaycan və Türkiyənin xarici işlər və nəqliyyat nazirləri marşrut üzrə inkişafın sürətləndirilməsi və yük axınının genişləndirilməsi yollarının işlənib hazırlanması üçün toplaşıblar. Nazirlər dəmir yollarının modernləşdirilməsinə yönəlmiş beşillik plan elan etdilər və dəmir yolunun gücü başa çatdıqdan sonra iki dəfə artdı. 2027-ci ilə qədər ölkələr ildə 10 milyon ton daşıma qabiliyyətinə və 14-18 gün tranzit vaxtına sahib olmağı planlaşdırırlar [9].

Orta dəhlizin Avropa ucunda dəhlizə marağı Çinin marağına uyğun olan ölkə Türkiyə yerləşir. Ankara dəhlizə təkcə Mərkəzi Asiya ilə iqtisadi əlaqələri gücləndirmək deyil, həm də strateji mövqeyini yaxşılaşdırmaq üçün bir yol kimi baxır. Türkiyə bölgənin türkdilli ölkələri ilə ortaq dil köklərindən istifadə edərək və onlara İranla və ya Rusiya ilə ticarətə cəlbedici alternativ olan ticarət imkanlarını təklif etməklə buna nail olmağa ümid edirdi. Əslində Türkiyə Orta dəhlizi Mərkəzi Asiyadakı xarici siyasətinin mərkəzi elementi edib. 2013-2015-ci illər arasında Azərbaycan, Çin, Gürcüstan və Qazaxıstan ilə dəhlizin Avropa ilə əlaqəsinin yaxşılaşdırılmasına dair sazişlər imzalanmışdır. Türkiyə 2016-cı ildə İstanbulda Avrasiya tuneli və Yavuz Sultan Səlim körpüsünü tikib və artıq Ədirnə-Qars yüksək sürətli dəmir yolunun və Şimal Mərmərə dənizi avtomobil yolunun tikintisini başa çatdırır. Diplomatik cəhətdən Ankara Ermənistanın Zəngəzur regionu vasitəsilə yeni Orta dəhliz dəmir yolunun tikintisinə kömək etməyə çalışır [3].

Mərkəzi Asiya və Çin ölkələrinin Transxəzər Beynəlxalq Nəqliyyat Marşrutu layihəsinə marağı

Daha əvvəl qeyd edildiyi kimi, məhz Ukraynada vəziyyətin gərginləşməsi Mərkəzi Asiya ölkələrinin Rusiyadan yan keçərək Asiyadan Avropaya malların tədarükünü həyata keçirmək mümkün olan alternativ ticarət dəhlizini fəal şəkildə təbliğ etməyə başlamasına səbəb olub. Mərkəzi Asiya ölkələri münaqişədə bitərəf qalsalar da, Rusiyanın üstünlük təşkil etdiyi Şimal dəhlizinə alternativin mövcudluğunda üstünlük gördülər. Orta dəhliz regiondaxili ticarətin artmasına kömək edir, belə ki, 2022-ci ildə Orta dəhliz üzrə yük daşımaları 3,2 milyon tona qədər artıb, ticarət yolunun tutumunun 10 milyon tona çatacağı gözlənilir [2].

Orta dəhliz layihəsinin inkişafında beş ölkə, o cümlədən Azərbaycan, Gürcüstan, Qazaxıstan, Türkiyə və Çin ən böyük maraq göstərir. Transsərhəd dəmir yolu əlaqələrinin yaxşılaşdırılması və ticarətdəki ziddiyyətlərin azaldılması məqsədilə nazirlər səviyyəsində silsilə konfranslar və görüşlər keçiriblər və bu sahələrdə bir sıra məsələləri müzakirə ediblər. Orta dəhliz regional güc mərkəzi statusunu artıracağını vəd edir, buna görə də onun keçdiyi Mərkəzi Asiya ölkələri, məsələn, Qazaxıstan, Özbəkistan, Türkmənistan, Qırğızıstan, dəhlizlə birləşəcək öz dəmir yollarını qurmağa çalışırlar.

Çin üçün Orta dəhlizə maraq beynəlxalq bazarlara çıxış əldə etmək və Moskva ilə Pekin arasında uzun müddətdir rəqabətin müşahidə olunduğu Mərkəzi Asiya regionunda nüfuzunu artırmaq imkanlarına əsaslanır.

Çinin «Bir kəmər - bir yol» təşəbbüsü ölkənin xarici siyasətində prioritetdir. Bu təşəbbüs çərçivəsində Çin Orta Yol layihəsinin infrastrukturunun inkişafına sərmayə qoyur. Çin üçün dəmir yolu transkontinental dəhliz geostrateji əhəmiyyət daşıyır. Bu, dar Malakka boğazından asılılığı azaldır, bu da ABŞ və onun peykləri ilə bağlana bilər, Çini Hind okeanı və Avropadan kəsir. Buna görə də Çin Avropa ilə dəmir yolu əlaqəsinin yaradılmasına və inkişafına böyük töhfə verib. Pekin əvvəlcə zərərli olan dəmir yolu ilə yüklərin göndərilməsini subsidiyalaşdırdı. Əgər 2011-ci ildə cəmi 11 qatar işə salınıbsa, ötən il Çin və Avropa arasında hər iki istiqamətdə 16 min qatar keçib. Pekin Avropa biznesini dəmir yolu marşrutunun nəinki daha sürətli, etibarlı, sabit və təhlükəsiz olduğuna öyrətdi. Pandemiya və karantin tədbirləri zamanı dəniz marşrutu daha etibarlı və demək olar ki, ucuzlaşıb. Ən təsirli dəhliz şimal dəhlizi oldu. Lakin eyni zamanda Çin cənub marşrutunu da sınaqdan keçirdi və müharibənin başlamasından xeyli əvvəl. Buna görə də, Orta Dəhlizi Şimal kimi etibarlı və sürətli etməyin ən yaxşı (və bəlkə də yeganə) yolu Çin təchizatçıları tərəfindən marşruta tələbatı artırmaqdır [1].

Çin və Qazaxıstan sərhədində yerləşən geniş dəmir yolu keçid mərkəzi olan Horgos Qapısının tikintisi və Horgos - Şərqi Qapı xüsusi iqtisadi zonasının maliyyələşdirilməsi infrastrukturun inkişafına misal ola bilər. Aydındır ki, Pekinin nöqteyi-nəzərindən Rusiyanın üstünlük təşkil etmədiyi (Şimal dəhlizində olduğu kimi) və ABŞ-ın birbaşa müdaxilə edə bilmədiyi (ənənəvi dəniz yolunda olduğu kimi) ticarət marşrutunun mövcudluğu Çin üçün strateji əhəmiyyət kəsb edir [1].

Təhlükəsizliyin artırılması və tranzit vaxtının azaldılması ilə yanaşı, Orta Dəhlizdən istifadə əmək miqrasiyasının ümumi mövzu olduğu bütün Mərkəzi Asiyada iqtisadi imkanları yaxşılaşdırmağa kömək edə bilər. Rusiyanın Ukraynaya genişmiqyaslı işğalından sonra da Orta Asiyadan bir milyondan çox əmək miqrantı Rusiyaya köçdü. Özbəkistan kimi Mərkəzi Asiya dövlətləri əmək miqrasiyasının istiqamətlərini şaxələndirmək üçün yollar axtarır. Avropa İttifaqının və müxtəlif beynəlxalq qurumların yeni investisiyaları bütün Mərkəzi Asiya və Qafqaz üzrə əmək miqrasiyasının dövriyyəsi üçün bir yol təklif edə bilər, bütün marşrut üzrə daha böyük ölkələrarası əməkdaşlığı təşviq edir.

Azərbaycan Orta dəhliz layihəsinin mühüm aktoru kimi

Azərbaycan coğrafi cəhətdən «Şimal-Cənub» və «Şərq-Qərb» ən böyük beynəlxalq nəqliyyat dəhlizlərinin kəsişməsində yerləşir. Ölkə ərazisindən digər MTK-lar da keçir: «Cənub-Qərb» (Aİ - Hindistan), «Şimal-Qərb» (RF - Aralıq dənizi ölkələri), həmçinin gələcəkdə «Şimal-Cənub» və «Şərq-Qərb» dəhlizlərinin inkişafına təkan verən Zəngəzur dəhlizi.

Azərbaycanın öz ərazisindən keçən dəhlizlərin bərabər inkişafı şərti ilə beynəlxalq nəqliyyat mərkəzinə tam miqyaslı çevrilməsi potensialı var. Lakin bunun üçün infrastrukturun modernləşdirilməsi və inkişafı, normativ-hüquqi bazanın təkmilləşdirilməsi və uyğunlaşdırılması, logistika sahəsinin inkişafı, o cümlədən logistika mərkəzlərinin yaradılması zəruridir. 2020-ci il 44 günlük müharibəsinin və 2023-cü il yerli antiterror tədbirlərinin nəticələrinə əsasən ərazi bütövlüyünün bərpasından sonra Azərbaycanın böyük regional və beynəlxalq layihələrin həyata keçirilməsi üçün yeni imkanlar yaranıb. Belə ki, artıq azad edilmiş ərazilərdə dəmir yolu və avtomobil nəqliyyatının bərpası istiqamətində işlər aparılır. Zəngəzur dəhlizinə gəlincə, onun istifadəyə verilməsi Azərbaycanla Türkiyə arasında birbaşa yerüstü əlaqə yaradacaq, bu isə Aİ və Mərkəzi Asiya ölkələri arasında ticarət dövriyyəsini artıracaq. «Azərbaycan Respublikası ərazisindən keçən beynəlxalq nəqliyyat dəhlizlərinin tranzit potensialının artırılması və tranzit yükdaşımaların inkişafı üzrə 2024-2026-cı illər üçün Fəaliyyət Planına» əsasən ölkə ərazisindən yük axını 2022-ci ilin göstəriciləri ilə müqayisədə 27% artmalıdır. Hazırda azad edilmiş ərazilərdə yol infrastrukturunun tikintisinə xüsusi diqqət yetirilir [8].

Hacıqabul-Mincivan-Zəngəzur dəhliz avtomobil yolundan başlayaraq Şuşa şəhərinə qədər davam edən «Qələbə yolu», uzunluğu 123,6 km olan Horadiz-Cəbrayıl-Zəngilan-Ağbənd (Zəngəzur dəhlizi) avtomobil yolunun tikintisi də demək olar ki, istismara verilib Azərbaycan və Naxçıvan Muxtar Respublikasını Zəngəzur dəhlizi ilə birləşdirəcək Horadiz-Ağbənd dəmir yolunun tikintisi başa çatıb, davam etdirilir.

Dəniz nəqliyyatı da inkişaf edir. Bakı Beynəlxalq Dəniz Ticarət Limanı 2018-ci ildən istifadəyə verilmişdir. Hazırda limanın ikinci mərhələsinin açılması planlaşdırılır.

Dünya Bankının Orta dəhlizin fəaliyyəti haqqında hesabatında qeyd olunub ki, 2022-ci ildə Azərbaycan tərəfinin ixracı 72% artıb ki, bu da əsasən faydalı qazıntıların ixracına səbəb olub. Eyni dövrdə qeyri-mineral malların ixracı 50% artdı [8].

Rəqəmsallaşma prosesi nəqliyyat-logistika sahəsinin inkişafında xüsusi yer tutur. Belə ki, 2021-ci ildə Azərbaycanın Rəqəmsal İnkişaf və Nəqliyyat Nazirliyi və Asiyada Əməkdaşlıq və Etimad Tədbirləri üzrə Müşavirə «Nəqliyyat-logistika əməliyyatlarının rəqəmsallaşdırılmasının gücləndirilməsi istiqamətində əməkdaşlığın təşviqi» mövzusunda xüsusi tədbir keçirib və burada nəqliyyat və logistikanın rəqəmsallaşdırılması sahəsində əməkdaşlıq imkanlarını müzakirə ediblər.

2022-ci ildə Azərbaycan İnnovasiya və Elm Nazirliyinin İdarəetmə Sistemləri İnstitutunun və Özbəkistan Daşkənd Dövlət Nəqliyyat Universitetinin ekspert qrupları arasında Orta Dəhliz çərçivəsində rəqəmsallaşdırma layihəsi hazırlanmağa başlayıb.

2023-cü ildə Azərbaycanın Rəqəmsal İnkişaf və Nəqliyyat Nazirliyi müqavilələrin imzalanması prosesindən tutmuş nəqliyyat növünün seçilməsinə qədər nəqliyyat-logistika sahəsində bütün proseslərin rəqəmsallaşdırılması layihəsini təqdim edib. Layihə 2024-cü ildə həyata keçirilməlidir.

Azərbaycan tərəfindən dəhlizin inkişafı çərçivəsində ölkənin öz vəsaiti hesabına böyük işlər görülüb, o cümlədən infrastrukturun inkişafı və modernləşdirilməsi, dəmir yollarının və avtomobil yollarının tikintisi və təmiri. Kifayət qədər böyük həcmdə yük qəbul edə və malların sürətli hərəkətini təmin edə bilən Bakı limanı tikilib. Xəzər dənizində Azərbaycan tərəfdən iri logistika donanması yaradılıb.

Azərbaycan üçün tam hüquqlu nəqliyyat mərkəzinə çevrilmək təkcə iqtisadi cəhətdən sərfəli addım deyil, strateji hədəfə çevrilib. Söhbət gəlirlərin neft sektorundan asılılığının azaldılmasından, həmçinin milli təhlükəsizliyin təmin edilməsindən gedir.

Azərbaycan və Mərkəzi Asiya ölkələri arasında əməkdaşlıq kontekstində Orta dəhliz də əhəmiyyətli rol oynayır. Türk dünyası ölkələri arasında həm TDT çərçivəsində, həm də ikitərəfli formatda əməkdaşlıq inkişaf edir. Bu kontekstdə Azərbaycan Qərb və Mərkəzi Asiya ölkələri arasında birləşdirici həlqəyə çevrilib. Özbəkistan (avqust 2023) və Qazaxıstan (mart 2024) dövlət başçılarının Azərbaycana rəsmi səfərləri təsdiqidir. Bu səfərlərin əhəmiyyəti onunla müəyyən edilir ki, onlar ölkələrin infrastruktur və ticarət əməkdaşlığı məsələlərində ilkin inkişaf mərhələsinə müəyyən xətt çəkirlər. Məlum səbəblərə görə «Orta dəhliz» - Bakıdan Gürcüstana və Türkiyəyə gedən transxəzər ticarət marşrutu ideyası onun əsasını təşkil edir. "Resurslarla yanaşı, hazırda bütün dünyada məhz nəqliyyat-logistika imkanlarına çıxış uğrunda mübarizə kəskinləşir. Bu strateji sahədir. Sevindirici haldır ki, həm Qazaxıstan, həm də Azərbaycan burada təbii tərəfdaş kimi sıx əməkdaşlıq edir. Və bu gün Sian limanından Qazaxıstan ərazisi ilə Azərbaycana dəmir yolu marşrutunun açılış mərasimi çox şeydən danışır", - deyə Azərbaycan Prezidenti İlham Əliyev Qazaxıstan Prezidenti Kasım-Jomart Tokayevin Bakıya səfəri zamanı keçirdiyi mətbuat konfransında bildirib. [11] 2022-ci il aprelin 13-də Çinin Sian şəhərindən idman qatarı ilə yola düşüb mal. Beləliklə, Siyandan Almaniyanın Mannheim şəhərinə Qazaxıstan, Azərbaycan, Gürcüstan və Qara dəniz boyunca Rusiya ətrafında dəmir yolu qatarlarının hərəkəti başladı [12].

Orta dəhliz kifayət qədər çox sayda ölkəni əhatə edir və infrastrukturun inkişaf səviyyəsi, rəqəmsallaşma səviyyələri, dəmir yollarının ötürmə qabiliyyəti arasındakı fərqlərə görə ticarət dövriyyəsi səmərəli və sürətlə baş verə bilər.

Azərbaycan ölkə ərazilərinin çoxillik işğalına və kifayət qədər uzun və nəticəsiz danışıqlar prosesinə baxmayaraq, nəqliyyat-logistika sahəsinin inkişafına xeyli səy göstərib. Ərazi bütövlüyü bərpa edildikdən sonra ölkə hakimiyyəti azad edilmiş ərazilərdə tikinti işlərinin başlanmasına birdən-birə müdaxilə edib.

Zəngəzur dəhlizinin açılması Azərbaycan üçün mühüm vəzifəyə çevrilib, çünki onun istifadəyə verilməsi Azərbaycanla Türkiyə arasında birbaşa quru əlaqəsi yaradacaq, həm regional inkişaf kontekstində, həm də Orta dəhlizin inkişafı kontekstində mühüm rol oynayacaq.

Orta dəhliz layihəsinin həyata keçirilməsi yolunda Azərbaycan əsasən öz vəsaiti hesabına böyük işlər görmüşdür. Lakin dəhlizin inkişafı yolunda həllini tələb edən bir çox vəzifələr var:

- yükdaşımaların dəyərinin aydınlığının və proqnozlaşdırılmasının təmin edilməsi

- malların yerini yoxlamaq imkanı

- sənədləşmə də daxil olmaqla bütün proseslərin rəqəmsallaşdırılması, vahid logistika mərkəzlərinin yaradılması

- layihənin inkişafı üçün özəl sektorun, eləcə də investisiyaların işə cəlb edilməsi.

Avropa İttifaqının Transxəzər Beynəlxalq Nəqliyyat Marşrutu mövqeyi

Orta dəhliz mövzusu Transxəzər beynəlxalq nəqliyyat marşrutunu geosiyasi layihə hesab edən Avropa İttifaqının diqqət mərkəzində qalır.

2023-cü ildə «Orta dəhliz» mövzusu bir çox yüksək səviyyəli platformalarda geniş müzakirə edilmişdir. O cümlədən G7 sammitində və Ümumdünya İqtisadi Forumunda. Orada Böyük Britaniya və ABŞ da daxil olmaqla Qərb ölkələrinin nümayəndələri layihəyə investisiyalarla dəstək verməyə hazır olduqlarını bildiriblər. G7 sammitində 2027-ci ilə qədər "Orta dəhliz 'in inkişafına 600 milyard dollar ayırmaq barədə razılığa gəldilər [2].

Brüsseldə Avropa İttifaqı, Mərkəzi Asiya, Qafqaz və Türkiyədən hökumət, maliyyə qurumları, biznes və vətəndaş cəmiyyəti nümayəndələrinin iştirakı ilə Global Gateway investisiya forumu keçirilmişdir. Avropa Komissiyası və Avropa İnvestisiya Bankı strateji nəqliyyat infrastrukturu obyektlərinə investisiya qoymağa hazırdır. "Uzunluğu 11 min km olan nəqliyyat dəhlizi regionlarımızı 15 gün və ya daha az müddətə birləşdirməlidir. Biz bu dəhlizi rəqabətə davamlı etməliyik. Biz konkret nəticələr əldə etmək niyyətindəyik. Buna görə də Avropa Komissiyası və Avropa İnvestisiya Bankı Mərkəzi Asiyanın nəqliyyat imkanlarına 1,5 milyard avro sərmayə qoymaq niyyətindədir. Daha sonra qarşılıqlı anlaşma haqqında müvafiq memorandumlar imzalanacaq", - deyə Avropa Komissiyası sədrinin müavini, ticarət məsələləri üzrə komissar Valdis Dombrovskis bildirib. Bundan əlavə, AİB Qazaxıstanla artıq həyata keçirilən nəqliyyat layihələrinə 1,5 milyard avro ayrılması barədə saziş imzalayıb [2].

Dombrovskisin qeyd etdiyi kimi, Avropa İttifaqı "Transxəzər Beynəlxalq Nəqliyyat Marşrutu 'na 20 milyard avro sərmayə qoyur, uzunmüddətli perspektivdə isə söhbət ictimai və özəl investisiyalardan 2027-ci ilə qədər yığılması planlaşdırılan 300 milyard avro həcmində təsirli məbləğdən gedir.

Siyasi baxımdan aydındır ki, Avropa İttifaqı öz layihəsi ilə Mərkəzi Asiyaya Rusiyadan yan keçmək üçün yeni yollar axtarır. Digər tərəfdən, Azərbaycan, Gürcüstan və Türkiyə öz coğrafi mövqelərindən Mərkəzi Asiya ərazisindən yüklərin tranzitçisi kimi istifadə edə biləcəklər. Bu gün ölkələr arasında «Bakı - Tbilisi - Qars» dəmir yolu layihəsi fəaliyyət göstərir və artıq Qazaxıstan vasitəsilə daşınan Çin yükləri onunla hərəkət edir. Avropa layihəsində iştirak yalnız bu dövlətlərin Aİ üçün əhəmiyyətini

artıracaq. Gürcüstan - bu, onun avrointeqrasiyaya olan ümidlərinə, Türkiyə - investorların etimadını bərpa etmək və lirə böhranını söndürmək üçün, Azərbaycana isə avroquruculuqların anti-Azərbaycan hücumlarını dayandırmaq üçün lazımdır.

Nəticə

Beləliklə, beynəlxalq münasibətlərin qeyri-sabitliyi şəraitində Orta dəhliz hazırda Avropa İttifaqının Rusiyaya tətbiq etdiyi sanksiyalarla əlaqədar fəaliyyət göstərən Şimal Ticarət Yolunun yeganə alternatividir. Bu layihənin bir sıra üstünlükləri var, məsələn, Orta Asiya ölkələrindən və Çindən Avropaya malların daha sürətli daşınması təmin edilir ki, bu da cəmi 12 gündür, Şimal dəhlizi ilə ən azı 19 gün çəkir.

Lakin malların Orta dəhliz boyunca daşınması prosesində bir sıra çətinliklər var. Bu çətinliklər ilk növbədə nəqliyyat yolunun çoxlu sayda ölkələrin ərazisindən keçməsi ilə bağlıdır ki, bu da daşınma prosesini maliyyə baxımından kifayət qədər bahalı edir, çünki gömrük rüsumlarını ödəmək lazımdır. Bundan əlavə, marşrutun bir hissəsi Xəzər dənizindən keçir və burada tankerlər vasitəsilə daşımaq lazımdır.

Bu nəqliyyat marşrutunun gələcək inkişaf perspektivlərinə nəzər salsaq, demək olar ki, geosiyasi liderlər dəyişə bilər. Mərkəzi Asiya regionunda nüfuz uğrunda mübarizədə Çin bu marşrutun yaradılmasının təşəbbüskarlarından biri kimi qalib gələcək. Eyni zamanda, bu marşrut Rusiyaya Avropa İttifaqının sanksiya siyasətindən yan keçməyə və ticarətin bərpası və yeni bazarların axtarışı üçün Orta Marşrutdan istifadə etməyə kömək edə bilər.

Təhlükəsizliyin artırılması və tranzit vaxtının azaldılması ilə yanaşı, Orta Dəhlizdən istifadə əmək miqrasiyasının ümumi mövzu olduğu bütün Mərkəzi Asiyada iqtisadi imkanları yaxşılaşdırmağa kömək edə bilər. Rusiyanın Ukraynaya genişmiqyaslı işğalından sonra da Orta Asiyadan bir milyondan çox əmək miqrantı Rusiyaya köçdü. Özbəkistan kimi Mərkəzi Asiya dövlətləri əmək miqrasiyasının istiqamətlərini şaxələndirmək üçün yollar axtarır. Avropa İttifaqının və müxtəlif beynəlxalq qurumların yeni investisiyaları bütün Mərkəzi Asiya və Qafqaz üzrə əmək miqrasiyasının dövriyyəsi üçün bir yol təklif edə bilər, bütün marşrut üzrə daha böyük ölkələrarası əməkdaşlığı təşviq edir.

İqtisadi imkanları artırmaqla yanaşı, Orta Dəhliz üzrə daşımaların həcminin artırılması daşımalarla bağlı tranzit rüsumlarından əldə edilən gəlirləri artıracaq. 2021-ci ildə Misir Süveyşdən keçən yük gəmilərindən tranzit ödənişlərindən 6,3 milyard dollar qazanıb. Bu rekord rəqəmlər koronavirus pandemiyası və Ever Given yük gəmisi tərəfindən altı günlük kanal blokadasına baxmayaraq əldə edilmişdir. Süveyşdən keçən həcm Orta Dəhlizin gözlənilən tutumundan dəfələrlə çox olsa da, Orta Dəhliz üzrə həcmin artması layihədə iştirak edən bütün ölkələr üçün sabit gəlir axını təmin edərdi.

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SUSTAINABILITY-DRIVEN MARKETING AND FINANCIAL DYNAMICS IN CONSUMER DECISION-MAKING FOR ORGANIC PRODUCTS

Filip TASKOVSKI

PhD Candidate, Faculty of economics, Goce Delcev University, Stip, North Macedonia
E-mail: filip.30825@student.ugd.edu.mk
ORCID ID: 0009-0002-6440-3944

Teodora SILJANOSKA TASKOVSKA

Faculty of Information and Communication Technologies, UKLO Bitola
E-mail: siljanoska.teodora@uklo.edu.mk
ORCID ID: 0009-0008-9147-7408

Julijana SILJANOSKA

Full professor, Faculty of Economics and Organization of Entrepreneurship, International Slavic University, St. Nicholas
E-mail: julijana.siljanoska@msu.edu.mk
ORCID ID: 0009-0006-3338-4284

Abstract

In recent years, sustainability-oriented consumption has become a major driver of change in both marketing strategies and financial models across global markets. This paper explores the marketing and financial determinants influencing consumer behavior in purchasing organic products in the Republic of North Macedonia. The research aims to identify key behavioral, socio-demographic, and economic factors that shape consumers' willingness to pay for organic goods, integrating sustainability perspectives into marketing and financial decision-making frameworks. Using quantitative research design and statistical analysis conducted through SPSS, the study finds that perceived nutritional value, education level, income, and trust in certification systems significantly affect consumers' readiness to pay premium prices for organic products. The findings suggest that transparent marketing communication, consumer education, and strong brand positioning can enhance market loyalty and stimulate sustainable demand. From a financial perspective, increased consumer awareness and government incentives for organic production can contribute to market growth, producer profitability, and long-term economic stability. The study underscores the importance of aligning marketing innovation and financial policy instruments to promote sustainable consumption behavior in emerging markets.

Keywords: Sustainability, marketing strategy, financial dynamics, consumer behavior, organic products.

INTRODUCTION

Food safety is widely recognized as one of the most critical issues in the production and processing of agricultural and food products. In this context, organic food has gained considerable attention, as its production is grounded in the balanced use of renewable resources, preservation of soil and water quality, and mitigation of environmental degradation. The growing interest in organic agriculture has encouraged an expanding body of research comparing the nutritional, environmental, and economic characteristics of organic and conventionally produced food.

Although the market for organic products in the Republic of North Macedonia is still emerging, consumer interest has increased steadily in recent years. Many consumers are willing to pay a price premium for organic goods, perceiving them as more nutritious and safer relative to conventional alternatives. This positive shift in consumer attitudes is accompanied, however, by several structural constraints, including limited purchasing power, high retail prices, and persistent albeit decreasing concerns about the reliability of certification and control mechanisms.

According to consumer behavior theory, individual choices are shaped by the maximization of utility based on personal preferences, income constraints, product prices, and broader socio-economic factors (Thompson, Consumer Demand for Organic Foods: What We Know and What We Need to Know, 1998). Building upon this theoretical premise, the present research aims to identify the profile of organic food consumers in North Macedonia by examining their socio-demographic characteristics and the economic and psychological determinants that influence their purchasing decisions. In line with the methodological framework outlined by Hanić (2005a), the research questions are translated into clearly formulated objectives and testable hypotheses.

Global trends further underscore the relevance of this study. The market for organic food and beverages has expanded significantly over the past two decades, with demand in many regions outpacing supply. Notably, the consumption of organic products continued to rise even during periods of global economic instability, indicating resilient and deeply rooted changes in consumer preferences. As highlighted by Vapa Tankosić & Lekić (2018), the alignment of national agricultural policies with European standards supported by adequate financial incentives can foster long-term income stability for producers, higher productivity, and improved market positioning for organic agricultural products.

Given these developments, a systematic investigation of the determinants shaping the behavior of domestic consumers is essential. Understanding the interplay between consumer awareness, trust in certification systems, psychological attitudes, income levels, and price sensitivity can provide meaningful insights for policymakers, producers, and retailers seeking to advance the development of the organic food market in North Macedonia. Such knowledge is crucial for strengthening the connection between organic production and consumer demand, thereby supporting the sustainable growth of this sector.

LITERATURE REVIEW

Organic food consumption has been widely examined across diverse markets, with research emphasizing determinants such as health consciousness, environmental concern, and trust in certification systems. Aertsens et al. (2009) highlight that personal and socio-psychological factors shape consumers' organic choices, while Magnusson et al. (2001) demonstrate that positive attitudes toward organic foods do not always convert into actual purchasing behavior. Padel & Foster (2005) address the persistent attitude-behavior gap, noting that price sensitivity, limited availability, and perceived product credibility affect final purchasing decisions. Yiridoe et al. (2005) further compare

consumer perceptions of organic versus conventional foods, underscoring the premium pricing challenge and the importance of clear labeling. Complementing these findings, Zanoli & Naspetti (2002) reveal that motivations for organic consumption are value-driven and culturally contingent, suggesting that marketing strategies must tailor messaging to specific consumer belief structures.

Overall, the literature demonstrates a complex interplay between motivations, perceived benefits, and market constraints. Understanding these dynamics is essential for improving demand forecasting, designing effective promotional strategies, and refining policy measures that support the organic sector's growth.

METHODOLOGY

Data Collection

Primary data were collected through an online structured questionnaire distributed to approximately 500 consumers across the Republic of North Macedonia. The survey instrument, adapted from internationally validated tools used in studies on organic food consumption, consisted of 17 mandatory questions, ensuring a complete dataset without missing responses. The questionnaire captured sociodemographic characteristics, general purchasing behavior related to organic products, willingness to pay a price premium, and respondents' evaluation of the nutritional attributes of organic products. Items included categorical variables, ordinal scales, and five-point Likert-type measures, allowing for precise operationalization of the key constructs. Secondary data from relevant academic literature, institutional reports, and prior empirical studies were used to contextualize the primary findings and to support the theoretical orientation of the research.

Analytical Framework

The empirical analysis centers on two dependent variables willingness to pay a higher price for organic products and perceived nutritional value while sociodemographic characteristics and consumer attitudes serve as explanatory variables. Data processing was performed using SPSS, employing a set of statistical techniques suitable for examining both associative and predictive relationships. Descriptive statistics were used to summarize consumer profiles and purchasing patterns. The binomial test and Chi-square test of independence assessed proportional differences and associations between categorical variables. Correlation analysis examined the strength and direction of relationships among key constructs, and multiple regression models were applied to evaluate the predictive power of sociodemographic and attitudinal factors on the dependent variables. This integrated analytical design ensures methodological robustness, supports rigorous hypothesis testing, and provides a comprehensive understanding of the determinants shaping consumer behavior in the organic products market.

RESEARCH AND DISCUSSION

To examine the relationship between socio-demographic characteristics and the regularity of organic food consumption, a new variable, "Regularity of Organic Consumption," was introduced.

Table 1: Distribution of respondents by regularity of organic consumption

Distribution of responses to the question: 'How often do you purchase organic products?'	Frequency	%	Variable: "Consumption Regularity"	Frequency	%
Daily	0	2,86	Regular consumers	165	3,05

Weekly	25	0,19	(1)		
Monthly	22	9,22			
Quarterly	21	,76	Casual consumers (2)	146	6,95
Semiannually	2	,64			
Annually	1	,32			
Total:	11	00,0	Total:	311	00,0

Source: Authors' calculations

Survey responses classified 53.05% of participants as regular consumers and 46.95% as occasional consumers, indicating a fairly balanced distribution. A binomial test confirmed that the proportion of regular consumers did not significantly differ from the expected 50% (p = 0.281).

Table 2: Binomial test for proportion of regular vs. occasional consumers

		Category	N	Observed Prop.	Test Prop.	Exact Sig. (2-tailed)
Regularity	Group 1	Irregular	146	,47	,50	,281
	Group 2	Regular	165	,53		
	Total		311	1,00		

Source: Authors' calculations

Descriptive analysis revealed that regular consumers were slightly more often women, predominantly aged 31–40 years, with higher education levels, living in households of up to four members, with monthly incomes between €500 and €1,000, and mainly residing in urban areas. These patterns are consistent with previous studies across Europe and the USA, where women, middle-aged adults, and urban residents are more likely to be regular purchasers of organic products.

The results indicate that socio-demographic factors—gender, age, education, household size, income, and urban residence—significantly influence the regularity of organic food consumption in North Macedonia.

Analysis of the Regularity of Organic Food Consumption and Consumers' Socio-Demographic Characteristics

To investigate the first hypothesis, which posits that socio-demographic characteristics do not significantly influence whether an individual is a regular or irregular consumer of organic products, a Chi-square test of independence was employed. One of the key assumptions for the validity of the Chi-square test is that the sample size must be sufficiently large so that the expected frequency in each cell is at least five. The present study, with a sample of 311 respondents, met this requirement, ensuring the robustness of the statistical analysis.

Table 3: Significance levels of socio-demographic characteristics and consumption regularity

Socio-Demographic Characteristics of Organic Food Consumers	Regularity in Purchasing Organic Products
Gender	,617
Age	,572
Education	,763
Household size	,096
Monthly income	,096
Place of residence	,897

Source: Authors' calculations

The analysis revealed that gender does not have a statistically significant effect on the regularity of organic food consumption ($\chi^2(1, n=311)=0.251$, $p=0.617$). This finding aligns with previous research conducted in multiple countries, including the United States, Greece, Italy, Croatia, and Serbia, where gender was similarly found not to significantly determine organic food consumption patterns ((Thompson & Kidwell, 1998); (Wandel & Bugge, 1997); (Tsakiridou et al., 2008); (Gracia & De Magistris, 2008); (Anic et al., 2014); (Vehapi & Dolićanin, 2016)).

Further, age was not significantly associated with consumption regularity ($\chi^2(5, n=311)=3.845$, $p=0.572$), suggesting that regularity in purchasing organic products is relatively consistent across different age groups in the study sample. Education level also showed no significant relationship with consumption regularity ($\chi^2(2, n=311)=0.541$, $p=0.763$), indicating that higher educational attainment does not necessarily predict more frequent consumption of organic products.

Household size was categorized into two groups (1–4 members vs. 5 or more members) to satisfy the Chi-square assumptions, and no significant association with consumption regularity was found ($\chi^2(1, n=311)=2.766$, $p=0.096$). Similarly, monthly household income did not show a statistically significant effect ($\chi^2(4, n=311)=7.884$, $p=0.096$), indicating that variations in income within this sample do not substantially influence whether consumers are regular or irregular buyers. Finally, the place of residence, whether urban or rural, also exhibited no significant impact on consumption patterns ($p=0.897$).

Overall, these results suggest that socio-demographic characteristics including gender, age, education, household size, income, and place of residence do not play a decisive role in determining the regularity of organic food consumption within the population studied. This insight is consistent with evidence from other international studies, which also reported the limited explanatory power of socio-demographic variables on consumer behavior regarding organic products. These findings imply that other factors, such as psychological attitudes, perceived health benefits, environmental concerns, and trust in certification mechanisms, may be more critical in shaping regular purchasing behavior.

Analysis of Socio-Demographic Characteristics of Loyal Consumers and Willingness to Pay a Premium for Organic Products

To examine the second hypothesis "Socio-demographic characteristics can serve as predictors of regular consumers' willingness to pay a higher price for organic products compared to conventional products"

descriptive statistics were first analyzed to identify the socio-demographic profile of regular consumers and their readiness to pay a premium for organic products. The analysis provided insights into the characteristics of consumers who are most willing to allocate additional resources for the purchase of organic products.

Regarding gender, the findings indicate that a higher proportion of male respondents were not willing to pay more than the conventional price for organic products. Overall, both male and female regular consumers were generally willing to pay a premium of 10–20%. However, female respondents were more willing than males to pay an additional 10–20% and 20–30% for organic products. Interestingly, in the category exceeding a 30% premium, male consumers demonstrated a slightly higher willingness to pay.

Age significantly influenced willingness to pay. Among all age groups, consumers aged 21–30 years were least willing to pay any additional amount for organic products (38.5%). The highest willingness to pay a 10–20% premium was observed among consumers aged 31–40 years (35.8%), followed by those aged 41–50 years (28.4%). Consumers over 50 years demonstrated greater readiness to pay a 20–30% premium. These results suggest that willingness to pay increases with age, likely reflecting higher income levels and educational attainment among older consumers, both of which positively influence the decision to pay a premium for organic products.

Education also played a notable role. Consumers with higher educational attainment were more willing to pay additional amounts, with 32.1% prepared to pay 10–20% more and 27.3% willing to pay 20–30% more. This supports existing evidence that higher education correlates with greater organic food consumption. Similarly, higher income was associated with a greater willingness to pay, as better-educated consumers typically have higher disposable incomes and can allocate more resources to organic products. Previous research in North Macedonia and Serbia corroborates these findings, identifying the typical organic consumer as an individual aged 18–50 years with higher education, generally unwilling to pay a premium exceeding 30% ((Sekovska et al., 2013); (Vehapi & Dolićanin, 2016)).

Household size also influenced willingness to pay. Smaller households, typically up to four members, were more willing to pay a 10–20% premium (37.6%), while a 20–30% premium was also notable (29.1%). The presence of children increased the likelihood of purchasing organic products, whereas larger households faced higher food expenditure burdens and were less willing to allocate additional funds to organic products. Similarly, monthly household income affected willingness to pay: households earning under €500 were generally unwilling to pay more than 10% extra, whereas households with incomes between €500–2,000 were willing to pay up to a 30% premium, and households earning over €2,000 were prepared to pay more than 30% extra. Place of residence also demonstrated an effect, with the majority of urban respondents willing to pay higher prices, reflecting urban predominance among regular consumers.

To formally test the predictive power of socio-demographic variables on willingness to pay, an ordinal logistic regression was conducted. The dependent variable was willingness to pay a premium for organic products, while independent variables included gender, age, education, household size, monthly household income, and place of residence. Multicollinearity was assessed using Spearman correlations and Variance Inflation Factor (VIF) analysis, revealing no violation of assumptions (all VIFs < 1.2).

Model fitting statistics indicated a significant improvement over the null model ($\chi^2(13)=34.188$, $p=0.001$), suggesting that the predictors meaningfully contributed to predicting willingness to pay. Goodness-of-fit tests showed acceptable model fit, with Pearson $\chi^2(335)=379.128$, $p=0.048$ and Deviance $\chi^2(335)=254.157$, $p=1.000$. Pseudo R^2 values were 0.074 (McFadden), 0.187 (Cox & Snell), and 0.199 (Nagelkerke), indicating that the model explained a meaningful portion of variance in the

dependent variable. Parallel lines assumption was satisfied (χ^2=52.839, df=39, p=0.069), confirming proportional odds across response categories.

Analysis of the final model revealed that only age and monthly household income were statistically significant predictors of willingness to pay. Specifically, respondents aged 20–30, 31–40, and 41–50 showed a reduced likelihood of paying a higher price compared to those over 60 (Exp(B) ranging from 0.23–0.24). Conversely, higher household income significantly increased the probability of willingness to pay: those earning €1,000–2,000 were 4.04 times more likely, and those earning over €2,000 were 13.67 times more likely, to pay a premium compared to households earning less than €200. Other socio-demographic factors, including gender, education, household size, and place of residence, did not reach statistical significance.

In conclusion, the empirical evidence supports the second hypothesis, confirming that certain socio-demographic factors namely age and monthly household income significantly determine regular consumers' decisions to pay a higher price for organic products. These findings have important implications for marketers and policymakers seeking to design targeted strategies to promote organic food consumption.

Analysis of the Nutritional Properties and Consumers' Willingness to Pay a Premium for Organic Products

The third working hypothesis assumed that consumers' willingness to pay a higher price for organic products significantly depends on their evaluation of the nutritional properties of these products. The majority of respondents (89.4%) who assessed organic products as having higher nutritional properties were willing to allocate additional funds for their purchase. Most respondents perceived organic products as having moderate nutritional properties (39.5%) compared to conventional products. The largest share of respondents who evaluated organic products as moderately nutritious were willing to pay 10–20% more for these products (36.6%). Among respondents who considered organic products to have higher (44.9%) or very high nutritional properties (33.3%), the willingness to pay 10–20% more was also prevalent, indicating that respondents recognize the superior quality and greater nutritional value of organic products relative to conventional alternatives. These products are perceived as tastier, more visually appealing, richer in nutrients, containing fewer chemicals, and offering more health benefits, which encourages consumers to pay a premium. To test the statistical independence between the categories of willingness to pay more and the evaluation of the nutritional properties of organic products, a Chi-square test was applied. The SPSS output showed a Pearson Chi-square value of 44.500 with 16 degrees of freedom (p = 0.000), indicating sufficient evidence to conclude that willingness to pay more and the evaluation of nutritional properties are dependent variables; in other words, willingness to pay more depends on the perception of nutritional properties. While Radović-Marković and Hanić (2018) note that Chi-square values and associated measures of association do not necessarily indicate a direct relationship between two variables, a correlation analysis was further applied to examine the strength and direction of the association. Spearman's rank correlation coefficient between the willingness to pay more for organic products and the evaluation of nutritional properties was 0.115, statistically significant at the 0.05 level (p = 0.042). Although the correlation is weak, it is positive, suggesting that higher perceived nutritional properties are associated with greater consumer willingness to pay a premium. This result confirms the initial hypothesis, as empirical evidence demonstrates a significant, positive linear relationship. Supporting these findings, prior research on consumers in North Macedonia and Serbia ((Sekovska и др., 2013)) showed that the majority of respondents (72% of Macedonian and 58% of Serbian consumers) believe that organic products are healthier and more natural than conventionally produced foods. Our study corroborates these observations, indicating that North Macedonian consumers who perceive organic products as nutritionally superior are more willing to spend additional resources to purchase them. This highlights that consumers in North Macedonia who

prioritize nutrition, food safety, and product quality are indeed more prepared to pay higher prices for organic products, thereby contributing to the confirmation of the third hypothesis.

Analysis of Consumers' Socio-Demographic Characteristics and the Assessment of the Nutritional Properties of Organic Products

The fourth working hypothesis was based on the assumption that consumers' socio-demographic characteristics (gender, age, education, household size, place of residence, and monthly income) can be used to predict their assessment of the nutritional properties of organic products. Based on descriptive indicators, conclusions were drawn regarding the characteristics of consumers who evaluate organic products as having higher nutritional properties compared to conventional products. The descriptive analysis shows that a high percentage of both men and women (92.6%) hold positive attitudes toward the superior nutritional value of organic products compared to conventional ones. The largest proportion of male (48.4%) and female (51.6%) respondents assessed organic products as having moderate nutritional properties (rating 3). A higher percentage of female respondents (62.2%) rated the nutritional qualities of organic products with a score of 4 compared to male respondents (37.8%), as well as with a score of 5 (53.0% and 47.0%, respectively). A small proportion of respondents (7.4%) rated the nutritional qualities of organic products as 1 or 2. It can therefore be concluded that female respondents are more likely to assign the highest ratings to the nutritional properties of organic products. The largest percentage of respondents in the 31–40 age group rated the nutritional properties of organic products with a score of 3 (36.3%). Among age groups over 40, no respondents assigned a rating of 1. Respondents who gave the highest rating of 5 mostly belong to the over-50 age category, indicating that older consumers have the most positive attitudes toward the higher nutritional value of organic products. Consumers with secondary education (36.7%), higher education (39.0%), and those with master's or doctoral degrees (44.6%) rated organic products as having moderate nutritional properties (score 3). A larger proportion of small households (up to 4 members) rated the nutritional properties of organic products with a score of 3. Within the moderate nutritional property category (score 3), households with monthly incomes of €500–1,000 were predominant (44.4%), while households with monthly incomes of €200–500 and €500–1,000 were most represented in the highest rating category (score 5). This suggests that households that value nutritional properties the most generally have monthly incomes between €200 and €1,000. Among respondents assigning a score of 5, the majority were urban residents (78.8%), suggesting that consumers from urban areas rated the nutritional value of organic products higher, likely because they are farther removed from nature and perceive these products as healthier than conventionally produced ones.

To further test Hypothesis 4, which states that "Based on consumers' socio-demographic characteristics (gender, age, education, household size, place of residence, monthly income), it is possible to predict their assessment of the nutritional properties of organic products," a statistical analysis was conducted using ordinal regression. All independent predictors were included in the model: gender, age, education, household size, monthly household income, and place of residence, while the assessment of the nutritional value of organic products was used as the dependent variable. First, the assumptions regarding model adequacy were tested. To examine potential multicollinearity, the correlations among predictor variables were inspected, and all coefficients were below the threshold of 0.6, indicating no multicollinearity. This was further confirmed using the Variance Inflation Factor (VIF), which showed no multicollinearity in the model, allowing all predictor variables to be retained for regression analysis.

Initial testing of the model across the total sample of organic consumers showed that the ordinal regression parameters were not statistically significant. Regularity of consumption was then included as a control variable, and further testing was conducted. The final model, including predictors such as gender, age, education, household size, monthly income, and place of residence, was evaluated to determine whether it improved prediction of the dependent variable (assessment of nutritional value) compared to the baseline model. The model fitting results ($\chi^2(14)=15.992$; $p=0.314$) indicated no

statistical significance. However, the Goodness-of-Fit test for irregular consumers showed significance, suggesting that the observed data are consistent with the tested model, justifying further analysis exclusively for the irregular consumer sample. Pseudo R^2 values indicated that the model explained approximately 11% of the variance in the dependent variable (Nagelkerke R^2=0.114). The parallel lines test confirmed the proportional odds assumption (χ^2=41.743, df=42, p=0.482), validating the adequacy of the final model.

Analysis of the final ordinal regression model revealed that only one variable—Education in the category of higher vocational education—was a significant predictor of the assessment of the nutritional value of organic products (Sig.=0.03) among irregular consumers. Based on the Exp(B) (odds ratio), irregular consumers with university-level education were 2.59 times more likely to rate the nutritional value of organic products higher compared to those with master's or doctoral degrees, assuming all other predictors are held constant.

CONCLUSION

This study provides empirical evidence on the determinants shaping consumer behavior toward organic products in the Republic of North Macedonia, offering insights relevant to sustainability-driven markets in emerging economies. The findings reveal that while socio-demographic characteristics do not systematically predict the regularity of organic food consumption, age and household income significantly influence consumers' willingness to pay a price premium. These results underscore the economic nature of sustainable purchasing decisions, where financial capacity and life-cycle stages condition the adoption of higher-priced organic alternatives. The analysis further confirms that perceptions of superior nutritional value strongly reinforce willingness to pay more, indicating that cognitive evaluations and product-related beliefs remain central drivers of sustainable consumption. Although this relationship is modest in magnitude, its statistical significance highlights the need for credible, evidence-based marketing communication and transparent certification systems capable of reducing consumer uncertainty and strengthening trust. Importantly, the study demonstrates that structural constraints price sensitivity, limited purchasing power, and perceived reliability of certification continue to moderate the translation of positive attitudes into actual purchasing behavior. These findings align with international literature and emphasize that behavioral, informational, and institutional barriers persist even in markets with increasing interest in organic products. Overall, the research contributes to the literature by integrating socio-demographic, economic, and perceptual determinants into a unified analytical framework. Policy measures that enhance consumer education, improve labeling credibility, and support affordability combined with marketing strategies emphasizing verified nutritional superiority have the potential to expand organic demand and foster a more resilient and sustainable food system.

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EVALUATION OF RECREATIONAL HOT WATER USE IN THERMAL HOTELS IN KÜTAHYA IN TERMS OF SUSTAINABILITY AND ECONOMY

Mert TESTERE

Yüksek Lisans Öğrencisi, Rekreasyon Yönetimi Bölümü, Dumlupınar Üniversitesi, Kütahya, Türkiye

mert.testere@ogr.dpu.edu.tr

ORCID: 0000-0002-0293-0063

Abstract

Kütahya is one of Turkey's leading centers for health and tourism, renowned for its rich thermal resources. The recreational use of thermal waters (such as in spas, pools, and wellness facilities) constitutes a significant source of income for hotel enterprises; however, the intensity of this use raises important questions regarding environmental sustainability. This study aims to evaluate the recreational use of thermal water in Kütahya's thermal hotels from a sustainability perspective. Based on a review of the literature, the research emphasizes the necessity of utilizing thermal resources in tourism enterprises in an environmentally responsible, energy-efficient, and economically sustainable manner. The findings indicate that modern thermal hotels should adopt practices aligned with environmental sustainability principles, including energy efficiency, wastewater recovery, and natural resource management.

Keywords: Thermal Tourism, Sustainability, Recreation, Energy Efficiency, Tourism and Hotel Management

KÜTAHYA'DAKİ TERMAL OTELLERDE REKREASYONEL SICAK SU KULLANIMININ SÜRDÜRÜLEBİLİRLİK VE EKONOMİ AÇISINDAN DEĞERLENDİRİLMESİ

Öz

Termal otellerde kullanılan sıcak su, hem rekreasyonel hizmetlerin temel unsurlarından biri hem de işletmenin çevresel ve ekonomik sürdürülebilirliğini doğrudan etkileyen stratejik bir kaynaktır. Jeotermal kaynakların yenilenme hızları ile otellerin kullanım yoğunluğu arasındaki dengenin bozulması, mevsimsel değişimler sebebi ile yağmurun az yağması ve nerdeyse hiç kış yaşanmaması ayrıca kaçak kuyuların kullanılması kaynakların giderek azalmasına ve yenilenme hızının düşmesine sebep olduğu gözlemlenmiştir. Bu çalışma, termal otellerde sıcak su kullanımının yenilenebilirlik ilkeleri çerçevesinde değerlendirilmesini ve sürdürülebilir yönetim modellerinin ortaya konulmasını amaçlamaktadır. Literatür bulguları; kapalı devre sistemler, ısı geri kazanım teknolojileri, su yönetimi otomasyonları ve kuyuların izleme mekanizmalarının sürdürülebilir termal su kullanımında kritik rol oynadığını göstermektedir. Elde edilen sonuçlar, termal suyun yalnızca bir hizmet girdisi değil, aynı zamanda korunması ve etkin yönetilmesi gereken stratejik bir doğal sermaye olduğunu vurgulamaktadır.

Anahtar Kelimeler: Termal İşletmeler,Sürdürülebilirlik,Ekonomi

GİRİŞ

Kütahya, zengin termal kaynaklarıyla Türkiye'nin önemli sağlık ve turizm merkezlerinden biridir. Termal suların rekreasyon (dinlenme ve eğlence) amaçlı kullanımı, otel işletmeleri için önemli bir gelir kaynağı oluşturmaktadır. Ancak, bu kaynakların sürdürülebilirliği, aşırı kullanım, çevresel etkiler ve enerji verimliliği gibi konularla yakından ilişkilidir. Bu çalışma, Kütahya'daki termal otellerde rekreasyonel sıcak su kullanımının sürdürülebilirlik açısından değerlendirilmesini amaçlamaktadır.

Termal sular, kaplıca turizminin yanı sıra spa, havuz ve wellness hizmetleri gibi rekreasyonel faaliyetlerde yaygın olarak kullanılmaktadır. Kütahya'daki oteller, misafirlerine termal suyun rahatlatıcı ve şifa verici özelliklerini sunarken, aynı zamanda lüks bir konaklama deneyimi sağlamaktadır. Ancak, bu kullanımın yoğunluğu, su kaynaklarının geleceği açısından önemli soruları beraberinde getirmektedir.

Termal Turizm

Turizm sektörünün son yıllarda hızla gelişip büyümesi, sağlık turizmine olan ilgiyi de hızlı bir şekilde arttırmıştır (Kuşat & Esen, 2022; Sarkım, 2007; Garda&Temizel, 2017). İnsanların yoğun ilgi göstermesi ile birlikte artan ticaret hacmi farklı kollarda çeşitlilik sunmuştur. Sağlık turizmi yelpazesi içinde en büyük payı "termal turizm" işletmeleri oluşturmaktadır. Günümüzde insanlarının değişen yaşam tarzları ve sağlıksal ihtiyaçlarının daha iyi karşılanacağı düşüncesi ile sağlık turizminin bir kolu olan termal turizme yönelme ihtiyacı hissedilmiştir (Tengilimoğlu & Işık 2010). Sağlık turizmi içerisinde yer alan termal turizm, yeraltından çıkan 18 –20 derece üzerinde sıcaklığı olan ve içeriğinde litresinde en az 1 gram mineral bulunan maden sularına denilmektedir. Dinlenme, zindeleşme, tedavi ve bunun gibi amaçlarla başvurulan mekanlar "termal otel" olarak adlandırılmaktadır (Çontu, 2006; Keskin, 2008). Başka bir deyişle termal otellerin genel tanımlarda, kısaca şifa dağıtan tesisler olup, insanların bedensel, zihinsel ve ruhsal olarak rahatlamak istediği için tercih ettiği merkezler denilmektedir (Akyürek, 2016).

Kültür ve Turizm Bakanlığı'na göre termal turizm; mineral ve çamur banyosu gibi çeşitli türler ile birlikte fizik tedavi, egzersiz, diyet gibi yardımcı tedavilerin birleştirilmesi ile termal kaynakları eğlence ve rekreasyon amaçlı kullanılan turizm çeşididir (Öztürk & Bayat, 2011).

Türkiye, sahip olduğu yenilenebilir jeotermal kaynakları daha etkin ve verimli bir şekilde kullanabilmek amacıyla, geleneksel kaplıca anlayışının ötesine geçen yeni bir model benimsemektedir. Bu kapsamda, kür parkı, kür merkezi ve konaklama olanaklarını bir araya getiren ve uluslararası standartlara uygun nitelikli tesislerin sayısının artırılması hedeflenmektedir. Söz konusu yatırımlarla birlikte, termal turizmden elde edilen gelirin ve bu alanı ziyaret eden turist sayısının yükseltilmesi öngörülmektedir (Aklanoğlu, 2008).

Günümüzde turizm sektörünün çevresel etkilerinin artmasıyla birlikte, termal turizmin sürdürülebilirlik boyutu da ön plana çıkmıştır. Termal kaynakların bilinçsiz kullanımı, su ve enerji israfı ile doğal çevrenin tahribatı, uzun vadede bu işletmelerin faaliyetlerini riske atabilmektedir (Şen & Uz, 2023). Bu nedenle modern termal otel işletmeleri, çevresel sürdürülebilirlik ilkelerini benimseyerek enerji verimliliği, atık suyun geri kazanımı, karbon ayak izinin azaltılması ve doğal kaynakların dengeli kullanımı gibi uygulamalara yönelmektedir. Sürdürülebilir termal turizm anlayışı, yalnızca ekonomik kazanç sağlamayı değil; aynı zamanda yerel toplulukların refahını artırmayı, çevresel değerleri korumayı ve gelecek nesillere yaşanabilir bir çevre bırakmayı hedeflemektedir (Battaglia, 2017).

Sürdürülebilir Turizm

Sürdürülebilirlik kavramı; ekolojik, toplumsal, politik ve ekonomik pek çok alanda genişleyen bir etki alanına sahiptir. Kitlesel turizm faaliyetlerinin günlük yaşamın bir parçası haline gelmesi ve sanayi devrimi sonrasında gelişen ağır endüstriler, sağladıkları faydanın yanı sıra, çevre üzerinde yok edici bir tahribata neden olmuşlardır. Buna ilave olarak, hızlı nüfus artışı ve aşırı doğal kaynak tüketimi sonucu ortaya çıkan bozulma; çevrenin korunmasını zorunlu hale getirmiştir (Oflaz, 2023).

Dolayısıyla toplumlarda aşırı ve bilinçsiz doğal kaynak tüketimine karşı bir tepki oluşturmuştur. Bu çerçevede sürdürülebilirlik: "günümüzün ihtiyaçlarının gelecek nesillerin yaşam standartlarını zedelemeden karşılanması" olarak kabul edilebilir. Diğer bir tanıma göre ise; sürdürülebilirlik "toplum veya ekosistem gibi devam eden bir sistemin işlerini kesintisiz, bozulmadan veya aşırı kullanımla ana kaynaklara aşırı yüklenilip tüketilmeden sürdürebilmesi yeteneğidir" (Köroğlu & Karaman ,2014). Bu

bağlamda turizm özelinde, sürdürülebilirlik "turistik merkezin ayırt edici çekiciliklerinin korunarak geleceğe aktarılması" olarak da ifade edilebilir.

Sürdürülebilirlik, ekonomik büyüme, çevresel koruma ve toplumsal refah arasında denge kurmayı amaçlayan bütüncül bir kalkınma anlayışıdır. Günümüz küresel ekonomisinde artan çevresel sorunlar, doğal kaynakların tükenmesi ve toplumsal eşitsizlikler, sürdürülebilirlik kavramını hem bireyler hem de kurumlar açısından stratejik bir zorunluluk hâline getirmiştir (Kaypak, 2011).

İşletmeler açısından sürdürülebilirliğin benimsenmesi, uzun vadeli rekabet avantajı elde etmenin, kurumsal itibarın güçlendirilmesinin ve paydaş güveninin tesis edilmesinin temel koşullarından biridir. Sürdürülebilirlik ilkelerinin işletme stratejilerine entegre edilmesi, kaynak kullanımında etkinliği artırırken çevresel etkileri azaltmakta; aynı zamanda sosyal sorumluluk bilincini kurumsal kültürün bir parçası hâline getirmektedir (Yalçın, 2024). Bu durum, işletmelerin yalnızca ekonomik performanslarını değil, topluma ve çevreye olan katkılarını da ölçülebilir hâle getirerek kurumsal değer üretimini sürdürülebilir kılmaktadır (Düzer, 2018).

Dolayısıyla sürdürülebilirlik, çağdaş işletmecilik anlayışında etik, ekonomik ve ekolojik boyutlarıyla bir zorunluluk olarak ele alınmakta; işletmelerin uzun vadeli başarısının, çevreyle uyumlu ve toplumsal faydayı gözeten politikalar geliştirmelerine bağlı olduğu kabul edilmektedir. Sürdürülebilir turizmde aşırı kullanımdan kaynaklanan yıpranmayı önlemek için tercih edilebilecek bir pazarlama türüdür (Sezgin, Bilgiç & Akgül, 2024). Bu çerçevede, sürdürülebilir turizme uygun turizm nişleri; etkinlik turizmi, ekoturizm, doğa turizmi, kültür turizmi, keşif turizmi ve macera turizmi olarak belirlenebilir (Karpuz, 2017).

Sürdürülebilir Turizm Çeşitleri

Dünya Turizm Örgütü, sürdürülebilir turizm için üç temel ilke öngörmüştür. Bunlar; ekolojik ve biyolojik çeşitliliğin korunması, ev sahibi toplumların özgün sosyokültürel değerlerinin bozulmaması ve yerel halkın turizm sektöründe istihdamı sağlanarak, toplumsal yaşam standartlarının yükseltilmesidir (Goodwin 2007). Modern turizm pazarlamasındaki “niş pazarlama” teriminin kullanımı özel bir kitle için gerçekleştirilen odaklanmış pazarlama olarak ifade edilebilir. Diğer bir tanıma göre ise niş pazarlama; göreceli olarak benzer niteliklerde mal/hizmetlere gereksinim duyan, bir ya da daha çok benzer özelliği paylaşan, küçük bir tüketici kitlesinin istemlerini daha iyi karşılamak amacıyla geliştirilen pazarlama faaliyetleridir. Bu durumda niş pazar; gereksinimleri tam olarak karşılanamayan küçük bir müşteri grubunun istemlerini daha iyi karşılayabilmek için belirlenen çok dar kapsamlı, küçük bir pazar bölümüdür. Genellikle her endüstri kolunda, kendi alanında uzmanlaşmış, pazar nişlerinde hizmet veren firmalar vardır. Bu firmalar, bütün pazarda geniş bir alanda faaliyet göstermek yerine, pazar bölümlerini daha da bölümlendirerek pazar içinde pazar olarak bilinen çok küçük pazar bölümlerini kendilerine hedef pazar seçerler. Niş pazarlama, herkesin tercih ettiği mallar/hizmetler üretmek yerine, az kişinin çok fazla sevdiği malların/hizmetlerin üretimini gerçekleştirme temeline dayanır. Kitlesel pazarlarda bütün pazar için tek bir ürün modeli yapılırsa, tüketiciler ortalama düzeyde memnuniyet duyarlar. Bu bağlamda niş pazarlamada az sayıda tüketici için yüksek düzeyde tatmin sağlayacak ürünler kullanıma sunulur. Niş pazarlamanın önemi, boşlukları doldurmaktan kaynaklanmaktadır. Yani piyasada rakiplerin fark edemediği bir boşluk tespit edilir ve doldurulur (Uçkun & Çeltek, 2004). Sürdürülebilir turizmde aşırı kullanımdan kaynaklanan yıpranmayı önlemek için tercih edilebilecek bir pazarlama türüdür. Bu çerçevede, sürdürülebilir turizme uygun turizm nişleri; etkinlik turizmi, ekoturizm, doğa turizmi, kültür turizmi, keşif turizmi ve macera turizmi olarak belirlenebilir.

Örnek Sürdürülebilir Turizm Çeşitleri;

- Etkinlik Turizmi: Doğal çevre; kasırgalar, kutup buzulları, dağlar, okyanuslar gibi tekrar gidildiğinde sonsuz yenilik ve çeşitli hazır mücadeleleri sunan çok çeşitli olay ve ortamları birleştirmektedir.
- Ekoturizm: Ekoturizm, doğayı gözlemlemek ve deneyimle öğrenmek için boş zaman seyahatleri üzerine kurulmuştur.
- Doğa Turizmi: Doğa turizmi bazı kaynaklarda ekoturizmle eş anlamlı olarak kullanılırken bazılarında tamamen ayırt edici özellikleri olan bir turizm dalı olarak görülmektedir. Örneğin; Whelan'ın doğa turizminin ayırt edici özelliklerini vurgulayan ilk çalışmasında, ekoturizmin önemi de vurgulanmasına rağmen, turizmin sürdürülebilmesi için; doğal kaynakların acilen yönetilmesi ve korunması gerektiği savunulmuştur.
- Macera turizmi: Macera seyahati, geleneksel açık hava rekreasyonlarının gelişmiş şeklidir. Ewert (1994) göre, macera seyahatini diğer rekreaktif faaliyetlerden ayıran en önemli özellik, katılımcısına daha riskli bir deneyim yaşatmasıdır. Macera seyahati, doğal bir çevredeki veya egzotik bir açık hava ortamındaki kişisel mücadele ile ilgili algılanmış risk veya kontrollü tehlike içeren, katılım amacı yeni bir deneyimi keşfetmek olan, özel hedefli bir seyahattir
- Kültür Turizmi: Kültür turizmi, değişik kültürler ile yabancı, olağandışı ve alışılmamış ortamlara yoğunlaşan bir turizm türüdür. Kültür turizmi, etkinlik turizmi gibi oldukça geniş bir kavramdır.
- Keşif Turizmi : Keşfe yönelik kültür turizmi, zihinsel uyarım ve fikir geliştirme deneyimleri üzerine kurulmuştur. Kültürel turizmin en belirgin özelliği kişisel gelişim sağlanabilecek öğrenme ve keşif fırsatı için seyahat etmektir. Kültür turizminin tercih edilme nedeni; yeni yer, kültür, etkinlikleri keşfetme çevreyi öğrenme ihtiyacıdır.

Termal Turizm ve Sürdürülebilirlik İlişkisi

Termal turizm, doğal kaynakların kullanımına dayalı bir turizm türü olduğundan, sürdürülebilirlik kavramıyla doğrudan ilişkilidir. Yer altından çıkan sıcak su kaynakları, mineraller ve çamur gibi doğal unsurlar, doğru yönetilmediğinde tükenebilir veya ekosistemde kalıcı hasarlara yol açabilir. Bu nedenle termal turizmin geleceği, kaynakların çevreye duyarlı ve uzun vadeli bir planlama çerçevesinde kullanılmasına bağlıdır (Kaman & Bozkurt, 2025).

Termal tesislerin faaliyetleri sırasında ortaya çıkan en önemli çevresel sorunlardan biri, jeotermal suların aşırı ve kontrolsüz kullanımıdır. Kullanım sonrası arıtılmadan doğaya bırakılan termal sular hem yüzey hem de yeraltı sularının sıcaklığını ve kimyasal dengesini bozabilmektedir. Ayrıca enerji tüketimi, atık yönetimi ve karbon salınımı gibi unsurlar da termal işletmelerin sürdürülebilirlik performansını doğrudan etkilemektedir. Bu bağlamda, modern termal tesislerde atık suyun geri kazanımı, ısı enerjisinin yeniden kullanımı, yenilenebilir enerji sistemlerinin entegrasyonu ve doğal kaynak kullanımının izlenmesi gibi çevresel uygulamaların önemi giderek artmaktadır (Kaypak, 2011).

Ekonomik sürdürülebilirlik açısından bakıldığında, termal turizm yalnızca sağlık arayışı içindeki bireylere değil, aynı zamanda bölge halkına da gelir kaynağı oluşturmaktadır. Termal otellerin bulunduğu bölgelerde konaklama, ulaşım, gastronomi ve el sanatları gibi sektörlerin canlanması, yerel ekonominin güçlenmesine katkı sağlar (Cihangir, 2016). Ancak bu ekonomik büyümenin çevresel dengeyi tehdit etmemesi için kaynakların bilinçli yönetimi ve yerel toplulukların sürece aktif katılımı büyük önem taşır.

Sosyal sürdürülebilirlik boyutunda ise termal turizm, yerel halkın yaşam kalitesini artırma potansiyeline sahiptir. Termal tesislerin sağladığı istihdam olanakları, bölge gençlerinin göç etmesini önleyebilir; aynı zamanda halkın kültürel kimliğini ve bölgesel değerlerini koruma bilincini güçlendirebilir. Bu nedenle sürdürülebilir termal turizm, yalnızca çevre korumasına değil, aynı zamanda toplumsal refahın güçlendirilmesine de hizmet eden çok boyutlu bir kalkınma yaklaşımıdır (Bilgili, 2017).

Türkiye'de özellikle Afyonkarahisar, Kütahya-Yoncalı, Balıkesir-Gönen, Denizli-Karahayıt ve Nevşehir-Kozaklı gibi bölgelerde son yıllarda "yeşil otel", "eko-termal tesis" gibi kavramların yaygınlaşması, termal turizmin sürdürülebilirlik perspektifine yöneldiğini göstermektedir. Bu tesislerde enerji verimliliği sağlayan teknolojilerin kullanılması, atık yönetimi planlarının hazırlanması ve çevreye duyarlı mimari tasarımların benimsenmesi sürdürülebilir termal turizmin somut örnekleri olarak değerlendirilebilir (Kozak ,1992).

Sonuç olarak, termal turizm ile sürdürülebilirlik arasındaki ilişki, yalnızca doğal kaynakların korunmasına yönelik değil; aynı zamanda ekonomik sürekliliğin sağlanması, toplumsal faydanın artırılması ve çevresel bilincin yaygınlaştırılması açısından da stratejik bir öneme sahiptir. Bu ilişki, turizmin doğa ve insan arasında kurduğu dengenin geleceğe taşınabilmesi için bir zorunluluk hâline gelmiştir.

Termal Turizmin Sürdürülebilir Kalkınmaya Katkısı

Termal turizm, sürdürülebilir kalkınma hedefleri açısından çevresel, ekonomik ve sosyal boyutlarıyla önemli katkılar sunmaktadır. Öncelikle çevresel açıdan, termal turizmin gelişimi doğal kaynakların daha bilinçli ve kontrollü kullanılmasını gerektirdiğinden, suyun ve enerjinin verimli yönetimi konusunda farkındalık yaratmaktadır. Bu kapsamda birçok termal tesis, yenilenebilir enerji kullanımı, gri su geri dönüşüm sistemleri, ısı yalıtımı ve atık ayrıştırma uygulamaları ile çevreye duyarlı üretim modelleri benimsemektedir. Bu uygulamalar hem çevresel tahribatın önüne geçilmesini hem de işletme maliyetlerinin azaltılmasını sağlamaktadır (Cesur, 2023).

Ekonomik boyutta, termal turizm bölgesel kalkınmanın itici gücü konumundadır. Türkiye'nin termal bölgelerinde (örneğin Afyonkarahisar, Kütahya, Balıkesir, Nevşehir) oluşturulan turizm altyapısı, sadece turistik gelirleri değil; aynı zamanda yerel istihdamı, küçük ölçekli işletmelerin gelişimini ve bölgesel girişimciliği de desteklemektedir. Termal turizm, yılın dört mevsiminde talep görebilmesi sayesinde turizmde mevsimsellik sorununu azaltmakta ve sürdürülebilir gelir akışı sağlamaktadır (Erdoğan & Aklanoğlu, 2008).

Sosyal sürdürülebilirlik açısından termal turizm, yerel halkın yaşam kalitesini yükselten ve toplumsal refahı destekleyen bir rol üstlenmektedir. Termal tesislerin açılmasıyla birlikte bölge halkı için yeni istihdam alanları doğmakta; aynı zamanda halkın sağlık bilinci, çevre duyarlılığı ve sosyal etkileşim fırsatları da artmaktadır. Bununla birlikte, yerel kültürün korunması, geleneksel şifa uygulamalarının tanıtılması ve gastronomi turizmiyle birleşen yöresel mutfak kültürünün yaşatılması da kültürel sürdürülebilirliğe katkı sağlamaktadır (Çağlı, 2012).

SONUÇ VE ÖNERİLER

Termal turizm, sağlık ve rekreasyonun birleştiği bir turizm türü olarak Türkiye'nin turizm çeşitliliğine önemli katkılar sunmaktadır (Göçmen, 2008). Ancak bu katkının sürdürülebilir olabilmesi, doğal kaynakların doğru ve yenilenebilir biçimde kullanılması, sürece yerel toplulukların da dahil edilmesi ve çevre bilincinin artırılması ile mümkündür. Sürdürülebilir termal turizm anlayışı, yalnızca ekonomik kazanç elde etmeyi değil; aynı zamanda doğanın korunmasını, gelecek nesillere aktarılabilirliğinin sağlanmasını ve toplumun refah düzeyinin yükseltilmesini hedeflemektedir.

- Kaynak Yönetimi: Termal suyun kullanım sonrası arıtılarak yeniden kazanımı zorunlu hâle getirilmeli; suyun debi, sıcaklık ve kimyasal bileşimi düzenli olarak izlenmelidir.
- Enerji Verimliliği: Termal tesislerde güneş, jeotermal ve biyokütle gibi yenilenebilir enerji kaynaklarının kullanım oranı artırılmalıdır.
- Çevre Sertifikasyonları: Termal otellere çevreye duyarlı işletme belgeleri (Green Key, Eco Label, ISO 14001 vb.) almaları için teşvik sağlanmalıdır.
- Yerel Katılım: Yerel halkın karar alma süreçlerine dahil edilmesi, bölgesel kalkınmanın sosyal boyutunu güçlendirecektir.

- Eğitim ve Farkındalık: Turizm fakülteleri, belediyeler ve kamu kurumları iş birliğiyle "Sürdürülebilir Termal Turizm Yönetimi" konulu eğitim programları düzenlenmelidir.
- Ar-Ge ve İzleme: Termal kaynakların uzun vadeli korunması için araştırma merkezleri kurulmalı ve bu kaynakların kullanım verileri kamuya açık hâle getirilmelidir.

Sonuç olarak, sürdürülebilir termal turizm anlayışı; yalnızca ekonomik kazanç sağlamayı değil, aynı zamanda çevresel dengenin korunmasını, yerel halkın yaşam kalitesinin yükseltilmesini ve kültürel sürekliliğin sağlanmasını da hedeflemektedir. Doğaya zarar vermeden gerçekleştirilen planlı yatırımlar, kaynak yönetimi ve çevre bilinciyle desteklendiğinde, Türkiye'nin sahip olduğu zengin jeotermal potansiyel ülkeyi sağlık ve sürdürülebilirlik temelli turizmde küresel ölçekte güçlü bir aktör hâline getirecektir.

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GELİR DAĞILIMI VE FİNANSAL KAPSAYICILIK: SİSTEMATİK BİR DERLEME

Gözde NALBANT EFE

Dr. Öğr. Üyesi, İstanbul Medeniyet Üniversitesi
E-mail: gozde.nalbant@marmara.edu.tr
ORCID ID: 0000-0002-4651-2007

Özet

Bu çalışma, finansal kapsayıcılığın (FK) gelir dağılımı eşitsizliği üzerindeki etkilerine ilişkin ampirik bulguları, 2010 sonrası dönemi kapsayan bir taramayla ve çeşili FK göstergeleri temelinde sistematik biçimde özetlemeyi amaçlamaktadır. Finans–büyüme ilişkisine dair literatür geniş olsa da, finansal sektörün gelir eşitsizliği üzerindeki etkilerinin görece daha sınırlı şekilde incelendiği görülmektedir. İncelenen çalışmaların genel eğilimi, FK'nın özellikle düşük ve orta gelirli ülkelerde eşitsizliği hafifletme potansiyeline sahip olduğunu, ancak finansal derinliğin yüksek olduğu ülkelerde etkinin zayıflayabileceğini ve belirli koşullar altında tersine dönebileceğini göstermektedir. Etkilerin büyüklüğü ve yönü; erişim–kullanım–kalite, kurumsal kalite ve düzenleyici/denetleyici kapasite ile sosyal grupların erişim kalıplarına bağlı olarak geniş ölçüde değişiklik göstermektedir. Çalışma, literatürden elde edilen bulguları kamu politikalarıyla ilişkilendirmektedir. Bu bağlamda; temel hesaplara erişimin kolaylaştırılması, maliyetlerin düşürülmesi, tüketicilerin koruması, finans piyasalarında rekabetin tesis edilmesi ve dezavantajlı grupları hedefleyen tasarımların geliştirilmesi gibi gelir eşitsizliğiyle mücadelede uygulanabilir bir politika çerçevesi önerilmektedir.

Keywords: Finansal kapsayıcılık, finansal erişim, gelir dağılımı, gelir eşitsizliği

Abstract

This study aims to systematically summarize empirical findings on the impact of financial inclusion (FI) on income inequality, covering the post-2010 period and based on various FI indicators. While the literature on the finance-growth relationship is extensive, the impact of the financial sector on income inequality appears to have been relatively limited. The general trend of the reviewed studies suggests that FI has the potential to alleviate inequality, particularly in low- and middle-income countries, but that the impact may be weakened and, under certain circumstances, reversed in countries with high financial depth. The magnitude and direction of the effects vary widely depending on access, usage, and quality, institutional quality, regulatory/supervisory capacity, and access patterns of social groups. The study relates the findings from the literature to public policies. In this context, a viable policy framework is proposed to combat income inequality, including facilitating access to basic accounts, reducing costs, protecting consumers, establishing competition in financial markets, and developing designs targeting disadvantaged groups.

Keywords: Financial inclusion, financial access, income distribution, income inequality

GİRİŞ

Son yirmi yılda artma eğilimi gösteren gelir ve servet eşitsizlikleri, toplumsal refahı ve sürdürülebilir kalkınmayı doğrudan etkileyen bir sorun olarak yeniden öne çıkmıştır. Söz konusu eşitsizliklerin derinleşmesi, fırsat eşitliğini de olumsuz yönde etkileyerek sosyal mobilite önünde önemli bir engel haline gelmektedir (Cihak ve Sahay, 2020). Bu bağlamda, maliye politikalarının vergi–transfer sistemi ve kamusal hizmetler vasıtasıyla eşitsizlikle mücadelede bakımından merkezi rolü tartışmasızdır.

Bununla birlikte, hanehalklarının ve küçük işletmelerin formel finansal hizmetlere erişimi ve bu hizmetleri fiilen kullanabilmesi, fırsat eşitliğini ve ekonomik dayanıklılığı artırabilecek tamamlayıcı bir mekanizma olarak öne çıkmaktadır.

Finansal kapsayıcılık, yalnızca krediye erişim değil; ücret ve işlem maliyetlerinin düşüklüğü, ürünlerin uygunluğu, güvenli ödeme kanalları ve sigorta benzeri koruma araçları gibi birden çok boyutu birlikte içerir (Dünya Bankası, 2014). FK'nın artması, düşük gelirli hanehalklarının beşerî sermaye yatırımları yapabilmesini, üretken yatırımlara yönelmesini ve şoklara karşı dayanıklılığını güçlendirebilir. Bu nedenle literatürde FK, eşitsizliği azaltıcı bir kaldıraç olarak ele alınmaktadır. Öte yandan, heterodoks yaklaşımlar FK genişlemesinin borçluluk ve finansallaşma kanalıyla dezavantajlı grupların kırılganlığını artırabileceğini ve uzun dönemde servet eşitsizliğini derinleştirebileceğini vurgulamaktadır. Bu ikili tartışma, FK–eşitsizlik ilişkisinin ülke grupları, kurumsal yapı, inceleme dönemi ve düzenleme çerçevesi gibi koşullara duyarlı olduğunu göstermektedir.

Bu çalışma, 2010 sonrası dönemde FK ile gelir eşitsizliği arasındaki ilişkiyi inceleyen ampirik literatürü tematik biçimde derleyerek bulguların genel yönünü, etkilerin hangi kanallar üzerinden işlediğini ve sonuçları farklılaştıran kurumsal ve yapısal koşulları ortaya koymayı hedeflemektedir. Bu sayede maliye politikalarının yanında finansal sektöre ilişkin düzenleyici politikaların, eşitsizliğin azaltılmasında nasıl tamamlayıcı bir rol üstlenebileceği ve finansal kapsayıcılığı artırıcı etkin kamu politikası seçeneklerinin neler olabileceği tartışılmaktadır.

TEORİK ARKA PLAN

FK–eşitsizlik ilişkisini açıklamak için literatürde iki ana yönelim öne çıkmaktadır. Ortodoks yaklaşımlar, finansal dışlanma ve özellikle krediye erişim eksikliğinin yoksulluk tuzaklarını derinleştirdiğini, sosyal hareketliliği sınırladığını ve uzun dönemde büyüme ve gelir dağılımını olumsuz etkileyebileceğini ileri sürer. Bu çerçevede teminat ve başlangıç serveti kısıtlarının eğitim ve girişimcilik gibi yatırım kararlarını belirlediği modeller kapsamlı biçimde tartışılmıştır (Banerjee ve Newman, 1993; Galor ve Zeira, 1993; Aghion ve Bolton, 1997). Örneğin Galor ve Zeira'nın (1993) yaklaşımında, başlangıç serveti düşük olan bireyler beklenen getirisi yüksek olsa dahi eğitime yatırım yapamaz; sonuçta kuşaklar arası eşitsizlik kalıcılaşır. Banerjee ve Newman'ın (1993) modelinde ise bireylerin meslek seçimi (girişimci olmak ile ücretli kalmak arasında) başlangıçtaki gelir ve servet düzeyleri tarafından kısıtlanır. Bu modeller, finansmana erişim eksikliğinin kalıcı gelir eşitsizliği veya yoksulluk tuzakları üretmesinde ve aynı zamanda daha düşük büyüme ile sonuçlanmasında kritik bir rol oynayabildiğini göstermektedir.

Heteredoks yaklaşımlar ise finansal hizmetlerin düşük ve orta gelirli hanehalklarına ulaştırılması ile ortaya çıkan refah etkisinin geçici olduğunu, gerçekte gelecekteki tüketimlerin bugüne çekilmesiyle borçluluk seviyelerinin arttığını, finansallaşmanın uzun vadede gelir ve servet eşitsizliklerini artırmaya devam edeceğini vurgulamaktadır (Lapavistas, 2009; Saad-Filho, 2011). Bu görüşe paralel bir şekilde, düşük ve orta gelirli ülkelerde, finansal kapsayıcılık belli bir seviyeyi aştıktan sonra, hanehalklarının borçluluk düzeylerinin önemli ölçüde yükseldiğini raporlayan bulgular da mevcuttur (Sezer vd., 2025). Ayrıca FK kavramının, neoliberal dönüşüm sürecinde tartışılan eşitsizlik, yoksulluk ve borçluluk sorunlarının hem nedeni hem sonucu olarak gündeme geldiği yönünde eleştiriler bulunmaktadır. Abuk Duygulu ve Özyiğit (2022) finansal kapsayıcılığı, kapitalizmin finansal mekanizmalar aracılığıyla dönüşümünü ifade eden bir finansallaşma biçimi olarak ele almaktadır. Bu sebeple, eşitsizliği ve yoksulluğu finansal mekanizmalar aracılığıyla yönetmeyi amaçlayan politikaların yerine, ücret, istihdam ve maliye politikalarıyla doğrudan düşük gelirlilerin gelirini artırmayı hedefleyen, vatandaşlık geliri vb. uygulamaların somutlaştırılacağı politikaların tartışılmasını ve geliştirilmesini önermektedir.

KAVRAMSAL ÇERÇEVE VE ÖLÇÜM YAKLAŞIMLARI

Finansal gelişme kavramı geleneksel olarak finansal derinleşme anlamında yorumlanmıştır ve bu da finansal sistemin büyüklüğüyle temsil edilmiştir. Ancak finansal sistemin büyüklüğü her zaman düşük gelirlilerin finansal hizmetlere erişimini ve kullanımını garanti etmez. Yakın dönemde ortaya çıkan finansal kapsayıcılık kavramı ise, gelir eşitsizliğini azaltmada finansal derinleşmeden çok daha etkili bir araç olarak görülmektedir (García-Herrero & Turégano, 2015).

Finansal kapsayıcılık, resmî (formel) finansal hizmetlere *erişim* ve bu hizmetlerin *kullanımı* olarak tanımlanır. Temel fikir, finansman araçlarının mümkün olduğunca çok kişi için ve çeşitli amaçlarla erişilebilir olmasıdır. Çalışma çağındaki tüm yetişkinlerin gelir ya da transferleri alabilecek hesaplara, paralarını güvenli ve ihtiyatlı biçimde tutmaya yarayan tasarruf hesaplarına, bireysel ya da ticari amaçlı kredi kaynaklarına ve olumsuz dönemlere karşı dayanıklılık sağlayan sigorta ürünlerine resmi hizmet sağlayıcılar yoluyla erişimi finansal kapsayıcılığın yüksek olduğu durumu işaret etmektedir (Kim, 2016). Dünya Bankası (World Bank) (2014)'na göre, finansal kapsayıcılık kavramı "sorumlu ve sürdürülebilir biçimde sunulan finansal hizmetlere erişim ve kullanım"dan, "dezavantajlı ve düşük gelirli kesimlere karşılanabilir maliyetlerle finansal hizmetlerin ulaştırılması"na kadar uzanan bir yelpazeyi kapsamaktadır.

Erken dönem çalışmalar, finansal gelişmeyi çoğunlukla özel sektöre verilen kredi/GSYH gibi tekil göstergeler üzerinden izlemiştir (Beck vd., 2007; Fowowe ve Abidoye, 2013). Bu durumun başlıca sebebi finansal kapsayıcılığın ölçülmesinde kullanılan çok boyutlu göstergelere ilişkin veri tabanlarının 2000'li yılların sonlarına doğru oluşturulmaya başlamasıdır. Yakın dönem yazında ise finansal hizmetlere ilişkin:

-Erişim (demografi ya da coğrafyaya göre Şube sayısı, ATM sayısı, kişi başına düşen mevduat hesabı sayısı vb.),

-Kullanım (kredi hacmi/GSYH, mevduat hacmi/GSYH, sigorta prim hacmi/GSYH, vb.),

-Kolaylık (teminat tutarları, işlemlerin aldığı süre, dökümantasyon gereklilikleri, dijitalleşme, vb.),

-Maliyet (yıllık hesap ücretleri, aracılık işlem ücretleri, kredi maliyetleri, transfer ücretleri, vb.),

gibi çeşitli boyutları bir araya getiren kompozit endekslerin, finansal kapsayıcılığın ölçülmesinde yaygın biçimde kullanıldığı görülmektedir (Sarma, 2012, 2015; Omar ve Inaba, 2020). Boyutların endekste temsil edeceği ağırlıkların belirlenmesinde ise eşit ağırlık gibi sübjektif yaklaşımlar ile PCA (Temel Bileşenler Analizi) benzeri istatistiki yöntemler kullanılabilmektedir (Camara ve Tuesta, 2014; Yorulmaz, 2018).

Bu göstergeler arz yanlı bilgilerin toplandığı veri tabanları (IMF-Financial Access Survey (2004-), Financial Development Database (1960-), Financial Development index (1980-), Bank Regulation and Supervision Survey, 2011-2016) ya da talep yanlı bilgilerin toplandığı veri tabanlarından (World Bank, Global Findex Database (2011-), Enterprise Survey (2002-)) faydalanılarak toplulaştırılmakta ve endeks haline getirilmektedir. Çalışmalar arasında kullanılan veri seti ve göstergeler farklılaştıkça, bulguların karşılaştırılabilirliği de sınırlanabilmektedir.

FİNANSAL KAPSAYICILIĞIN EŞİTSİZLİĞİ ETKİLEDİĞİ KANALLAR

Finans kuramına göre finansal kurumlar ve piyasalar, sermayenin etkin tahsisinde kritik bir rol oynar. Bu çerçevede, sermayenin hanehalkları ile firmalar arasında dağılımı finansal hizmetler aracılığıyla gerçekleşir ve nihayetinde ekonomik büyümeyi destekler. Finans–büyüme ilişkisi literatürde kapsamlı

biçimde incelenmiş olsa da, finansal hizmetlerin yoksulluk ve gelir eşitsizliğiyle bağlantısı görece daha az ele alınmıştır. Öyle ki eşitsizlik üzerine gerçekleştirilen ampirik çalışmaların sadece 10'da 1'inde finansal sektörün etkileri tartışılmaktadır (Cihak ve Sahay, 2020). Oysa finansal hizmetlere erişimin artması, özellikle düşük gelirli kesimlerin eğitim-istihdam-yatırım fırsatlarına ulaşımını kolaylaştırarak gelirlerini yükseltebilir; dolayısıyla gelir dağılımının daha adil hâle gelmesine katkı sağlayabilir.

İncelenen literatürde FK'nın gelir eşitsizliği üzerinde olumlu yönde etkili olabileceği başlıca kanallar şu şekilde sınıflandırılabilir:

(i) Krediye erişim: Uygun maliyetli kredi, düşük gelirli bireylerin tüketim seviyesini destekleyerek refahını artırabilir, eğitime yahut üretken faaliyetlere yatırım yapmasını kolaylaştırarak gelir yaratma kapasitesini ve sosyal hareketliliği destekleyebilir (Fowowe & Abidoye, 2013; Banerjee ve Duflo, 2014).

(ii) Tasarruf ve varlık birikimi: Resmî tasarruf araçlarıyla hesap sahipliğinin artması, gelir dalgalanmalarına karşı dayanıklılığı ve varlık birikimini güçlendirebilir (Burgess ve Pande, 2005).

(iii) Sigorta ve risk azaltma: Mikro sigorta ve benzeri koruma araçları, düşük gelirlilerin olumsuz şoklar karşısında tüketim ve yatırım kararlarını daha istikrarlı biçimde sürdürmesine katkı sağlayabilir (Cull vd., 2014).

(iv) İstihdam ve girişimcilik: Resmî finansmana erişim, özellikle küçük işletmelerin sermaye kısıtlarını hafifleterek girişimcilik faaliyetlerini teşvik edebilir ve istihdam yaratma kapasitelerini artırabilir (Beck ve Demirgüç-Kunt, 2008; Li vd., 2025).

(v) Makroekonomik istikrar: Finansal aracılık hizmetlerinin artışı, risklerin havuzlanmasını sağlar ve bu sayede azaltılmasına yardımcı olur, finansal piyasalara özgü asimetrik bilgi sorununu azaltıcı fonksiyon gösterir, böylece düşük gelirliler için daha faydalı olan istikrarlı bir makroekonomik çevrenin inşasını destekler (Fowowe & Abidoye, 2013).

(vi) Kurumsal tamamlayıcılar: FK'nın olumlu etkilerinin ortaya çıkabilmesi; finansal okuryazarlık, tüketici koruması ve düzenleme/denetleme kapasitesi gibi tamamlayıcı kurumlarla güçlenebilir (Čihák ve Sahay, 2020).

Bununla birlikte, finansal kapsayıcılığın eşitsizlikle ilişkisi ülkeler arasında yön ve büyüklük bakımından farklılaşabilmektedir. Bu ilişki ekonomik gelişmişlik, sosyo-kültürel yapı, kurumsal kalite ve düzenleyici çerçeve ile finansal kurumların, piyasaların ve araçların niteliği ve izlenen kapsayıcılık politikalarının tasarımına bağlıdır.

YÖNTEM

Bu çalışma, 2010 sonrası dönemde yayımlanan ampirik araştırmaları sistematik bir derleme mantığıyla sentezleyerek finansal kapsayıcılık (FK) ile gelir dağılımı eşitsizliği arasındaki ilişkinin yönünü, gücünü ve koşullara bağlılığını değerlendirmeyi amaçlamaktadır. Bu çerçevede dört temel araştırma sorusu belirlenmiştir: (S1) Finansal kapsayıcılık gelir eşitsizliğini azaltmakta mıdır? (S2) Bu etki hangi kanallar üzerinden işlemektedir (erişim/kullanım/kalite)? (S3) Ülkelerin gelir düzeyine göre bulgular nasıl farklılaştırmaktadır? (S4) FK'nın etkisini güçlendiren/zayıflatan etkileşim faktörleri (cinsiyet, kültürel normlar, kurumsal kalite vb.) nelerdir?

Bu sorulara yanıt üretmek amacıyla literatür taraması, "financial inclusion" ve "income inequality" anahtar kavramları etrafında kurgulanmış; tarama dizgileri gerekli durumlarda "inequality", "Gini", "financial access", "account ownership", "ATM/branch density" gibi terimlerle genişletilmiştir. İncelemenin kapsamı, finansal kapsayıcılığı tekil göstergelerle değil çok boyutlu biçimde (erişim–

kullanım–kalite/uygunluk) ölçen ve gelir eşitsizliğini Gini katsayısı üzerinden ele alan ampirik çalışmalar ile sınırlandırılmıştır. Böylece FK'nın "finansal derinlik" göstergeleriyle (ör. kredi/GSYH) karıştırılmasının doğurabileceği kavramsal belirsizlik azaltılmaya çalışılmıştır. Dahil etme sürecinde FK ile eşitsizlik arasında açık bir ampirik ilişki test eden, değişken tanımı ve yöntem bilgisini şeffaf biçimde raporlayan çalışmalar esas alınmıştır.

LİTERATÜR TARAMASI

2000'li yıllarda IMF ve Dünya Bankası'nın finansal kapsayıcılığa ilişkin veri tabanlarının gelişmesiyle birlikte, özellikle 2010 yılı ve sonrasında FK'nın gelir eşitsizliği üzerindeki etkilerinin ampirik olarak analiz edildiği çalışmaların sayısı da hızla artış göstermiştir. Aşağıda yer alan tabloda, söz konusu çalışmalar inceleme dönemi ve ülke örneklemi, FK ve eşitsizlik ölçütü, incelemede kullanılan yöntem ve elde edilen bulgulara göre kronolojik olarak gösterilmektedir.

Tablo 1: Finansal Kapsayıcılık ve Gelir Eşitsizliği Üzerine Ampirik Literatür

Çalışma	Örnek/ Periyot	FK Ölçütü	Eşitsizlik Ölçütü	Yöntem	Bulgular (özet)
Mookerjee ve Kalipioni (2010)	99 ülke, 2000-2005	100.000 kişiye düşen banka şubesi, banka hesabı için gereken min. tutar, kredi başvurusu için uzaklık	Gini katsayısı	OLS/IV	Banka şube yaygınlığı arttıkça Gini katsayısı düşmekte, hesap açmanın maliyeti ve uzaklık arttıkça Gini katsayısı artmaktadır.
Dabla Norris vd. (2015)	Uganda, Kenya, Mozambik, Malezya, Filipinler ve Mısır 2005/2007	Erişim boyutu: Kredi kullanma maliyeti, Derinlik boyutu: borçlanma kısıtı (teminatlar) ve Aracılık maliyetlerinin bileşkesi olan bir endeks	Gini katsayısı	Genel Denge Analizi	Finansal kapsayıcılığın etkisi, ülkeye özgü özelliklere bağlı olarak değişkenlik gösterir. Örneğin Uganda'da teminatlar çok yüksek belirlenmiştir, kredi hacminin artışı varlıklı firmalara yarar. Finansmana erişim maliyetlerinin düşmesi ise eşitsizliği azaltmaktadır.
García-Herrero ve Turégano (2015)	Geniş örneklem, 2000-2011	Finansal kapsayıcılık, Finansal derinlik	Gini katsayısı	Panel OLS	FK eşitsizliği azaltır. Finansal derinliğin ise anlamlı bir etkisi yoktur.

Park & Mercado (2015)	37 GOÜ Asya ülkesi, 2004–2011	Bileşik FK endeksi	Gini, yoksulluk	FE/RE, 2SLS	Finansal kapsayıcılık yoksulluğu önemli ölçüde azaltır; gelir eşitsizliğini düşürdüğüne dair kanıtlar daha zayıftır.
Kim (2016)	40 OECD ve EU ülkesi	Bileşik endeks: Yaygınlık (1000 kişiye düşen banka hesabı), erişebilirlik (şube sayısı), kullanım (kredi/GSYH)	Gini katsayısı	OLS/GMM	Tüm örneklemde FK arttıkça Gini düşmektedir. Ülkeler gruplandırıldığında, düşük gelirli ülkelerde etki daha güçlüdür. Finansal sistemin görece daha zayıf olduğu ülkelerde, kapsayıcılık gelir eşitsizliğini daha fazla azaltmaktadır.
Aslan vd. (2017)	140 ülkeden 146000 bireyin anket verisi, 2011/2014	Bileşik FK endeksi, finansal erişimde cinsiyet eşitsizliği	Gini katsayısı	Çoklu Uyum Analizi	Finansal hizmetlere erişimdeki cinsiyet eşitsizliği, daha yüksek gelir eşitsizliği ile ilişkilidir. Kadın-erkek finansal erişim farkının azaltılması, gelir eşitsizliğini önemli ölçüde azaltmaktadır.
Park & Mercado (2018)	176 ülke ve Asya	Bileşik FK endeksi (PCA analizi)	Gini, yoksulluk	Panel OLS	FK arttıkça orta ve yüksek gelirli ülkelerde yoksulluk azalmaktadır. Gelir eşitsizliği için anlamlı ilişki tespit edilememiştir.
Neaime & Gaysset (2018)	8 MENA ülkesi, 2002–2015	FK göstergesi olarak erişim: 100 bin kişiye düşen banka şube sayısı ve ATM sayısı	Gini, yoksulluk	GLS/GMM	FK gelir eşitsizliğini azaltmaktadır ancak yoksulluk üzerinde anlamlı bir etkisi yoktur.
Chu Khanh & Chu (2018)	69 ülke, 2015-2017	FK indeksi (hesap-kart sahipliği ve kullanım sıklığı, tasarruf ve	Gini katsayısı	OLS	Finansal kapsayıcılık arttıkça gelir eşitsizliği azalmaktadır. Bu etki GOÜ'lerde daha yüksektir. Finansal

		borçlanma oranı/ PCA analizi), finansal derinlik (kredi hacmi)			derinlik bir noktaya kadar gelir eşitsizliğini azaltıcı etki gösterirken, belli bir eşik seviyesini aştığında gelir dağılımını bozucu etkisi ortaya çıkar.
Fouejieu vd. (2019)	Geniş örnek; 2004-2015	Finansal kapsayıcılık (ATM ve banka şubesine erişim)	Servet eşitsizliği endeksi (en varlıklının serveti/ortalama servet)	OLS/ GLS/ GMM	Hem Gelişmiş, hem de gelişmekte olan ülkelerde, finansal kapsayıcılık servet eşitsizliğini azaltmaktadır.
Le vd. (2019)	Geçiş ülkeleri (2005-2015)	FK endeksi (ATM, şube sayısı, mevduat ve kredi hesabı sayısı)	Gini katsayısı	2SLS	FK endeksi ile gini arasında negatif yönde ilişki vardır.
Čihák & Sahay (2020)	Geniş örnek; 2004–2015	Finansal derinlik–finansal kapsayıcılık (ATM ve banka şubesine erişim)–kullanım (1000 kişi başına düşen kredi kullanımı) finansal istikrar	Gini katsayısı	OLS/ GLS/ GMM	Finansal kapsayıcılık artışı, (finansal derinlik daha düşükken) eşitsizliği daha fazla azaltmaktadır (Gini'de %9 azalma). Finansal derinlik yüksekse %7 azalma) Kadınların finansal erişimi, eşitsizliği daha hızlı düşürür. Kredi kullanımı bakımından, finansal derinlik düşükse eşitsizlik azalır, çok yüksekse eşitsizlik artar. Gelişmekte olan ülkelerde finansal derinlik artarken, eşitsizlik azalmakta, gelişmiş ülkelerde ise artmaktadır.

Omar & Inaba (2020)	118 GOÜ ülke, 2004–2016	Çok boyutlu FK endeksi. Yaygınlık (mevduat hesabı), Erişebilirlik (ATM, şube) Kullanım (kredi sayısı)	Gini katsayısı	Panel Sabit etkiler	FK anlamlı biçimde gelir eşitsizliğini azaltır. Hukukun üstünlüğü bu etkiyi güçlendirir.
Ouechtati (2020)	53 GOÜ, 2007-2017	Erişim (ATM, şube), kullanım (mevduat hesabı, kredi hesabı sayısı)	Gini katsayısı	Fark GMM, system GMM	Banka şubesi yaygınlığı ve krediye erişim arttıkça, gelir eşitsizliği düşmektedir.
Sari ve Falianty (2021)	Hindistan'ın bölgeleri, 2010-2020	Bileşik FK indeksi (PCA yötemi)	Gini katsayısı	Panel sabit etkiler	FK'nın gelir eşitsizliği üzerinde anlamlı bir etkisi yoktur.
Tsouli (2022)	30 Avrupa ülkesi, 2004-2019	Bileşik FK indeksi (PCA yötemi)	Gini katsayısı	Panel sabit etkiler, GMM	FK endeksi ile Gini arasında negatif yönlü ilişki vardır.
Verma ve Giri (2024)	Asya ülkeleri, 2005-2019	Şube sayısı, mevduat hesabı sayısı, kredi hacmi	Gini katsayısı	Pedroni koentegrasyon, FMOLS, ARDL, Granger	Kısa dönemde gelir eşitsizliği finansal kapsayıcılık göstergelerinden etkilenmezken, uzun dönemde azaltıcı etki görülmektedir.
Atadouanla Segning vd. (2024)	Sahraaltı Afrika ülkeleri, 2002-2015	FK indeksi, (banka hesabı sayısı, şube sayısı, mevduat hacmi, kredi hacmi)	Gini katsayısı	Sistem GMM	Sosyokültürel farklılıklara göre sonuçlar değişmektedir. İslam'ın yaygın olduğu ülkelerde FK ile eşitsizlik arasındaki ilişki anlamsızken, Hristiyanlığın yaygın olduğu ülkelerde anlamlı ve negatif ilişki vardır.
Eriqat vd. (2025)	70 GOÜ, 2014/17/21	Erişim (şube ve ATM yaygınlığı), kullanım	Gini katsayısı	PLS-SEM	Finansal kapsayıcılık göstergeleri, gelir eşitsizliğini azaltır. Özellikle düşük gelirli

		(mevduat hesabı, tasarruf hesabı ve kredi hesabı)			ülkelerde kullanımın artması, daha etkili sonuçlar doğurur.
Rubio ve Leon (2025)	Latin Amerika ülkeleri, 2004-2021	Erişim (ATM, şube), kullanım (özel sektör kredileri, emeklilik fonları, sigorta primleri), etkinlik (düşük maliyet)	Gini katsayısı	Sistem GMM	FK gelir eşitsizliğini azaltır. Kullanımın artması, erişimin artmasından çok daha yüksek etki sağlar.

BULGULARIN DEĞERLENDİRİLMESİ

Derlenen literatürün genel eğilimi, FK'nın kısa dönemde Gini katsayısı üzerinde azaltıcı etkide bulunarak gelir eşitsizliğini azaltabildiğini göstermektedir. Bu etkinin, özellikle düşük ve orta gelirli ülkelerde daha güçlü ve belirgin olduğu görülmektedir. Ampirik literatürden elde edilen analiz sonuçları tematik bir şekilde sentezlendiğinde ortaya çıkan temel bulgular ise şu şekilde sıralanabilmektedir:

FK > finansal derinlik: Gelir eşitsizliğini azaltmada finansal kapsayıcılık, finansal derinlikten daha etkilidir.

Tersine dönen etkiler: Finansal derinlik çok arttıkça (üst gelir gruplarının ürün çeşitliliğini daha fazla kullanması, olası finansal krizlerin gelir eşitsizliğini artırması gibi kanallarla) etki zayıflar veya tersine dönebilir.

Genel eğilim: Literatürün büyük bölümü, FK'nın gelir eşitsizliğini azalttığını gösterir. Ancak çalışmaların çoğu -veri kısıtı altında- kısa dönemi incelemektedir.

Düşük–orta gelirli ülkelerde güçlü etki: Erişim ve kullanım artışı eşitsizliği belirgin biçimde azaltır.

Yüksek gelirli ülkelerde sınırlı etki: Derinlik seviyesi yükseldikçe eşitsizlik üzerindeki olumlu etki küçülür.

Dezavantajlı gruplar: Kadınların finansmana erişimini artırmak eşitsizliği daha hızlı düşürür.

Erişim ≠ kullanım: Sadece ATM/şube ağını genişletmek yetmez; fiilî kullanımın kolaylaşması ve maliyetlerin düşmesi (düşük ücret/masraf, sade ürünler, dijital erişim) etkileri güçlendirir.

Servet boyutu: FK, yalnızca gelir eşitsizliği değil servet eşitsizliği üzerinde de azaltıcı yönde etkide bulunabilir.

Maliyet/mesafe engelleri: Hesap ve kredi maliyetlerinin düşmesi, mesafe ve belge yükünün azalması finansal kapsayıcılığın etkisini artırmaktadır.

Kurumsal kalite ve regülasyon: Güçlü düzenlemeler ve hukuki altyapı, tüketici koruması ve şeffaflık olumlu etkileri artırır; zayıf kurumsal düzenlemeler ise aksi yönde etki gösterir.

Kültürel bağlam: Toplumsal/kültürel farklılıklar (normlar, dinî yapı, vb.) FK ile eşitsizlik ilişkisinin gücünü ve yönünü etkileyebilir.

Politika önceliği: Kullanımı artıran düzenlemeler (düşük masraf, şeffaf sözleşmeler, basit ürünler, tüketici koruması, finansal eğitim) erişimi artırmaktan daha etkili sonuçlar sağlar.

KAMUSAL POLİTİKA ÖNERİLERİ

Finansal piyasaların etkin çalışmamasına yol açan asimetrik bilgi sorunları, kamu otoritesinin düzenleme ve denetleme faaliyetlerinin temel gerekçesini oluşturur. Bu nedenle FK'nın gelir eşitsizliği üzerinde yaratabileceği olumlu etkilerin gerçekleşmesi, kamu kesiminin kurumsal altyapıyı güçlendirme ve piyasa işleyişini gözetme kapasitesiyle yakından ilişkilidir (Čihák & Sahay, 2020).

Literatürden elde edilen bulgular, gelir eşitsizliği ile mücadelede maliye politikalarını tamamlayıcı bir önlem olarak finansal kapsayıcılığın artırılması gerektiğini göstermektedir. Ancak özellikle finansal derinliği değil de finansal kapsayıcılığı hedefleyen kamu politikalarının uygulamaya koyulması gerekmektedir. Finansal hizmetlere erişimin/kullanımın düşük olduğu bölgelerde erişimi güçlendirecek, toplumda kadınların finansal erişimini artıracak önlemlerin hayata geçirilmesi, gelir eşitsizliğiyle mücadelede önemli bir kaldıraç niteliği taşımaktadır. Bu bağlamda hükümetler, merkez bankaları, finansal kurumlar ve kalkınma ortakları, finansal hizmet altyapısını geliştirmek ve kırsal ile kentsel alanlarda hizmet ağını güçlendirmek için etkin bir işbirliği yürütmelidir (Omar ve Inaba, 2020).

Kamu kesiminin finansal kapsayıcılığı artırmak suretiyle gelir eşitsizliğinin azaltılması ve toplumsal refaha katkı sunulması noktasında gerçekleştirebileceği bazı politika önlemleri de öne çıkmaktadır. Öncelikle kamusal düzenlemelerle, özellikle dezavantajlı bireylerin temel hesaplara erişimini kolaylaştırmak adına düşük maliyetli ürün standartları geliştirilebilir. Örneğin temel finansal hizmetlerde belli bir ücret tavanı uygulanması sağlanarak erişim hızlandırılabilir. Erişimin yanında kullanımın artması ile finansal kapsayıcılığın gelir eşitsizliği üzerindeki etkisinin daha güçlü olarak ortaya çıktığı düşünüldüğünde, finansal hizmetlerin kullanımı teşvik edici yönde politikalar geliştirilebilir. Örneğin kamu sosyal yardımları dijital finansal hizmetler yoluyla bireylere ulaştırılabilir. Kamu kesimi finansal kesimde rekabeti etkin şekilde tahsis edebilecek düzenlemeleri uygulamaya koyduğu ölçüde, tüketicilerin hizmetlere ulaşım maliyetinin de düşürülmesi yönünde etki sağlayacaktır (Dabla Norris vd., 2015).

Kamu kesiminin düzenleyici ve denetleyici rolü, özellikle tüketici haklarının korunması, finansal hizmetlere erişimi kısıtlayan teminat gösterme, belge yükümlülükleri vb. konularda düzenlemelerin kolaylaştırılması-etkinleştirilmesi, kredi bilgi altyapı sisteminin güçlendirilmesi hususlarında önem kazanmaktadır. Bunların yanında toplumda finansal okuryazarlığın geliştirilmesi, yeni dijital teknolojilerin takibi ve regülasyonu da kamusal politikaların kapsamına girmekte ve politika yapıcılara çeşitli görevler yüklemektedir (Omar ve Inaba, 2020; Čihák & Sahay, 2020).

Kamu kesimi düzenleyici ve denetleyici rolünün yanında, kamu bankaları aracılığıyla da finansal kapsayıcılıkla ortaya çıkacak faydaların gerçekleşmesinde öncü rolü üstlenebilir. Kredi piyasasına dönük doğrudan müdahale araçlarıyla, faiz-destekli, teminat kolaylıkları sunan kredi programlarıyla küçük ve orta ölçekli işletmelerin yahut toplumdaki dezavantajlı grupların finansmana erişimini kolaylaştırabilir.

Son olarak kamu kesimi tarafından üstlenilen düzenleme ve denetleme fonksiyonunun daha etkin hale getirilmesi ve finansal kapsayıcılığın gelir eşitsizliğini azaltıcı yönde fonksiyon ifa edebilmesi için, FK'ya yönelik göstergelerin izlenmesi-raporlanması ve değerlendirilmesi, gelir ve servet eşitsizliği

göstergeleri ile ilişkisinin kurulması ve bu hususta ulusal stratejilerin geliştirilmesi, finansal dışlamanın önüne geçebilmek için olası sorunların tespiti ve güncel gelişmeler karşısında aksiyon alınması da önemli görünmektedir.

SINIRLILIKLAR VE ARAŞTIRMA BOŞLUKLARI

Literatür incelemesi sonucunda ortaya çıkan sınırlılıklar ve araştırma boşlukları ise aşağıda maddeler halinde özetlenmiştir:

Ölçüm Tutarsızlığı: Çalışmalar finansal kapsayıcılığı farklı göstergelerle ölçmektedir, bu da farklı çalışmaların bulgularını karşılaştırmayı zorlaştırmaktadır. Yaygın olarak kullanılabilecek ortak bir finansal kapsayıcılık göstergesinin geliştirilmesine ihtiyaç vardır.

Nedensellik Sorunları: Az sayıda çalışma içsellik sorununu titizlikle ele almaktadır; finansal kapsayıcılığın mı eşitsizliği azalttığı, yoksa daha düşük eşitsizliğin mi kapsayıcılığı artırdığı hâlâ tartışmalıdır. Karşılıklı nedensellikler, dinamik modellerle elimine edilmeye çalışılmışsa da nedensellik ilişkisini tahmin etmek için veriler hala kısıtlıdır.

Zamansal ve Bölgesel Sınırlılıklar: Mevcut araştırmalar çoğunlukla belirli bölgeler veya kısa dönemler üzerinde yoğunlaşmaktadır. Bu durum finansal kapsayıcılığın uzun vadeli etkilerinin yeterince anlaşılmasını engellemekte ve heterodoks yaklaşımların öngörülerinin test edilebilirliğini önemli ölçüde sınırlandırmaktadır.

Dijital Finansmanın Etkileri: Dijital finansmana hızlı geçiş, dijital okuryazarlığı veya teknolojiye erişimi olmayan bireyler için yeni bir finansal dışlanma biçimi yaratmıştır. Dijital finansman araçlarının eşitsizlik üzerindeki etkileri literatürde yeni dikkat çeken bir konudur. Bunların uzun dönem etkileri ve tüketicilerin korunmasına yönelik alınacak önlemler gelecek çalışma konularıdır.

Toplumsal Cinsiyet ve Sosyal Boyutlar: Pek çok analiz, finansal sistemlerin kapsayıcılığını etkileyen toplumsal cinsiyet, eğitim düzeyi veya kırsal-kentsel farklar gibi faktörleri göz ardı etmektedir.

Mikro Analizlerin Eksikliği: Makro verilerle elde edilen bulgular politika önlemleri için yeterli olmayıp, sadece birer gösterge niteliğindedir. Mikro analizlerle ülkelere özgü politika çıkarımlarına ihtiyaç vardır.

Kamu Maliye politikalarının etkileri: Finansal kapsayıcılığın gelir eşitsizliği üzerindeki etkilerini incelerken, gelir dağılımını doğrudan değiştiren maliye politikalarının etkisini dikkate almayan çalışmalar mevcuttur. Olası spesifikasyon hatalarını en aza indirmek ve elde edilen bulguların sağlamlığını kontrol etmek için, tahminler yapılırken mali göstergelerin gelir eşitsizliği üzerindeki etkisi mutlaka dikkate alınmalıdır.

SONUÇ

Bu çalışma, 2010 sonrası ampirik literatürü sistematik bir çerçevede derleyerek finansal kapsayıcılık (FK) ile gelir eşitsizliği arasındaki ilişkinin yönünü ve koşullara bağlılığını tartışmaktadır. Literatürde gözlenen genel eğilim, FK'nin özellikle düşük ve orta gelirli ülkelerde eşitsizliği azaltıcı bir potansiyel taşıdığına işaret etmektedir. Bununla birlikte bulgular, etkinin büyüklüğünün ve hatta yönünün; FK'nin hangi boyutla ölçüldüğüne (erişim–kullanım–kalite), finansal derinliğin seviyesine, kurumsal kaliteye ve düzenleme-denetleme kapasitesine göre anlamlı biçimde farklılaştığını göstermektedir. Başka bir ifadeyle, finansal sektörün büyüklüğü ya da kredi hacmindeki artış tek başına "kapsayıcılık" anlamına gelmemekte; kapsayıcılığın eşitsizlik üzerinde olumlu sonuçlar üretebilmesi, ürünlerin erişilebilirliği kadar fiilî kullanımına ve tüketicilerin korunma mekanizmalarının niteliğine bağlı bulunmaktadır.

Bu noktada maliye politikası perspektifinden temel çıkarım şudur: Finansal kapsayıcılık, eşitsizlikle mücadelede vergi-transfer sistemi ve kamusal hizmetlere erişim gibi klasik yeniden dağıtım araçlarının alternatifi değil, doğru tasarlandığında onları tamamlayan bir politika aracıdır. Kamunun temel rolü, piyasadaki asimetrik bilgi sorunları ve dışlanma mekanizmaları karşısında kapsayıcılığı artıracak kurumsal zemini oluşturmaktır. Bu çerçevede (i) temel finansal hizmetlere düşük maliyetli erişimi genişleten düzenlemeler, (ii) tüketici korumasını ve şeffaf ücretlendirmeyi güçlendiren denetim kapasitesi, (iii) aşırı borçlanmayı ve dezavantajlı grupların borç döngülerine sıkışmasını önleyici makro-ihtiyati araçlar, (iv) rekabeti artırarak hizmet maliyetlerini düşüren piyasa tasarımları ve (v) toplumsal cinsiyet ve bölgesel eşitsizlikleri hedefleyen programlar, FK'nin dağılımsal etkilerini belirleyen kritik politika kaldıraçlarıdır. Ayrıca sosyal yardım ve transferlerin dijital kanallar üzerinden ödenmesi gibi uygulamalar, kapsayıcılığın kullanım boyutunu güçlendirebilse de, dijital uçurum riskini azaltmak için eş zamanlı olarak finansal okuryazarlık ve dijital erişim yatırımlarıyla desteklenmelidir.

Sonuç olarak, finansal kapsayıcılığın eşitsizlik üzerindeki etkisi otomatik ve tek yönlü değildir; kamusal düzenleme, denetim ve sosyal politika bileşimi tarafından şekillendirilebilen bir yapıya sahiptir. Bu nedenle gelir dağılımı eşitsizliğini azaltma hedefi açısından, FK politikalarının maliye politikası gündemiyle bütünleşik biçimde ele alınması; hem gelir dağılımı hem de fırsat eşitliği kanallarından toplumsal refahın güçlendirilmesine yönelik daha tutarlı ve uygulanabilir bir politika çerçevesi sunmaktadır. Gelecek araştırmaların, nedensellik sorununu daha güçlü biçimde ele alan mikro veri temelli stratejilerle ve FK'nin borçluluk/finansal kırılganlık kanalları üzerinden yaratabileceği ters etkileri ayrıştıran analizlerle literatürdeki belirsizlikleri azaltması beklenmektedir.

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THE CONTROL STRATEGY OF THE NATIONAL STRATEGIC PLAN IN THE FRAMEWORK OF THE NEW CAP 2023-2027: GOVERNANCE, EVALUATION AND COMPARATIVE ANALYSIS APPROACHES AT THE EUROPEAN UNION LEVEL

Antonia LAMPRIDOU

Ph. D. Student, International Hellenic University
E-mail: mba11819@ihu.gr
ORCID ID: 0009-0002-6976-356X

Abstract

The reform of the Common Agricultural Policy (CAP) 2023–2027 introduced a new governance model and a strengthened Performance Monitoring and Evaluation Framework (PME), placing national administrations at the forefront of strategic design and implementation. This article examines the new Performance Framework focusing on the Control Strategy of the National Strategic Plan of Greece, comparing it with the practices of other Member States, such as Austria, Italy and Germany. Through a bibliographic analysis and comparison of national approaches, the main problems, challenges and prospects for a more effective policy evaluation are highlighted. The study concludes with proposals for improving the efficiency of the evaluation system in Greece and new research directions.

Keywords: Common Agricultural Policy (CAP), National Strategic Plan, Performance Framework, Governance, Subsidy Evaluation, Monitoring, Greece, European Union

INTRODUCTION

The goal of the new CAP is to guide the European agriculture sector's transition to a resilient, sustainable, and contemporary one. Funding will be allocated more equitably to young farmers and small and medium-sized family farms under the revised program. Additionally, farmers will get assistance in adopting new technologies, such as agro-ecological production techniques and precision farming. The new CAP may serve as the cornerstone for agricultural communities and food security in the European Union by promoting tangible initiatives in these and other sectors.

A more effective and efficient method of operation is included into the redesigned CAP. EU nations will combine funds for market measures, rural development, and income assistance to achieve their national CAP Strategic Plans. Each Member State choose from a variety of EU-level interventions when creating their CAP Strategic Plan, modifying and focusing on them to meet their unique requirements and regional circumstances. The Commission has been evaluating how well each Plan advances the 10 main CAP goals, which address common social, economic, and environmental issues. Therefore, as outlined in the Commission's Farm to Fork and Biodiversity policies, the Plans will comply with EU law and should support the EU's environmental and climatic objectives, especially those pertaining to animal welfare.

For the years 2023–2027, the CAP will receive €270 billion in financing. Over €34 billion of the €120 billion budgeted for the seven Plans agreed today is solely allocated to environmental and climatic goals and eco-schemes. For instance, this quantity may be used to enhance grassland quality, water management, and soil-beneficial activities. Additionally, the CAP may support forest restoration, adaptation, fire avoidance, and afforestation. Among other things, farmers taking part in eco-schemes may get rewards for restricting or outlawing the use of pesticides and preventing soil erosion. Approximately 86% to 97% of the country's cultivated land will be farmed under favorable environmental and agricultural circumstances. The growth of organic agriculture will also get significant investment, with the majority of nations hoping to increase or even quadruple their agricultural area. Naturally restricted areas, including coastal or mountainous regions, will continue to receive special financing to support agricultural operations.

The Commission urged Member States to take use of every chance in their CAP strategic plans to increase the resilience of their agricultural sector in order to advance food security, given the Russian aggression against Ukraine and the current commodities boom. This entails encouraging sustainable agriculture practices, decreasing reliance on artificial fertilizers, and increasing the production of renewable energy without compromising the production of food.

One of the biggest issues confronting European agriculture in the next years is generational renewal. Maintaining the agriculture sector's competitiveness and making rural communities more appealing are crucial. With more than €3 billion going directly to young farmers throughout the seven nations, specific assistance for young farmers is a major component of every approved plan. In addition to enhancing access to services and infrastructure, such as internet, rural development funding will help local companies create thousands of employment in rural regions. Other EU tools, like the Recovery and Resilience Facility (RRF) or the European Structural and Investment Funds (ESIF), will also address the needs of rural residents in accordance with the long-term vision for the EU's rural regions.

After approving the first seven CAP Strategic Plans, the European Commission is still fully committed to approving the other 21 Plans as soon as possible, taking into consideration the promptness and caliber of responses to the Commission's concerns.

Having taken the aforementioned into consideration, this article aims at evaluating the new governance model of the CAP 2023-2027, concentrating on the Control Strategy of the National Strategic Plan and the Monitoring and Evaluation Framework for performance at both national and EU levels. Through the article it is sought to delineate the principal challenges and optimal practices, with the insights gained for enhanced policy implementation within the Greek context, via a comparative analysis with other European countries (Italy, Austria, Germany) (Pierangeli et al., 2025; Tyrovoli, 2024).

In this regard, the research questions that would be attempted to be answered are the following:

•What are the main characteristics of the CAP 2023–2027 new governance and assessment model?

•What are the primary barriers and difficulties Greece is facing while putting the Monitoring and Evaluation Framework into practice?

•In terms of performance and preparedness for adopting the new CAP, how does Greece stack up against other European nations?

•What lessons and best practices may be modified to improve the policy's efficacy in Greece?

The importance of the present article relies on the scarcity of targeted and comparative documentation about the implementation of the new governance framework in Greece, despite the multiple evaluations previously undertaken (Cagliero et al., 2025; Pufahl & Sinabell, 2023). In addition, achieving the objectives of the European Green Deal and ensuring the long-term resilience of the agricultural sector need the integration of innovative and sustainable Common Agricultural Policy (CAP) methods (Peeters et al., 2020; García Azcárate & Folkeson, 2020). With this in mind, the article aims to contribute to the global body of knowledge and provide science-based suggestions for policymakers, researchers, and agricultural specialists.

Finally, the article is structured as follows: Aside the present introductory chapter, section Comparative Literature Review provides an overview of the literature on the CAP reform and the new governance model.

Section Methodology presents the policies and ways of implementing them into action in some EU countries, such as Greece, Italy, Austria, and Germany.

Section Comparison of Greece to other European Countries refers to the knowledge acquired from the comparisons, the problems that arose, and the barriers that were faced.

Section Challenges on the implementation of CAP 2023–2027goes into more detail about what Greece learned and what it means for policy; and finally, section 6 presents the conclusions and suggestions.

Comparative Literature Review

As being aforementioned, within a unified European framework, the "New Delivery Model" (NDM), which is introduced in the new CAP 2023–2027, renders planning, implementation, and assessment responsibilities from the European Commission to the Member States (Cagliero, Licciardo, & Legnini, 2023). Critical success factors and shortcomings at the national level are revealed by comparing scientific research, particularly with regard to governance, assessment capabilities, and the relationship between goals and performance (Pufahl & Sinabell, 2023; Pierangeli et al., 2025).

The New CAP assessment framework

The late 1980s European structural policy reform brought in European Rural Development (RD) initiatives to make farms more competitive and encourage long-term growth in rural regions (Esposti & Sotte, 1999; van der Ploeg et al., 2002; Sotte, 2006; Mantino, 2008). These policies use the LEADER (Liaison entre actions de développement de l'économie rurale) strategy, which is now part of rural development intervention, to bring together a big-picture view of the land with local involvement. RD is beginning a new era of programming more than 30 years after it was founded. In June 2018, the European Commission suggested new CAP laws to deal with problems that could come up in the future (European Commission, 2007). The goal was to help European farmers remain competitive and keep farming going. The Council and European Parliament started the trilogue process in October 2020. This was the final stage in passing the CAP. This legislation brings together the first and second pillars. The NDM is a big step forward since it is a new way of doing things. The Commission says that we should move from compliance to performance. They think that the National Strategic Plan (NSP) will make the CAP easier to understand. Member States (MS), on the other hand, need to do a better job of organizing this, especially by area.

Over time, rural development initiatives have changed the ways and needs for assessments. It's clear that the way we make policies and the way we judge them are connected. This assertion is substantiated by the efficacy of rural development initiatives; nevertheless, it is inapplicable in other contexts. During the Structural Funds (SF) reform, evaluation became an important part of programming operations. The rules made it obvious what each person's job was, how things should be done, and what the main ways to evaluate were, including who was in charge (Cagliero & Cristiano, 2013; Mantino et al., 2000).

The Directorate-General for Budget set out standards for other Directorate-Generals to use when judging. Regulation (EEC) No. 2052/88 acknowledges evaluation as an essential tool for the design and execution of interventions. This law, together with other working papers and recommendations, has started to put together questions, indicators, and standards (Mantino et al., 2000; Commission of the European Communities, 1999, 2001).

This was the first time that evaluations before and after the fact were utilized to make assessments and program cycle match better. During the trial phase, there has been immature assessment, a range of opinions, and an unequal grasp of what evaluation can do and how it may be used. Vision coordination at the Member State (MS) and community (EC and MS) levels may have required to be better. The European Commission created MEANS, STAR VI/7676/98 to make sure that all techniques and processes are the same. The Commission said that the intervention logic, or logical framework (Mantino,

Monteleone & Pesce, 2000; Dax, Oedl-Wieser & Strahl-Naderer, 2014), was the most important part of this standardization process.

None of these approaches enhanced evaluation methods or guaranteed compliance with the framework. It is evident that evaluation reports from that era were often inadequate and seldom used (Monteleone, 2006; Mantino, 2010). There is little understanding about the enhancement of program development via assessment (Mantino, Monteleone & Pesce, 2000). The assessment criteria from other Directorate-Generals were utilized instead of those from the Directorate-General for Agriculture and Rural Development. These criteria were not necessarily suitable for rural development. Rural development policies were established during a transitional period between the CAP reform and the cohesion policy, coinciding with the conclusion of structural policies and the commencement of the new rural policy (Mantino, 2008).

The Commission changed the SF (Reg. (EC) No. 1260/99) and RD (Reg. (EC) No. 1257/99) evaluations such that they showed outcomes. The regulations for the 2000–2006 cycle made the monitoring and evaluation system stronger by using a single reason for control and reporting. The Commission's evaluation process became better thanks to two publications: STAR VI/8865/99 and STAR VI/12004/00. This strategy was based on questions, criteria, and indications. The second part of the EC's Common Evaluation Questionnaire question is important. The Commission does, however, have certain unique ways of managing assessments. For MSs, the evaluation cycle involves evaluations before, during, and after the event. This will make it faster to deploy and reprogram RDP. The evaluation looked at how RDP and Agenda 2000 were used from 2000 to 2006. This programming made it possible to use both new territorial tools, such those suggested and established by Article 33 of Regulation 1257/99, and old tools, like those from Regulations (EC) 950/96 and 951/96. The RDPs were complicated and looked like mosaics. Evaluation standards such as STAR document 12204/00 provide criteria and indicators, and they also reexamine the reasoning behind each intervention to make these treatments more systematic. The Commission advised that local government, industry groupings, and the scientific community become more involved and set up steering committees. The National Evaluation System of Italy (Sistema Nazionale di Valutazione) urged evaluators and public organizations to share their evaluation methods. The legislation from 2007 to 2013 made rural development easier by focusing on the "strategic approach," which included needs assessment, goal setting, and measure selection. Evaluation turned become a strategic tool for gathering information that aided with planning and carrying out projects, making it simpler to reach rural development goals (Mantino, 2008; Monteleone, 2005).

The Common Monitoring and Evaluation Framework (CMEF) was very important since it included all of the commitments and methodological standards. Regulation (EC) No. 1698/2005 makes it easier for Member States to keep an eye on and evaluate their work (Bergschmidt, 2009). According to Smismans (2015), the European Commission's "Reinforcing Evaluation" (2007), "Smart Regulation" (2010), and "Improving Evaluation" (2013) pronouncements helped the EU become a place where policies are founded on facts.

The CMEF employed standardized questions and indicators for baseline, output, result, and effect to make evaluation more consistent. This methodological approach guarantees superior evaluations across all Member States and facilitates European comparison and enhancement (Dax, Oedl-Wieser & Strahl-Naderer, 2014; Maye, Enticott & Naylor, 2020).

The Common Monitoring and Evaluation Framework (CMEF) set up standardized standards for methods and procedures to make sure that evaluation methods are the same across Member States and at the EU level. But assessors had a lot of freedom since there were no clear rules or ways to make decisions and assessments (Directorate-General for Agriculture and Rural Development, 2014;

Michalek, 2012). This openness brought forth new ideas, but it also made it harder for countries to agree on how to evaluate and report on things.

From 2007 to 2013, the "ongoing method" was the second big change in programming. Its goal was to make testing better all the way through the development cycle. Evaluation used to be thought of as post-hoc. It is currently seen as a process that goes on all the time, from design to implementation. This technique gave Managing Authorities timely information and feedback that helped them improve the implementation of the Rural Development Programme (RDP) and adapt to changing needs. The continuous technique changed evaluation from a duty to report to a way to learn.

Third, there were more national and European assessment networks. The European Evaluation Network for Rural Development, the Evaluation Helpdesk, and national rural networks were all set up. The goal of these initiatives was to make reviews easier, promote learning, and get Member States and others to share information. These collaborative frameworks enhance evaluation by making it more evidence-based and participatory, therefore legitimizing and holding the Common Agricultural Policy framework responsible (Cristiano & Licciardo, 2017; Smismans, 2015).

The EU put a new version of the Common Agricultural Policy (CAP) into effect in 2023. Since then, Member States (MS) have been adding the CAP to their national policies via the CAP Strategic Plans (CSP) 2023–2027. The CSPs list the CAP objectives that should be pushed at the national level, as well as the money and activities that will be utilized to reach those goals.

A MS has a great deal of flexibility to modify the CAP to suit its own requirements and tastes thanks to the new distribution model. The integrated program management and execution of rural development (RD) policies (Pillar 2) and market-related measures and direct payments (Pillar 1) under a single national CSP is a distinctive aspect of the current programming era. Regionalized RD MSs, like Germany, were compelled to incorporate their regional RD initiatives into a national CSP. Unified requirements for programming, monitoring, and evaluation resulted from the combination of both pillars into a single planning document. The Better Regulation Strategy, which aims to simplify and enhance rules via evidence-based policymaking, is a commitment made by the European Commission (EC) (EC, 2021). This is especially true for the CAP and the Cohesion Policy. In the current multiannual financial framework 2021-27, these two programs make up 62% of total EU spending (not including NextGenerationEU) (BACHTRÖGLER, et al., 2021). The most contentious topic in society is the CAP, but programs funded by structural funds are seldom contested in public. The European Court of Auditors often complains that assessments do not support the CAP's efficacy (ECA, 2021, 2017, 2016). The EC is thus eager to demonstrate that the CAP is accomplishing its goals. The law governing the CSP 2023-2027, which established the new delivery model, reflects this concern. The performance-based implementation of CAP is strengthened, and there is further flexibility to customize the CAP to the demands of MSs. Annual monitoring of the attainment of established policy goals is required. When deviations occur, MSs are required to provide an explanation and modify their CSP accordingly. Effectiveness, efficiency, relevance, coherence, Union added value, and effects in connection to the established CAP general and particular objectives (SOs) are all factors that MSs must consider when assessing their CSPs. A performance review and assessment at the EU level is also carried out by the EC (see Art. 140, 141 of CSP regulation (EU) 2021/2115). The assessment will be significantly impacted by the new deployment method using CSP: Pillar 1 and Pillar 2 interventions are being assessed together for the first time. This makes it possible to examine how they together affect goals like revenue, competitiveness, and environmental and climatic concerns. Prior to 2022, only Pillar 2 actions were subject to the CAP review criteria for MSs; the EC was in charge of evaluating Pillar 1. MSs have to provide a strategy for assessment. All assessment activities, their schedule, data needs, and other administrative and communication elements up to the ex-post evaluation in 2031 must be included in the evaluation plan. The implementing regulation (EU) 2022/1475 lays forth minimum standards for the frequency, duration, and subject matter of CSP evaluations. Certain clauses, such as the use of impact

indicators specified in the performance monitoring and evaluation framework (PMEF; EC, 2023b), are legally enforceable in and of themselves. MS's interests and requirements must be taken into consideration while making decisions about the evaluation's scheduling, format, and content. Making ensuring there are enough activities for data collection and administration is a key responsibility of the evaluation plan. A significant amount of data is already being gathered since the assessment of the CAP using MSs has been a continuous endeavor since 2000. When the intermediate review of the CSP begins, the ex-post evaluation of the 2014–22 period will be conducted. Even if there are still certain data gaps that need to be filled, better data management and enrichment are receiving more attention. The latter entails gathering and combining information from many sources (EEH and EC, 2020). Given that farm businesses get over 93% of CAP funding in the EU, this is particularly true for farm-level data (BECKER et al., 2022: 36).

Structural Weaknesses and challenges in Greece

For more than four decades, Greek agriculture has been fully integrated into the European Union's Common Agricultural Policy (CAP) mechanisms, remaining one of the largest recipients of CAP funds among Member States (European Commission, 2024). In GDP terms, EU support to Greek agriculture consistently ranks among the highest in the Union, with Greece receiving 1.4% of its GDP in agricultural support in 2021—second only to Bulgaria's 1.7%—while countries like Spain recorded considerably lower shares (Karantininis, 2017; Dianeosis, 2024). Historically, CAP resources constituted about fifty percent of total EU aid to Greece; however, this has changed considerably with the establishment of the Recovery and Resilience Facility, which expanded the EU's financial support framework (European Commission, 2023b).

Even though money has been coming in steadily, Greek agriculture has had a hard time using CAP financing to modernize its structures and make them as competitive as those in other Member States with similar agro-environmental circumstances (Haniotis, 2023a).

Nowadays, exports and value-added output pertaining agri-food have risen, something which means that economy can sustain and adapt periods of crises. This does not mean that there is connection to the adoption of the CAP (Sorrentino, Henke & Severini, 2011; Swinnen, 2015).

Green Deal and CAP

The Commission's main political goals for the next five years are outlined in the Communication on the "European Green Deal," which was released on December 11, 2019 (EC, 2019). With a focus on sustainability and the goal of making Europe "the world's first climate-neutral continent by 2050," it establishes a new growth strategy for the EU. The European Parliament welcomed the idea in a Resolution3 voted on January 15, 2020.

The Green Deal addresses the mounting issues and worries of Europeans over the state of the environment, the climate, and other aspects that affect the food and agricultural industries. "Europe's environment is at a tipping point," says Hans Bruyninckx, Executive Director of the European Environment Agency (EEA). In the next ten years, we have a limited window of time to drastically cut down on our use of natural resources, mitigate the effects of climate change, and increase environmental protection efforts. In order to address "urgent sustainability challenges," the EEA (2020) calls for structural adjustments.

In addition to the EU's primary goal of climate neutrality, the European Green Deal lays out a plan of action to reduce pollution, restore biodiversity, and increase resource efficiency by transitioning to a clean, circular economy whose development will be independent of resource usage. By offering a Just shift Mechanism that offers both financial and technical help throughout this shift, it also seeks to guarantee that no one or no area is left behind (Maréchal et al., 2020).

These strategic advancements have coincided with the world's and the EU's unparalleled COVID-19 sanitary catastrophe. By focusing on vulnerability and the importance of resilience in adapting to shocks, this expands the topic and offers new insights into the sustainability of current supply chain models, including agri-food systems. Because they are linked all over the globe, they are more vulnerable to a number of threats, and this makes it harder for them to fix any problems that come up.

So, it will probably be more important to plan for even greater resilience in our future health, social, and economic systems. To make food supply chains more shock-resistant, to reduce the impact of food production and consumption on the environment and climate, and to move to healthier and more sustainable diets will be important parts of this.

The June 2018 publication of the legislative recommendations for the CAP after 2020, which the Commission has not since changed, aims to raise the policy's degree of environmental and climatic ambition. They are offered as a tool to aid in the shift to an entirely sustainable agriculture industry using a new, results-driven delivery paradigm. The Commission's proposals update the overarching legal framework and goals while streamlining EU law. Member states are expected to create national CAP Strategic Plans (CSPs) outlining their planned interventions for both Pillar 1 and Pillar 2 in order to accomplish the nine CAP goals. These CSPs must be justified based on their assessment of needs and priorities, but they also have more flexibility and subsidiarity (Maréchal et al., 2020).

Four broad and one overarching goals for the new CAP are outlined in the legislative proposals:

1.To modernize the sector by fostering and sharing knowledge, innovation, and digitalization in agriculture and rural areas and encouraging uptake (cross-cutting); 2

2.To strengthen the socioeconomic fabric of rural areas;

3.To support environmental care and climate action and to contribute to the Union's environmental and climate-related objectives; and

4.To cultivate a smart, resilient, and diversified agricultural sector that ensures food security.

There are nine distinct goals depicted on the figure that follows, some of which are pertinent to enhancing the sustainability of agri-food systems and are shown in the diagram on the page that follows.

According to Bas-Defossez et al. (2018), the suggested new delivery model may, in theory, provide more creative, inventive, targeted, and cohesive methods to improve the sustainability of agri-food systems.

However, given the continued dominance of direct payments in the policy menu offered to Member States, as well as concerns about Member States' ability to create more ambitious CSPs and the European Commission's ability to evaluate and approve them, particularly under pressure, there are still concerns about how much of this will actually be implemented in practice (Erjavec et al., 2018; Hart and Bas-Defossez, 2018; Pe'er et al., 2019). The suggestions, according to Pe'er et al. (2019), provide "an inadequate response to environmental and sustainability challenges, and makes a business-as-usual scenario very likely." They also highlight "a gap between the green aspirations of [CAP] payments and reality of the CAP." According to the European Court of Auditors' 2018 critical analysis, the proposed CAP Regulations lacked the components of an effective performance-based system since its nine goals were "not clearly defined, neither specific nor translated into quantified targets" (ECA, 2018). However, several Member States are still reluctant to adopt a performance-based strategy.

The European Green Deal, the umbrella for a number of new policies, including the Farm to Fork Strategy, which aims to mainstream the relevant Green Deal targets within the CAP and requires Member States to set explicit values for these targets and identify appropriate interventions within their CSPs, is at the center of the new five-year vision adopted by the newly appointed Commission following the publication of the 2018 proposals (EC, 2020a).

As a crucial policy tool and financial source, the CAP might contribute significantly to achieving the goals of the Green Deal if it is planned and executed in a manner that takes into account the new European agenda. In the next era, agriculture and rural development will receive €343.9 billion6 in support from the CAP between 2021 and 2027. A small amount of the CAP budget is also available to fund activities and projects with actors along the agri-food supply chain, in the forest sector, and in rural areas more generally. The majority of the CAP budget is allocated to the agricultural sector, with €258.6 billion going to Pillar 1 and €85.3 billion going to Pillar 2 over the period. Therefore, if properly designed and executed, the CAP may serve as a key policy instrument to accomplish the goals of the Green Deal. A Staff Working Paper on the connections between CAP reform and the Green Deal (EC, 2020c) was released with the Farm to Fork Strategy. It demonstrated how the CAP proposals met the Green Deal's aims, highlighting areas that may be reinforced.

Member states will have much more freedom to use the entire range of CAP interventions (both in Pillar 1 and Pillar 2) to fulfill their priorities in accordance with EU goals, which should also include the goals outlined in the Green Deal, thanks to the new flexibility proposed for the next CAP. Additionally, they will need to show in their CAP Strategic Plans (CSPs) how they prevent unsustainable behaviors (e.g., by using linked income support).

MATERIALS AND METHODS

This research employs qualitative comparative policy analysis to examine the functionality and efficacy of the Performance Monitoring and Evaluation Framework within the forthcoming Common Agricultural Policy (CAP) 2023–2027 (Cagliero, Licciardo & Legnini, 2023; Pufahl & Sinabell, 2023). The methodological approach follows different steps, which include the systematic literature review, the selection of comparative case studies, the assessment of control techniques and the awareness of study limits.

Data collection

The study was based on seven key scientific sources, which encompass theoretical, methodological and empirical components of the implementation of the CAP. Specifically, the following were examined:

•the institutional framework and governance philosophy (García Azcárate & Folkeson, 2020),

•the performance assessment system and lessons learned from the previous Rural Development Programme (Cagliero et al., 2023),

•the environmental and agroecological methodologies (Peeters et al., 2020),

The case studies that are going to be presented are from Italy, Austria, and Germany (Pierangeli et al., 2025; Pufahl & Sinabell, 2023), together with the specifics of the Greek institutional framework (Tyrovoli, 2022).

The comparative literature assessment included content analysis to identify recurring thematic patterns, prevalent indicators, and conceptual deficiencies in the available studies (Krippendorff, 2018). This method was chosen because it offers an interpretative framework that accurately reflects the political differences and governance patterns across the Member States.

Selection of Countries for Comparison

Four countries were selected for the comparative research, representing different levels of development and institutional frameworks of the CAP evaluation system.

Greece is the main case study since it has to deal with problems that are different from those in other countries when it comes to carrying out the program. Italy was selected due to its similar rural character and decentralized administrative framework, although Austria and Germany were referenced as examples of countries with advanced and effective monitoring and evaluation systems (Pufahl & Sinabell, 2023; Pierangeli et al., 2025).

The selection of the aforementioned countries was based on the criteria of data accessibility, institutional variety of governance structures, and sufficient bibliographic material to ensure the validity and comparability of the results.

Examination of Control Strategies

The examination of the control strategies concentrated on evaluating the systematic oversight of indicators, the incorporation of evaluation outcomes into the decision-making process, the transparency and public accessibility of reports, and the involvement of stakeholders in the formulation and assessment of policies (Cagliero et al., 2023; García Azcárate & Folkeson, 2020). The comparison method was undertaken via the research of official documents of the European Commission, technical reports of the Member States and descriptions of the CAP Strategic Plans 2023–2027 (European Commission, 2022). The data were organized by theme, which made it possible to compare national plans based on how mature they were, how open they were to the public, and how well they fit into the common European assessment framework.

Study Limitations

The study relies only on secondary data, foregoing primary empirical research methods like as interviews or surveys, so limiting the potential for a comprehensive examination of the administrative experiences of the Member States (Bowen, 2009).

Additionally, the comparison study is informative rather than comprehensive, due to the heterogeneity and variability in data availability and structure among countries.

Lastly, it is important to note that there is a temporal asymmetry in the available sources. This is because some studies were published before the Strategic Plans were fully put into action, which means that the results should be seen as preliminary assessments rather than final conclusions (Cagliero et al., 2023; Pierangeli et al., 2025).

FINDINGS

Comparison of Greece to other European Countries

The comparison of Greece with other European countries in the field of implementation and evaluation of the CAP 2023–2027 reveals significant differences that mainly concern the institutional framework, governance, availability and quality of data, as well as the participation of stakeholders.

Greece

Greece is anticipated to receive around €19.4 billion from CAP funds from 2021 to 2027. This is a little less than the amount for the previous period, 2014–2020 (−0.5%). The small drop is because the Recovery Fund's "extraordinary" resources provided a lot of extra help during the two-year "transitional CAP" period from 2020 to 2022.

The European Commission approved Greece's final plan for the years 2023 to 2027. It says that 73% of the support (about €10 billion) will go to the first Pillar (aid and market measures), and the second Pillar

(investments) will get the other 27% (about €4 billion). Greece's strategy also includes assistance for the market in some areas of production, such as fruits and vegetables, olive oil and table olives, wine, and beekeeping products.

The diaNEOsis report makes it very clear that "it is very early to make any kind of assessment" about the strategic part, which is the national strategic plan for the CAP. This is because "we are only at the beginning of the implementation of the new CAP," and many parts of the policy's implementation in the country are still "general and descriptive." (Nikolaidis, 2023)

The process for creating and getting the Greek strategic plan for the CAP approved was also not straightforward and had a lot of problems both within and outside of Greece. For instance, the implementation of the country's strategic decision to equalize the unit value of all payment entitlements in each agronomic region (arable crops, tree crops, and pastures) will not be painless, as it is anticipated to significantly affect the income support of small and medium-sized farms that historically established high unit value entitlements from crops such as raisins, tobacco, etc. This is despite the fact that the SWOT analysis of Greece's strengths and weaknesses, which was done to help make its strategic plan, showed that "10% of farms get 48% of direct payments, while 45% of farms that can be considered small farmers get 10% of direct payments." (Nikolaidis, 2023).

Italy

BPS, which made up over 55% of the direct payment budget in 2020, dominated direct payments in Italy prior to the 2023–2027 reform. The change reflects a move towards redistributive goals, with BISS now making up 48% of the budget and CRISS contributing 10%. Coupled payments, which support important industries like rice, buffalo milk, and durum wheat, still account about 13% of the envelope. In Italian agriculture, direct payments make up a considerable portion of FNVA. Decoupled payments made up, on average, 18 percent of FNVA in 2020, albeit this varied by farm type and geographic location. After reform, this percentage is anticipated to modestly decrease as a result of budget reallocations that favor eco-schemes and redistributive payments. Along with direct payments, Italian farmers also receive risk management instruments including subsidized insurance (€3 billion), rural development initiatives (€3 billion), eco-schemes encouraging sustainable practices (€4.4 billion), and coupled assistance (13% of the direct payment budget).

In Italy, the post-reform scenario (2026) and the status quo (2020) are applied differently. Italy continues to use payment entitlements (PEs) as a means of allocating basic income assistance for both BPS (2020) and BISS (2026). As a consequence, farmers get unit quantities that fluctuate, sometimes by a large amount. Under the BPS from 2015, a process of partial internal convergence was started to progressively lessen these disparities. This approach entails the progressive equalization of the value of payment entitlements (Pierangeli et al. 2023).5. By 2020, the first stage of convergence was complete, guaranteeing that all PEs attained at least 60% of the national average. Italy has to stick with the partial internal convergence process under BISS in order to continue with PEs in 2023–2027. By 2026, all PEs must achieve at least 85% of the national average value, which is equivalent to 139,50€/ha and 164,12€/ha 6 respectively. The funding for this procedure came from lowering the PEs' value above the national average according to their distance; in other words, the higher the value, the larger the decrease. This decrease may reach a maximum of -30% (halt loss). Starting in 2023, all payment entitlements above €2000 are subject to a maximum ceiling in order to decrease extreme values and speed the transition towards the national average. This limit makes sure that entitlement values that are higher than this cutoff are appropriately decreased. During the convergence phase, a stop loss mechanism is implemented separately, restricting decreases to no more than 30% of each entitlement's starting value in 2020. Notably, the computation of this stop loss limit does not account for decreases brought on by the limitation.

In 2023, Italy will finally implement the redistributive payments (CRISS) for the first time, supporting small and medium-sized farms by offering unitary income assistance for the first 14 hectares of all farms with sizes between 0.5 and 50 hectares.

In order to account for the (differing) EU constraints associated with the requirement to allocate fixed quotas of the budget to specific payments, as well as the fact that different decisions were made in the two programming periods, the direct payment ceilings into the two periods were split between a number of components at the national level. As a result, BPS received almost 55% of the direct payment funding in 2020, or 2,074,792,970 euros. BISS and CRISS will get 48% (1,678,197,054 euros) and 10% (349,624,386 euros) of the total share in 2026. When comparing the national budget for agricultural income assistance in 2020 and 2026, the disparity in resource distribution shown above results in a decrease of −2.3 percent.

Austria and Germany

Article 140 of the CSP regulation sets out the broad rules for when and how evaluations should be done. The implementing rule, on the other hand, sets out more specific minimum criteria for how they should be made up and what they should include. The European Evaluation Helpdesk for the CAP (EC, 2023a; 2023b) makes it further clearer what parts of the evaluation plan are required and which are suggested. The CSP 2023–2027 evaluation framework seems much more demanding than the one from 2014 to 2022. This is because the European Commission wants to make sure that Member States take the evaluation process more seriously and use consistent methods.

In Austria, the assessment framework is based on the primary parts of the evaluation, and twenty-five of the thirty-six planned studies are directly related to particular goals as well as secondary ones that include natural resources broken down into more specific research on issues like air quality, soil erosion, and water quality. Four further synthesis studies are planned to bring together the results of the CAP Strategic Plan (CSP) and its main aims. Austria's plan also includes particular research of national relevance, such looking at how the CAP affects organic farming, figuring out what would happen if there were no CAP funding, and making it easier to carry out the plan. One of the best things about the Austrian system is its excellent way of handling data. The Federal Institute of Agricultural Economics, Rural and Mountain Research (BAB) manages the central data pool, which brings together georeferenced IACS data, rural development data since 2000, sectoral and non-IACS interventions, beneficiary-level information, and outcome indicators. Austria improves both transparency and the ability to analyze data by encouraging organized, standardized, and easy-to-find datasets. The nation is better able to do evidence-based evaluations because it keeps adding to its metadata, adds new econometric datasets, and uses machine-learning methods to find old data.

Germany has a different approach that is less centralized. The federal government orders one or more assessments for each specified objective (SO) in the CSP review. The federal government and the Länder share several responsibilities. The federal government is the only one who can measure farm income (SO a), however both levels of government are responsible for goals connected to generational renewal and the environment and climate (SOs g, d, e, and f). The Länder are the only ones who look at a number of additional goals, such as competitiveness and rural vitality. But Germany's review procedure is made more difficult by the fact that its data management system is broken up into several parts. There are thirteen separate systems at the state level that gather monitoring and IACS data. Each system has its own indications and formats, which makes it hard to make them all work together. There have been some attempts to combine monitoring data and change IACS data into a single format for use in larger policy evaluations, but there are still problems in combining and reusing data for CAP evaluations.

Austria conducts evaluations in a more centralized and tech-savvy way, focusing on efficiency, digital coordination, and well-organized data management. Germany, on the other hand, lets regions choose

their own rules, which is more decentralized. But it has trouble getting to and standardizing data. Both nations have set up interim reviews for 2025 and 2026 and a final assessment for 2031. Austria, on the other hand, is better ready for swift, data-driven inspections since it has a solid database infrastructure and an integrated governance framework.

Analysis and Discussion

The comparative analysis of European experiences in the implementation of the new Common Agricultural Policy (CAP) framework for 2023–2027 indicates that Greece lacks both institutional organization and technical infrastructure, essential for the effective execution of the Performance Monitoring and Evaluation Framework (PME). Cagliero, Licciardo, and Legnini (2023) assert that the efficacy of the new governance model hinges on the member states' capacity to continuously incorporate performance indicators, gather dependable data, and synchronize activities with quantifiable outcomes. In Greece, the fragmentation of data and the absence of compatible information technology hinder a unified assessment of performance. In contrast, Austria and Germany use centralized databases and well established methodological standards for evaluation (Pufahl & Sinabell, 2023).

Italy's experience teaches us more about how to help people in a fair manner. The BISS and CRISS systems were set up between 2023 and 2027. This gradually brought the values of payment entitlements together, which helped small and medium-sized farmers and made things more equitable (Pierangeli et al., 2025). The previous subsidy scheme is still producing problems in Greece, where 10% of farmers get around half of the direct payments (Tyrovoli, 2022). The program isn't performing as effectively as it should since resources are not being used fairly and the Farm Advisory System is not working adequately. This makes things much worse for regions that are already doing poorly.

Also, the difficulties that Member States have in aligning their environmental goals with those of the European Green Deal and the Farm to Fork strategy show how important it is for these two sets of goals to be quite similar. Peeters et al. (2020) and García Azcárate & Folkeson (2020) assert that the new model will only be effective if Member States implement agro-ecological practices and transform environmental indicators into significant evaluative tools. Greece is lagging in both using accurate environmental performance data and setting up regular systems to keep a check on problems.

The comparative study indicates that Greece could derive substantial advantages by implementing strategies utilized in Central European nations, including the formal incorporation of local entities in oversight mechanisms, the application of geospatial monitoring technologies, and the standardization of data management practices. Cagliero et al. (2023) underscore that the institutional and technological maturity of the system is a critical determinant of the New Delivery Model's (NDM) efficacy.

Challenges on the implementation of CAP 2023–2027

The change to the new governance structure introduces a lot of problems, and each Member State has its own set of them. In Greece, there is no method to coordinate things, and responsibilities are divided, which makes it hard to make quick choices and keep an eye on things. Tyrovoli (2022) says that the National Strategic Plan is taking longer to put into action since there isn't a clear institutional structure for collaboration between ministries and regions. On the other hand, managing things in Austria and Germany is harder.

However, the existence of institutionally reinforced structures and established procedures makes things more obvious and responsible (Pufahl & Sinabell, 2023).

Greece also faces challenges with the technologies it uses to gather and analyze data. People can't access real-time data without a fully operating information system, which makes it impossible to assess and make adjustments. Austria, on the other hand, has made it simpler to keep track of and evaluate by

creating an integrated digital platform via the Federal Institute BAB that combines geographical data, subsidy data, and result indicators (Pufahl & Sinabell, 2023).

Greece has very few local groups and rural organizations that are active in organizing and evaluating social participation. This makes the rules less obvious and less popular with the people (Tyrovoli, 2022). Italy and the Central European countries, on the other hand, have chosen more participatory forms of government. This has made it simpler for people to relate to each other and share the burden of carrying out the CAP (Pierangeli et al., 2025).

Combining environmental indicators with agroecological techniques is a difficulty that all countries face. Greece is especially behind when it comes to figuring out how things affect each other and utilizing indications to determine how long something will last (Peeters et al., 2020).

Lessons learned for Greece

The comparison of Member States shows that the CAP 2023–2027 requires strong institutions, qualified workers, and people who are involved in their communities to function. Greece can make its own system better by seeing what works well in other nations. To improve institutions, there has to be one system for coordinating and keeping an eye on things, with defined responsibilities and the same standards for judging (Cagliero et al., 2023). To improve technology, we need to build digital geographic monitoring tools, utilize AI to look at data, and link information bases as they do in Austria.

There has to be more social aspects to the plan, such as means for farmers, local governments, and scientific groups to help make decisions. The Italian experience shows that being open and letting people be a part of changes makes them more likely to be accepted and helps treatments work better (Pierangeli et al., 2025). Using accurate environmental indicators together with agro-ecological technology would help people accomplish the goals of the Green Deal at the same time (Peeters et al., 2020).

Greece has an advantage over other nations because of its biodiversity and agro-ecological features. You may exploit this benefit by partnering with universities and tech institutes on research initiatives, or by employing remote sensing technologies and big data analytics to monitor how well the environment is doing (García Azcárate & Folkeson, 2020).

DISCUSSION AND CONCLUSION

The review of the new CAP model for 2023–2027 shows that Greece has a number of structural issues, including a lack of administrative coherence, poor technological infrastructure, and low levels of public participation. Here are some suggestions about how to make the policy work better:

• Making the institutional structure and coordination stronger by setting up a single information system and making sure that ministries, regions, and supervisory bodies know what their roles are.

• Upgrading technology with digital geographic monitoring tools, collecting data in real time, and combining analytical platforms.

• Increasing social engagement by making it a rule for local and professional groups to talk and work together when making and judging policies.

• Combining scientifically proven measuring techniques with environmental indicators, working together with research institutes and technology networks.

• Invest in the education and training of executives to enhance their adaptability to the new governance model and to improve data management and assessments.

Finally, it is recommended that more empirical study be conducted to assess administrative experiences and investigate the environmental and social impacts of the new CAP at the local level. Such studies might greatly improve the creation of more fair, open, and long-lasting policies for Greek agriculture that are in line with the goals of sustainable development in Europe.

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THE MONETARY ASPECT IN THE FOREIGN POLICY OF MODERN STATES

Mehriban Babazada

PhD, Associate professor

Baku State University, Azerbaijan

mehribanbabazade@mail.ru

Orcid id: 0000-0001-7342-0477

ABSTRACT

Although the influence of monetary relations on world politics has recently become the subject of analysis in various branches of social science, no comprehensive research has been conducted in this area. It is this circumstance that makes this topic particularly relevant. Events related to the growth in the number of conflicts with monetary aspects, the conscious internationalization of currencies, and the emergence of new monetary institutions give reason to assert that monetary relations have become one of the most important factors in the formation of a new world order, on which the degree of influence of each actor in international politics will depend. Having proven the connection between these facts, we can state that monetary relations have become politicized, creating a new sphere of international confrontation and a new power hierarchy. Undoubtedly, monetary relations are influenced by technological progress, forcing the introduction of electronic and digital currencies into the analysis matrix.

Key words: monetization, global politics, tariffs, trade war, reserve currency, dollar, the USA, China, imports, exports

INTRODUCTION

All the recent changes that have already taken place and are taking place on the international stage lead us to believe that the old conceptual models of world order are outdated and need to be revised. These traditional models cannot provide an adequate response to all the events we are witnessing in world politics today. One of the main trends, in our opinion, is the further monetization of international politics. Issues of monetary influence and monetary sovereignty reinforce the factor of full financial sovereignty. In this regard, the main trigger in the world is the struggle against US monetary dominance. The United States began a trade war during Donald Trump's first term as president, primarily against China. Trump's trade war takes us back to the era of tariff wars and devaluations of the 1930s. Ultimately, this all ended in the Great Depression and World War II. The president's main argument in

favor of increasing tariffs is to reduce the tax budget deficit. The change in the basic settings of liberal trade policy has resulted in turbulence throughout the global economic system [1].

Monetary tools of US influence

During his first presidential term in 2018-2019, Donald Trump imposed tariffs on imports from China worth $380 billion and from Europe worth $8 billion. However, he introduced them gradually. Nevertheless, the confrontation with China caused significant damage to the US economy. Now, the US president has also struck a blow to his main allies on the American continent – Canada and Mexico. The total amount of taxes on imports from the above-mentioned countries turned out to be much higher – $1 trillion. All this was accompanied by attacks on major trading partners. Trump was not deterred by the stock market crash, the threat of rising inflation, or the possibility of a recession in the US economy. As a result, while the UK, Australia, and Mexico tried to negotiate with the eccentric Trump, China, Canada, and the EU responded with a decisive rebuff. Their retaliatory restrictions on US imports amounted to $190 billion.

The dollar is the world's reserve currency, and the United States, as the issuer of this currency, experiences both positive and negative effects. The main negative effect is the trade deficit. An increase in demand for the global reserve currency during times of crisis has a negative impact on the issuer of this currency. Issuance causes inflation, the price of the dollar rises, and it strengthens, which has a negative impact on exporters and reduces their competitiveness in the global market. This is what happened to the US economy during the global economic crisis of 2008-2009 [2; 6, pp. 72-73]. The Trump administration considers the situation critical, stating the need to eliminate the budget deficit.

This situation occurred in the 1970s, when demand for the US currency rose sharply. Later, in the fall of 1985, a solution to this problem was found at the Plaza Hotel in New York. The agreement, signed by the finance ministers of the world's five leading economies - the US, the UK, Germany, France, and Japan—was called the Plaza Accord. The G5 agreed to coordinate their actions to weaken the dollar, which the US itself needed. The countries decided to correct the trade imbalance with the United States. The main levers for this were currency interventions and stimulation of domestic demand. The main result of the agreement after a year and a half was a 35% devaluation of the dollar. Not wanting the dollar to weaken further, Washington, together with its G5 partners and Canada, initiated a new conference, this time in Paris. The meeting at the Louvre Palace in February 1987 led to the signing of a new document called the “Louvre Agreement”. The signatories pledged to coordinate their monetary and fiscal policies to stabilize currency imbalances and increase economic growth. The main emphasis was on reducing the budget deficit and lowering inflation.

Summarizing the results of the agreements for the US, it is worth noting that Washington implemented its policy in the medium term: the dollar fell in value and the trade deficit was significantly reduced. While in 1984 it amounted to $112 billion, by 1991 it had fallen to $30 billion. However, in the long term, this strategy did not work. Since the mid-1990s, global demand for the dollar as a safe haven for investors has grown again. Developing countries such as China and Mexico replaced cheap competitors. Nevertheless, the dollar weathered this crisis and remained the world's reserve currency. It is quite possible that exports will increase and the value of the dollar will decline, while the US currency will maintain its leading position in the world [5, pp. 24-25].

The US trade deficit reached $1 trillion in 2022, which the new administration considers critical. Donald Trump's tariff policy led to a 9% weakening of the dollar by the fall of 2025, which is beneficial to American manufacturers, as it increases the competitiveness of their goods. However, unlike the Plaza Accord and the Louvre Agreement, the United States began to act aggressively, disregarding its partners and offering them nothing in return. One example is the US-EU trade agreement of July 2025, under

which imports of European goods will be subject to 15% tariffs, while imports of American goods into Europe will be subject to a 1% tariff.

Policy on de-dollarization

It is clear that the role of the US currency will not be undermined in the near future. Nevertheless, a number of countries are pursuing an active policy of de-dollarization. It is worth noting here that when it comes to de-dollarization, it is important to distinguish between the dollar as a reserve currency and the dollar as an invoice currency. There are more opportunities to avoid using the dollar as a means of payment than in the reserve currency sphere, where the only alternative at present is gold, which is hitting historic lows. There are more options in the area of settlements. There are a number of initiatives that bypass the dollar and the banking system. One of the most advanced initiatives is the mBridge project, which allows central banks to conduct currency settlements and transactions between different national digital currencies on a multilateral platform, speeding up and reducing the cost of cross-border payments. The People's Bank of China, the central banks of Hong Kong and Thailand are participating in this pilot project. The Mariana project with European participating countries also allows settlements in national currencies that are included in the multilateral settlement pool, which automatically forms a bilateral price between each currency.

China has set itself the clear goal of reducing the international influence of the United States, which is based on the dominance of the dollar. In this regard, the inclusion of the yuan in the IMF's currency basket in 2016, alongside the dollar, euro, pound sterling, and yen, was a significant achievement for China. At the same time, China began trading gold in yuan on its exchanges, and later, in 2018, oil as well. All of this is part of China's “One Belt, One Road” strategy, which aims to squeeze out its American competitor in the Eurasian and Middle East regions [4, p. 229].

In 2018, Germany announced that it would include the Chinese yuan in its foreign exchange reserves, while simultaneously reducing the share of the US dollar in those reserves. A year earlier, in 2017, Germany completed its program to repatriate part of its gold reserves stored at the Federal Reserve Bank in New York ahead of schedule. Three hundred tons of gold were transported to the German Federal Bank in Frankfurt am Main. There is no doubt that Germany's actions are mainly motivated by political considerations and a desire to gradually withdraw from US tutelage.

A number of countries have begun developing their own national cryptocurrencies, all with the same goal of undermining the dominance of the United States. For example, in 2017, Venezuelan President Nicolas Maduro announced the creation of a Venezuelan cryptocurrency, El Petro, backed by the country's oil reserves. The Venezuelan president believes that this will strengthen the country's monetary sovereignty and get rid of the American financial blockade. Maduro's actions have caused concern in Washington, which fears that other countries will follow suit [3].

In Venezuela, as well as in Iran and Russia, the abandonment of the dollar is primarily motivated by the sanctions imposed on these countries. All of them are forced to seek an alternative to the dollar. The decline in demand for the U.S. currency is a consequence of the absence or low volume of financial transactions in the commodity market, for which payments need to be made in dollars. Sanctions that restrict the freedom of international trade operations also apply to Iran, Russia, and Venezuela. To some extent, Russia's actions regarding the shift of international trade to settlements in other convertible currencies can be seen as a preventive measure. In this light, further rapprochement between Russia and China and the gradual replacement of the dollar by the yuan appear logical, which strengthens the Chinese currency and further increases Russia's dependence on Beijing [8, pp.99-100].

The meeting between U.S. President D. Trump and Chinese President Xi Jinping on October 30, 2025, in Busan (South Korea) at the APEC summit was the first in six years. Moreover, as mentioned

above, this meeting was preceded by a tough tariff policy implemented by the U.S. against China. In response, Beijing tightened control over the export of strategically important rare earth metals to the U.S. In April 2025, the United States and China mutually increased tariffs to 145% and 125%, respectively, and then in June of the same year, the parties agreed to reduce these figures to 10% and 30%. According to a decree by D. Trump, the reduced tariffs are to remain in effect until November 10 of this year. Following the bilateral meeting, the American president decided against imposing new tariffs and also announced a reduction of the tariff rate on Chinese goods from 57% to 47%. In addition, the so-called fentanyl tariff was reduced from 20% to 10% (fentanyl overdose annually causes the deaths of a large number of young Americans). China, in turn, agreed to suspend the introduction of new restrictions on the export of rare earth metals for one year. However, this easing does not apply to seven rare earth metals (samarium, gadolinium, terbium, dysprosium, lutetium, scandium, and yttrium) and their alloys, which are essential for the American automotive industry. Nevertheless, as Trump stated following the meeting, he managed to 'resolve a crisis affecting not only the US but the entire world'.

Undoubtedly, the Chinese export restrictions imposed before the summit allowed the parties to reach a compromise. According to experts, Trump's trade war did not bring the desired results for the American administration, as the Chinese economy was prepared for a new round of tariff confrontations. During talks with Comrade Xi, the American president also tried to raise the issue of China's purchases of Russian energy resources. Washington has repeatedly expressed its dissatisfaction with this fact, lamenting that it contributes to prolonging the conflict in Ukraine. In particular, for the same reason, in August 2025, the U.S. imposed 25% 'penalty' tariffs on Indian goods (New Delhi is actively buying Russian oil). However, similar "penalty" tariffs against China were not imposed. Most likely, this was due to Beijing agreeing to purchase American energy resources (oil and gas) from Alaska. As for changes in Chinese trade policy towards Russia under American pressure, that would mean a demonstrative loss of "sovereignty" for Beijing, so one should not expect it. Thus, this meeting should be seen as something of a diplomatic pause in the trade wars. The parties are seeking compromises, but they are not abandoning global competition. There is a possibility that by the end of the year, Washington will tighten its tariff policy toward China again.

CONCLUSION

The use of monetary instruments by states to achieve their foreign policy goals is becoming one of the triggers of the emerging new world order. Finance expands the toolkit of traditional means of influence. Just like financial relations in general, monetary relations play a dual role, bringing not only economic but also political benefits to those actors in world politics who have established effective control over them, linked to influencing the behavior of other actors. Due to the fact that not all actors are able to establish control over global monetary relations, a new power hierarchy has formed in the world, consisting of beneficiaries and benefactors, with semi-beneficiaries occupying an intermediate position. This gradually led to the emergence of two opposing trends in the development of the international system of monetary unification and monetary diversification. An actor that imposes its own model of monetary relations on the world strengthens its power position relative to others. In this case, all other actors must implement a monetary policy favorable to it, recognizing its currency, issued without any restrictions, as a sort of collateral basis for their national currencies, a role previously fulfilled by gold [7, p.153]. Thus, for the actor to gain maximum political benefits, it is necessary to achieve monetary unification of the international system, i.e., a monetary policy advantageous to itself.

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STRUCTURAL FEATURES AND DYNAMICS OF KAZAKHSTAN'S EXTERNAL TRADE (2004–2024)

Mehri Khasanovna VOKHIDOVA

Associate Professor, Tashkent State University of Oriental Studies, Uzbekistan
E-mail: mehrivoxidova@gmail.com
ORCID ID: 0000-0003-0809-0269
Irtaza NAWAZ

Senior Lecturer, Tashkent State University of Oriental Studies, Uzbekistan
E-mail: Irtaza.joiya@yahoo.com
ORCID ID: 0009-0004-1794-7740

Abstract

In this article, the authors discuss how the external trade in Kazakhstan developed between 2004 and 2024 based on the increase in trade volumes, export and import structure, geographic concentration, and structural imbalances underlying it. The total turnover in the trade grew about four times, exports rose to US$81.6 billion and US$59.7 billion as a result of the 20 years. This quantitative growth notwithstanding, export structure remained starkly contingent on raw materials (approximately 77-88 percent of exports), and imports were still characterised by machinery, equipment, and consumer goods, which is still symptomatic of technological asymmetry. The importance of geographic concentration and susceptibility to external shocks in response to changes in world energy and commodity prices is highlighted by leading trade partners (Russia, China, Italy). Even though recent years reflect a slight diversification of services (IT, finance, culture) and re-export activity, little structural transformation has occurred. The article talks about the trade policy implications, diversification strategy implications, and structural resilience implications.

Keywords: Kazakhstan; foreign trade; export structure; import composition; trade balance; diversification; raw materials; services export; re-export; trade concentration; Herfindahl–Hirschman Index; economic development; external shocks; trade policy; Central Asia.

INTRODUCTION

External trade is one of the central aspects of economic change in countries with rich resources and middle-income. In the case of Kazakhstan, blessed with much endowment of hydrocarbons and minerals, the ensuing years between 2004 and 2024 have been marked by significant growth in external trade. The numbers on the quantitative growth are astounding: trade turnover (imports + exports) increased not only in 2004 (around US$32.9 billion) but also in 2024 (around US$141.3 billion). During the same time, exports increased by about US$20.1 billion to US$81.6 billion, and imports increased by about US$12.7 billion to US$59.7 billion.

Growth is, however, not an assurance of structural sustainability. In the economies that depend on the export of commodities and are highly dependent on the select few, the growth might conceal the underlying weaknesses. The primary aim of the article is to examine the external trade of Kazakhstan in relation to: (a) growth patterns; (b) form of export-import structure; (c) concentration of export and import partners; (d) phenomenon of services trade and re-export; and (e) policy suggestions towards diversification and resiliency.

Research Context and Literature Review

External trade is also generally accepted as one of the key factors in economic growth, the spread of technology, and structural change in international economics (Krugman et al., 2022). Export diversification, the level of technological sophistication of the goods to be exported, and the involvement of a nation in world value chains are some of the factors that tend to mediate the relationship between

trade and growth. Based on the comparative advantage theory and its dynamic comparative advantage theory developed by Balassa (1985), countries with a natural resource endowment are prone to specialisation in commodities in the initial processes of development, but have to progressively shift to the processing of goods and services in order to achieve sustainable development.

As a post-Soviet transition economy, Kazakhstan had an intensive export structure based on resources as it entered the 2000s. The country's dependence on hydrocarbons (mainly crude oil and gas), ferrous and non-ferrous metals, and mineral resources determined its course of trade. The literature on the resource dependence problem has been presented in the form of the resource curse (Auty, 2001) and the Dutch disease (Corden & Neary, 1982) focusing on the negative structural and institutional implications of commodity booms. These models give an analytical perspective on evaluating Kazakhstan's external trade trends from 2004 to 2024.

A number of empirical studies have examined the performance of Kazakh external trade, but they have used shorter periods or limited fields. As an example, Pomfret (2019) noted that the structure of the exports in Kazakhstan continues to be predominantly mineral, with over 80 per cent of the total exports comprising mineral commodities and less than 10 per cent of manufacturing exports. He claimed that even though there has been a tremendous increase in exports made since 2000, the lack of deep industrialization prevents the integration of Kazakhstan into global value chains.

In the same way, according to the World Bank's report (2021) on the Kazakhstan Country Economic Memorandum, the country's export base is limited to crude oil, copper, uranium, and grain with minimal technological content. The report determined that Kazakhstan's trade performance has been volume and not value performance, and the growth in productivity outside the resource sector is still low (Lall et al., 2022).

Kalyuzhnova (2016) also investigated the impacts of external shocks, especially the fluctuation in oil prices, on Kazakhstan's export revenues and fiscal balance. As shown by her study, in oil boom periods, trade surpluses significantly grow and contract considerably in periods of crisis, indicating pro-cyclical fiscal and external policies. This leads to cyclical dependence that causes instability in the macroeconomy and makes planning difficult.

The trade of Kazakhstan is also to be examined in the context of the Central Asian and the Eurasian economic space in general. Being an original member of the Eurasian Economic Union (EAEU), the Kazakh trade relations with Russia, Belarus, Armenia, and the Kyrgyz state adhere to a customs union government. Research by Vinokurov (2018) and Libman and Shagina (2020) shows that the EAEU has not only led to the liberalisation of trade between the states but also increased Kazakhstan's exposure to Russia's external sanctions and supply-chain risks.

The general trade environment of Central Asia is typified by a two-fold reliance of the region on the export of resources to the international markets, as well as the importation of capital goods and technology from Russia, China, and the European Union. In this respect, Kazakhstan has a strategic transit and logistic location- the geography of this country places it both as a landlocked and transit-locked economy (Alam et al., 2019). The creation of the trans-Eurasian routes (the Trans-Caspian International Transport Route, the China-Europe rail corridor, and the North-South Corridor) has been mentioned, again and again, as a tool for diversifying trade flows and increasing connectivity (ADB, 2020).

It is estimated that Kazakhstan's engagement in such initiatives has increased the export of transport services, but it has yet to be reflected in significant industrial diversification and value addition (solid empirical studies indicate this) (Vinokurov et al., 2023).

The need to have an export diversification has not been a new concept in the policy discourse of Kazakhstan. Both the "Kazakhstan 2050 Strategy" (Nazarbayev, 2012) and the National Development

Plan 2025 focus on the growth of processed and high-value exports, as well as on facilitating the involvement of SMEs in trade. The focus of the programme in terms of diversification is on clusters in metallurgy, petrochemistry, agriculture, and machine-building, which are focused on in the Industrial-Innovative Development Programme 2020-2025.

However, the Anderson et al. (2018) and WorldBank (2017) evaluations indicate that the pace of progress has been slow and disproportionate. Export to non-oils has increased at a modest growth but the total composition of the export is biassed towards commodity. In addition, the coordination of policies in the trade, industrial and innovation sectors is still poor.

At the regional level, Kazakhstan seeks to leverage the Trans-Caspian International Transport Route (Middle Corridor) within China's Belt and Road Initiative (BRI) to enhance connectivity and logistics competitiveness. Empirical assessments (ADB, 2023) indicate that the corridor's efficiency has improved, but logistical costs and border-crossing times remain constraints.

Although various institutional and academic studies exist, few cover the full twenty-year period 2004–2024 with integrated quantitative and qualitative analysis. Earlier works tend to stop around 2016 or 2020 and seldom include the pandemic and post-sanction periods. Moreover, the re-export phenomenon and service-sector expansion have emerged only recently and remain understudied in peer-reviewed literature.

This article, therefore, contributes to the existing body of knowledge by:

i. Providing a comprehensive two-decade analysis (2004–2024) of Kazakhstan's external trade dynamics;
ii. Integrating merchandise and service trade statistics into a unified structural framework;
iii. Applying the Herfindahl–Hirschman Index to evaluate product and partner concentration;
iv. Linking macroeconomic shocks (oil-price fluctuations, COVID-19 pandemic, sanctions) with trade structure evolution; and
v. Discussing the policy implications of re-export growth and the transition toward service-based exports.

In doing so, the study aims to fill an empirical and analytical gap in Central Asian trade research by offering a longitudinal, data-driven overview of Kazakhstan's trade structure, its vulnerabilities, and its evolving integration into regional and global trade systems.

MATERIALS AND METHODS

The data sources are not only official national statistics (e.g., Kazakhstan Statistics Agency), but also international databases (UN COMTRADE, Wits), as well as the series given in the introduction (2004-2024). The most important variables: total trade (turnover), exports, imports, export share, export composition (raw materials; semi-processing goods; finished goods), import composition (consumer goods; intermediate/investment goods), partner country share, and concentration measures (e.g., HHI). Structural shares and growth rates are calculated. It provides descriptive time-series analysis of the growth and structure, identifies key years of inflexion (2008-2009, 2014-2016, 2020), and deciphers imbalances in the structure. The qualitative discussion is another extension of the quantitative results, relying on the commodity price shocks and the geopolitical events.

FINDINGS

The overall external trade of Kazakhstan grew between 2004 and 2024 by approximately US$32.9 billion to approximately US$141.3 billion, approximately four times. Exports stood at US 20.1 billion (61.1 percent export share) and imports at 12.7 billion in the year 2004. The export was US$81.6 billion, imports were US$59.7 billion, and the export share was approximately 57.7 percent by 2024. This

expansion, however, did not follow a straight line: the boom years culminated in 2008 with trade paying US$109 billion (exports). Before the 2009 global financial crisis, it grew to US$71.2 billion but was severely contracted (e.g., exports declined by approximately 39 per cent in 2009). The fall following the 2014 oil-price plummet and once more in the 2020 COVID-19 pandemic show that external commodity price shocks and externalities are a considerable burden. Trade balance was positive during numerous years; trade surplus was the highest in the period of 2011 (US$47.4 billion) and the lowest in 2016 (US$11.4 billion) when the conditions were not the most favourable.

Table 1: Dynamics of Kazakhstan's External Trade, 2004–2024

Year	Total Trade (US$ billion)	Export (US$ billion)	Import (US$ billion)	Export Share (%)	Trade Balance (US$ billion)
2004	**32.9**	**20.1**	**12.7**	**61.1**	**+7.4**
2008	**109.0**	**71.2**	**37.8**	**65.3**	**+33.4**
2011	**125.3**	**86.4**	**38.9**	**68.9**	**+47.5**
2014	**119.8**	**84.0**	**35.8**	**70.1**	**+48.2**
2016	**60.0**	**46.0**	**25.0**	**59.2**	**+21.0**
2020	**82.0**	**47.5**	**34.5**	**57.9**	**+13.0**
2022	**132.7**	**84.6**	**48.1**	**63.8**	**+36.5**
2024	**141.3**	**81.6**	**59.7**	**57.7**	**+21.9**

Source: Based on data from the State Revenue Committee under the Ministry of Finance of the Republic of Kazakhstan.

The composition is still skewed, notwithstanding the dramatic export growth. In 2004, raw materials and primary processing contributed about 84 per cent, increased to 89.4 per cent in 2012, and dropped to approximately 77.5 per cent in 2024. In 2004, semi-finished (intermediate) and finished consumer goods were 10-12 percent and 5 percent, respectively, and in 2024, it is projected at about 9.8 percent. These data indicate that, though an upgrade toward finished goods has been done to some degree, it is at a slow rate, and reliance on raw materials is still high.

Table 2: Composition of Exports by Product Category (%)

Category	2004	2012	2021	2024	Change 2004–2024
Raw and primary commodities	**84.0**	**89.4**	**81.0**	**77.5**	**−6.5**
Intermediate/semi-processed	**11.0**	**10.0**	**10.0**	**12.7**	**+1.7**
Finished/consumer goods	**5.0**	**4.0**	**9.0**	**9.8**	**+4.8**

Source: Based on data from the KDG MF RK

Structural change can also be seen in import composition: In 2004, imports of investment goods (capital and intermediate goods) predominated (81 %), and only a little more than 19 percent of imports were of consumer goods. The share of investment goods decreased to approximately 64% by 2024, with consumer goods increasing to approximately 36%. This reflects a shift in Kazakhstan's import orientation from heavy infrastructure investment-led imports to consumption-driven import growth,

which may signal the maturation of some investment projects but could also reveal rising dependency on consumer imports.

Table 3: Export Concentration and Partner Diversification

Indicator	2004	2012	2018	2024	Benchmark
Herfindahl–Hirschman Index (HHI) for product concentration	**0.36**	**0.40**	**0.35**	**0.34**	**EU-27 = 0.07**
HHI for partner concentration	**0.33**	**0.38**	**0.36**	**0.31**	**Uzbekistan = 0.20**
Top-3 partners' share (Russia + China + Italy) % of exports	**63**	**68**	**61**	**59**	**—**

Source: Based on data from the KDG MF RK

Kazakhstan's major trade partners remain concentrated. The main export partners include Russia, China, and Italy. For example, according to Trading Economics, in 2024, exports were significantly shaped by these three partners. High concentration is confirmed by HHI values of about 0.34–0.40 for export distribution, which are notably higher than, e.g., EU-27 (≈0.07) or Uzbekistan (≈0.17–0.22). This concentration implies vulnerability to partner-specific shocks (e.g., sanctions, demand slowdown).

Kazakhstan has shown some positive trends in services exports: transport services (especially international transit) grew from about US$841 million in 2004 to over US$4 billion in 2024; IT and telecom exports rose from US$61 million in 2004 to US$623 million in 2024; financial services exports increased from US$19 million to US$615 million over the same period. Nonetheless, these figures remain minor relative to total merchandise exports, and the significant growth in some high-tech goods (e.g., electronic components, communications equipment) appears driven largely by re-exports (especially to Russia/Belarus) rather than domestic value-added expansion. For instance, the export of smartphones rose by +8 076 % from 2021 to 2022, and computer hardware rose by +24 200 %. These are extraordinary rates but point to re-export rather than indigenous production scale-up.

Although the growth is quantitative, a number of structural challenges remain: (i) raw-materials export share is too high; (ii) import structure is based on machinery, electronics, consumer goods, which means that the country remains technologically asymmetrical; (iii) the trade partners are highly geographically concentrated; (iv) the country is too sensitive to external commodity price and geopolitical shocks (examples of these phenomena are the oil-price collapse in 2014 and the COVID-19 pandemic in 2020). The implication of these facets is that the trade development in Kazakhstan is still weak and is not diversified.

DISCUSSION AND CONCLUSION

The figures show that the external trade of Kazakhstan was impressive in terms of volumetric growth between 2004 and 2024, with the best years being boom years. However, the structural characteristics demonstrate the perpetuation of dependence on the extraction of raw materials and energy exports, as well as reliance on the imports of technology and consumer goods. The large concentration of partners is one more risk factor: the country is still vulnerable to changes in world trade of commodities and to geopolitical interruptions.

The fact that the import composition is changing, with more weight being placed on investment goods than consumer goods, indicates that domestic demand is gaining momentum. However, that can also be a result of earlier maturing infrastructure investment cycles. The increase in services exports and

IT/finance points to promising diversification; however, absolute volumes are small, and the situation with re-exports makes one question domestic value-added.

To policymakers, the dilemma is to create real structural change: more processing of raw materials at home, more into higher-value-added exports, more partner and product diversifications, more industrialisation down the value chain, and more integration of domestic companies into world value chains. The objective of increasing the export of processed goods by 2030 is, therefore, quite topical.

Besides, one needs to focus on the risk of re-exports: on the one hand, re-exports increase the volumes; however, on the other hand, they do not lead to sustainable industrial growth, and on the third hand, they leave the country vulnerable to sanctions or transport issues. Developing transparency, improving the customs/statistics systems, tracking the value-added content, and diversifying the logistic corridors are necessary.

Also, the larger landscape of transport corridors (e.g., the Middle Corridor between China and Europe) provides Kazakhstan with the potential to capitalise on its geographical position as a transit point. However, transit services must be complemented with industrial upgrading to prevent the lockage of transit services in low-value services.

Structurally, Kazakhstan needs to reduce its export concentration (product and partner) to lower vulnerability. Measures might include promoting non-hydrocarbon exports, bilateral/multilateral trade agreements beyond traditional markets, investment in human capital and manufacturing, and enhancing institutional capacity to support export diversification.

Conclusion

Kazakhstan's external trade expanded substantially over the two decades from 2004 to 2024, but structural transformation has been partial. The dominance of raw-material exports, the reliance on imported technology and consumer goods, and the geographic concentration of trade partners continue to pose risks. While services exports and re-exports have grown rapidly, the new growth is still small in absolute terms and often lacks deep domestic value-added. Moving forward, the country’s strategic aim to expand processed goods exports and diversify its trade must be operationalised with robust industrial, institutional, and trade-policy support. Without that, Kazakhstan’s trade growth may remain vulnerable to external shocks and not translate into broad-based structural resilience.

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Мақала атауы: ҚР-да АЭС салудың экономикалық мүмкіндіктері мен тәуекелдері

Paper title: Economic opportunities and risks of building a Nuclear Power Plant in Kazakhstan

Makale başlığı:

KAZAKISTAN'DA NÜKLEER SANTRAL KURULUMUNUN EKONOMIK FIRSATLARI VE RISKLERI

Автордың аты-жөні: Сапарова Айнура Алпамысовна

Қызметі мен мекемесі:Экономика ғылымдарының кандидаты, қауымдастырылған профессор, Қожа Ахмет Ясауи атындағы Халықаралық Қазақ-Түрік университеті, Қазақстан

E-mail:ainur.saparova@ayu.edu.kz

ORCID ID: 0000 0003 0956 9271

Автордың аты-жөні: Иманбай Әлбина Қалтайқызы

Қызметі мен мекемесі: 4 курс студенті, Қожа Ахмет Ясауи атындағы Халықаралық Қазақ-Түрік университеті, Қазақстан

E-mail:albina.imanbay2022@ayu.edu.kz

ORCID ID: 0009 0005 2789 1469

Ad-Soyad: Aynura Saparova

Ekonomi Bilimleri adayı, Doçent, İktisat, Finans ve Muhasebe Bölümü, Hoca Ahmet Yesevi Uluslararası Kazak-Türk Üniversitesi, Kazakistan

E-posta: ainur.saparova@ayu.edu.kz

ORCID ID: 0000-0003-0956-9271

Ad-Soyad: Albina Imanbay

Öğrenci, İktisat, Finans ve Muhasebe Bölümü, Hoca Ahmet Yesevi Uluslararası Kazak-Türk Üniversitesi, Kazakistan

E-posta: albina.imanbay2022@ayu.edu.kz

ORCID ID: 0009-0005-2789-1469

Name Surname: Aynura Saparova

Affiliation: Candidate of Economic Sciences, Associate Professor, Khoja Akhmet Yassawi International Kazakh-Turkish University, Kazakhstan

E-mail: ainur.saparova@ayu.edu.kz

ORCID ID: 0000-0003-0956-9271

Name Surname: Albina Imanbay

Affiliation: Student, Khoja Akhmet Yassawi International Kazakh-Turkish University, Kazakhstan

E-mail: albina.imanbay2022@ayu.edu.kz

ORCID ID: 0009-0005-2789-1469

Аңдатпа:
Бұл зерттеу Қазақстандағы атом электр станциясы (АЭС) жобасының қаржылық, экономикалық және экологиялық аспектілерін шетелдік тәжірибе мен халық пікірін ескере отырып талдайды. Елдегі энергия тұтынуының артуы және энергия тапшылығы АЭС құрылысының қажеттілігін айқындайды. 2030 жылға қарай электр энергиясына сұраныс 2,7 есе өсуі мүмкін, бұл жобаның маңыздылығын арттырады. Қазақстанның мол уран қоры мен атом энергетикасындағы әлеуеті жобаны қаржылық және экологиялық тұрғыдан тиімді етеді. Алайда бастапқы жоғары шығындар, құрылыс мерзімі, қауіпсіздік мәселелері және халықтың қарсылығы сияқты қиындықтар бар.
Зерттеудің мақсаты – АЭС құрылысының қаржылық және экономикалық мүмкіндіктерін, энергетикалық инфрақұрылымға әсерін және экологиялық тиімділігін бағалау, сондай-ақ аналитикалық сараптама негізінде ұсыныстар жасау.
Кілт сөздер: Атом электр станциясы (АЭС), инвестиция, қаржылық тәуекелдер, уран қоры, энергия тапшылығы, энергетикалық инфрақұрылым, экологиялық тиімділік, мемлекетаралық ынтымақтастық, экспорттық әлеует.

Abstract:

This study examines the financial, economic, and environmental aspects of the nuclear power plant (NPP) project in Kazakhstan, considering international experiences and public opinion. Rising energy demand and shortages in Kazakhstan highlight the necessity of constructing an NPP. By 2030, electricity demand may increase 2.7 times, emphasizing the project's importance. Kazakhstan's abundant uranium reserves and nuclear energy potential make the project financially and environmentally feasible. However, high initial costs, construction timelines, safety issues, and public concerns remain challenges.

The study aims to evaluate the financial and economic feasibility of the NPP, its impact on energy infrastructure, and environmental efficiency, while providing recommendations based on critical analysis.

Keywords: Nuclear Power Plant (NPP), investment, financial risks, uranium reserves, energy shortage, energy infrastructure, environmental efficiency, international cooperation, export potential.

Özet:

Bu çalışma, Kazakistan'daki nükleer enerji santrali (NES) projesinin finansal, ekonomik ve çevresel yönlerini, uluslararası deneyimler ve kamu görüşleri ışığında incelemektedir. Kazakistan'daki artan enerji talebi ve enerji sıkıntısı, NES inşasının gerekliliğini ortaya koymaktadır. 2030 yılına kadar elektrik talebinin 2,7 kat artması, projenin önemini artırmaktadır. Kazakistan'ın zengin uranyum rezervleri ve nükleer enerji potansiyeli, projeyi finansal ve çevresel açıdan uygulanabilir kılmaktadır. Ancak, yüksek başlangıç maliyetleri, inşaat süresi, güvenlik sorunları ve halkın tepkisi gibi zorluklar bulunmaktadır.

Çalışma, NES'in finansal ve ekonomik uygulanabilirliğini, enerji altyapısına etkilerini ve çevresel verimliliğini değerlendirmeyi, ayrıca eleştirel analizler doğrultusunda öneriler sunmayı amaçlamaktadır.

Anahtar Kelimeler: Nükleer Enerji Santrali (NES), yatırım, finansal riskler, uranyum rezervleri, enerji sıkıntısı, enerji altyapısı, çevresel verimlilik, uluslararası iş birliği, ihracat potansiyeli.

Кіріспе

Қазіргі таңда атом электр станцияларын (АЭС) салу мәселесі әлемде және Қазақстанда маңызды әрі өзекті тақырыптардың бірі болып отыр. Атом энергетикасы тарихы күрделі эволюциядан өтіп, индустрияландыру және Екінші дүниежүзілік соғыстың әсерімен дамыған. Дегенмен, халық арасында атом энергетикасына қатысты пікір көбіне теріс болып қалыптасқан.

Әлемдік тәжірибеде АЭС салу 1950–1960 жылдары талқылана бастады. Алайда ядролық қалдықтар мен қауіпсіздікке қатысты күмәндер 1970 жылдары жобаларды тоқтатуға себеп болды. Три-Миль аралы мен Чернобыльдегі апаттар атом энергетикасына деген сенімділікті төмендетті. Дегенмен, энергетикаға сұраныстың артуы атом энергетикасына біртіндеп қайта оралуға алып келді. Қазіргі таңда әлемде 439 атомдық қуат блогы жұмыс істеп тұр, ал 52 жаңа энергоблоктың құрылысы басталу үстінде.

Қазақстан үшін бұл тенденциялар маңызды болып табылады. Елдегі теріс пікірлерге қарамастан, атом энергетикасының экономикалық, экологиялық және энергетикалық әлеуетін елемеу мүмкін емес. Соңғы 50 жылдағы әлем елдерінің энергия тұтынуы адамзат тарихындағы барлық кезеңдерді асып кеткені АЭС салудың тиімділігін көрсететін статистикалық деректердің бірі болып табылады.

Қазақстандағы АЭС жобалары халықаралық деңгейде қарастырылуда. MAGATE халықаралық ұйымы, Ресейдің «Росатом» компаниясы (Түркиядағы АЭС жобаларына да қатысады), сондай-ақ Қытай компаниялары құрылыстың қауіпсіздігі мен қаржылық мәселелерін шешуде маңызды серіктестер болып отыр. АЭС құрылысы үшін сейсмикалық, геологиялық және табиғи-климаттық факторларды ескеру қажет.

Аталған факторларды бағалау негізінде келесі аймақтар АЭС салу үшін ықтимал деп танылуда:

1. Үлкен кенті (Балқаш көлі маңы, Алматы облысы) – Балқаш көліне жақындығы сумен қамтамасыз етуді шешеді, электр энергиясын оңтүстік және орталық аймақтарға таратуға тиімді. Сейсмикалық тұрғыдан тұрақты аймақ ретінде қауіпсіз саналады.

2. Курчатов қаласы (Шығыс Қазақстан облысы) – бұрынғы Семей ядролық полигонына жақын, ядролық зерттеулер инфрақұрылымы мен тәжірибелі мамандар бар. Дегенмен радиоактивті ластану мәселесін ескеріп, қосымша экологиялық зерттеулер қажет.

3. Ақтау қаласы (Маңғыстау облысы) – Кеңес дәуірінде БН-350 реакторы негізінде алғашқы коммерциялық АЭС жұмыс істеген. Каспий теңізіне жақындығы сумен қамтамасыз етуді жеңілдетеді. 2017 жылғы сауалнамаға сәйкес, тұрғындардың 58%-ы АЭС құрылысына қарсы.

4. Шымкент немесе Түркістан аймағы – халық тығыз орналасқан оңтүстік өңірді энергиямен қамтамасыз ету үшін әлеуетті. Инфрақұрылымды дамыту мүмкіндігі бар, алайда сейсмикалық белсенділікті ескере отырып қосымша геологиялық зерттеулер қажет.

Материалдар мен әдістер

1 АЭС құрылысының маңызын саралау үшін әдебиеттерге шолу жасау

Мақалада Қазақстан мен Қытай арасындағы энергетикалық әріптестіктің даму тарихы, қазіргі әл-ақуалы мен болашақтағы ынтымақтастықтары жөнінде талқыланады. Қытай – әлемде мұнай мен газ тұтыну көлемі бойынша АҚШ-тан кейінгі екінші орындағы мемлекет. Ал Қазақстанның ең ірі инвесторы –Қытай. Қазақстан мен Қытайдың бірлескен 3964 кәсіпорындары , 78 компаниясы бар. Олардың басым бөлігі мұнай-газ секторлары. Қытайда жыл сайын қазақстандық мұнайдың 25%-ы өндіріледі. Ақтөбемұнайгаздың 85%-ы, Қаражанбасмұнайдың 50%-ы, ПетроҚазақстанның 67%-ы Қытайға тиесілі.

Қазіргі статистикаға қарайтын болсақ Қытай АЭС-ларына қажетті уранның тек 20%-ын өз өндірісінен шығара алады. Қалған 80%-ын импорттауы қажет, яғни Қытай Қазақстан сияқты уран өндіруші елге тәуелді. «Қазатомпром» мен Қытай компаниялары 2020жылға дейін біте қайнасқан серіктес болып, түрлі келісімдер жасасты. Оның ішінде уранды қайта өңдеу, ядролық отын дайындау және АЭС салу мәселелері де болды.

Әрине, бұл әріптестіктің де қауіптері бар. Бірақ, Қытайдың атом энергетикасына деген қажеттілігі күннен күнге артып келе жатқандығы, бұл ынтымақтастықты күшейттірмесе жауластырмайды. Қазақстан АЭС салыну арқылы әлемдік энергетиканың маңызды ойыншысына айналу мүмкіндігі көп[1].

Мақалада қазіргі таңда жаһандық энергия тапшылығымен күреспесе, алдағы 5 жылда елімізде балама көздерінің жетіспеушілігі болуы мүмкін екендігі зерттеледі. Халықаралық сарапшылардың айтуынша, алдағы 25 жылда энергетикаға деген сұраныс екі есе артатыны көрсетілген. Бұл туралы президентіміз Қасым-Жомарт Тоқаевта өз жолдауында тілге тиек еткен болатын. Сондай-ақ кадр жетпеушілігін айта кетіп, оған кадр дайындау бағдарламасын қарастырады. Қазақстан Республикасы бұл бастаманы 2014жылы қолға алып 2030 жылға дейін қолданысқа енгізетіні жайлы №274 қаулыда бекіткен болатын. Және осындай мүмкіншілікке атом энергиясын бейбіт мақсатта қолдану арқылы ғана жететіндігін анықтаған[2].

Мақалада XXI ғасырда энергетикалық қажеттіліктерді қанағаттандыруда атомдық энергетиканың ерекше мәнге ие екені сарапталған. АЭС-тарда энергия өндіру үшін уран немесе плутоний ядроларының бөліну реакциясы қолданылады, ол үлкен жылу өндіру арқылы электр энергиясына айналады. Бұл реакциялар экологиялық таза болып саналады, бірақ оларды басқару жоғары қауіптерді тудырады. 2011 жылы Жапонияда Фукусима АЭС-інде болған апат қауіпсіздік стандарттарының маңыздылығын көрсетті. Дүниежүзілік ең қуатты АЭС – Касивадзаки-Карива (8 млн кВт) болып табылады. Қазіргі таңда ядролық энергетиканы дамытуда Қытай мен Үндістан белсенді, Қытайда 36 реактор жұмыс істеп, 21 реактор құрылысы жүріп жатыр. Атом энергетикасы тек экологиялық емес, сонымен қатар геосаяси мәселелермен де байланысты. Ядролық технологиялар халықаралық бақылауда болса да, ядролық қару жасау үшін қолданылу мүмкіндігі бар. 1953 жылы АҚШ президенті Дуайт Эйзенхауэр «Атом – бейбітшілік үшін» бағдарламасын ұсынды. 2022 жылғы Ресей–Украина қақтығысы кезінде Запорожье АЭС-іне бірнеше шабуыл жасалып, оның қауіпі тек Украинаға ғана емес, көрші елдерге де қатер төндірді[3].

2 Инвестициялар тарту мен мемлекеттік қолдаудың әсерін Түркия тәжірибесі арқылы бағамдау

Бүгінгі таңда Түркия Республикасында екі атом электр станциясының жобасы бастау алуда. Олар Аккую АЭС және Синоп АЭС. Синоп АЭС-ті 2013жылы Жапониямен бірлесіп жасау туралы келісім жасалған. Ал қазіргі серіктестері Жапония және Франция елдері болып тағайындалған. Жоба 2023жылы басталып, 2030жылы қолданысқа берілу керек болған. Бірақ белгілі мәселелерге байланысты уақытша тоқтатылған. Аккую АЭС-тің бірінші блогы 2025жылы толық іске қосылады. Құрылыс шамамен 2028жылы аяқталады деп күтілуде.

Классикалық тендер әдісімен энергия өндіруге бағытталған атом электр станциясының салынбауы нәтижесінде 2010 жылы 13 қаңтарда Түркия мен Ресей үкіметтері арасында Аккую атом электр станциясы жобасын жүзеге асыратын «Түркиядағы атом электр станциясы нысаны бойынша Ынтымақтастық туралы Бірлескен Декларация» атты келісімге қол қойылады

Аталған келісімге ресми түрде 2010 жылдың 6 қазанында № 27721 Парламент мақұлдағаннан кейін газеттерге жарияланады. Осы келісімдерден кейін Аққую атом электр станциясы жобасы бойынша жұмыстар басталды. Осы келісімге сәйкес, Ресей үкіметі Мерсин провинциясы, Гүлнар ауданы, Аккую жері айналасында әрқайсысы VVER-1200 (AES 2006 дизайны) реакторы типті төрт блоктан тұратын атом электр станциясын салады, оны электр энергиясын өндіру және тасымалдау үшін басқарады. Бұл электр станциясының қызметін жүзеге асыру үшін 100% акциялары Ресейге тиесілі Akkuyu Nükleer AŞ деп аталатын компания құрылды.

Бұл келісімнің маңызды бөлшектері төмендегідей :

- Электр энергиясын сатып алу және сату, электр станциясын жаңғырту, сынау және оған техникалық қызмет көрсету, электр станциясының қызмет ету мерзімі ішінде қосалқы бөлшектермен қамтамасыз ету, электр станциясын физикалық қорғау, ядролық және радиоактивті материалдарды физикалық қорғау, төтенше жағдайларды жою, пайдаланылған отынды тасымалдау , электр стансасын демонтаждау, Түркияға технологияны тасымалдау. Бұл ынтымақтастық мәселелері Түрік тарапына қаржылық ауыртпалық салмай жүзеге асырылады.
- Ресей тарапы жүз пайыздық (100%) үлесі бар акционерлік қоғамды құрады, ол электр станциясының құрылысы мен жұмысын жүзеге асырады (Akkuyu AŞ 15 құрылды) және өндірілген электр энергиясы және электр станциясына иелік етеді. Компаниядағы ресейлік тараптың жалпы үлесі ешқашан елу бір пайыздан (51%) кем болмайды. Электр станцияның бас мердігері «Атомстройэкспорт» АҚ (ASE) болады.
- Ұлттық мүддені қорғау мақсатында, лауазымды басшылар тағайындау, акцияларды бөлу және беру бойынша шектеулер, экономикалық және қауіпсіздік мәселелері бойынша Түрік тарапының келісімі жасау үшін арнайы тұлғалар шақыртылады.
- Жобалық компания жобаны инвестициялаудан бастап құрылыс және пайдалану кезеңіндегі тәуекелдерді сақтандыруға жауапты.
- Компания әрбір блоктан өндірілген электр энергиясын сату үшін ТЕТАŞ компаниясымен сатып алу келісімін жасайды және оның ұзақтығы 15 жыл болады. Осы келісім тоқтатылғаннан кейін жобалық компанияның жылдық таза пайдасының 20% түрік тарапына электр станциясының барлық қондырғыларының қалған қызмет мерзіміне беріледі.
- Электр станциясының бірінші және екінші блоктарында өндірілетін электр энергиясының 70 пайызы, үшінші және төртінші блоктар үшін 30% коммерциялық пайдалану күнінен бастап 15 жыл ішінде 12,35 АҚШ цент/кВтсағ (ҚҚС-сыз) орташа өлшенген бағамен ТЕТАŞ-қа сатылады.
- Бірлік бағасын қалыптастырудағы компоненттер: инвестициялық құн, тұрақты операциялық шығындар, ауыспалы пайдалану құны және отын құны.
- Бірінші блок электр станциясын салуға және пайдалануға барлық қажетті лицензиялар, рұқсаттар, келісімдер мен келісімдер алғаннан кейін 7 жыл ішінде пайдалануға беріледі. Қалған қондырғылар бір жылдан кейін пайдалануға беріледі.

- Электр станциясының құрылысында қолданылатын материалдар мен қызметтер мүмкіндігінше түрік компанияларынан қамтамасыз етіледі.
- Ресей тарапы Түркия азаматтарын электр станциясы туралы тегін оқумен қамтамасыз етеді. Электр станциясын басқару үшін түрік персоналы тағайындалады. Сонымен қатар, жаттығу үшін толық жабдықталған тренажер орнатылады.
- Осы келісім аясында жыл сайын университеттен өткен студенттер арасынан іріктелетін 50 студент Ресейде атом электр станциялары бойынша білім алады және елге оралған кезде Аккую атом электр станциясы жобасына қатысады. . Іріктеу Жобалық компания да, мемлекеттік органдар да анықтайтын критерийлер шеңберінде жүргізіледі. Осы тұрғыда соңғы төрт жылда Ресейге студенттер жіберіліп, олардың оқуы әлі де жалғасуда.
- Түркия жоба компаниясына электр станциясының орнын тегін бөлді.
- Электр станциясын салуға және пайдалануға қажетті қаржыландыруды Ресей компаниясы қамтамасыз етеді.
- Электр станциясының ядролық отынын компания қамтамасыз етеді. Кәсіпорын электр станциясы қалдықтарын басқару және кәдеге жарату міндетін атқаратындықтан, тиісті қаражатқа қажетті төлемдерді төлейтін болады. Сатылған электр энергиясының көлеміне байланысты тиісті қаражат:

-пайдаланылған отын мен радиоактивті отын үшін 0,15 АҚШ цент/кВтсағ
-пайдаланудан шығару үшін 0,15 АҚШ цент/кВт/сағ екі бөлек төлем жасайды.

- Станцияның пайдаланылған отыны бөлек келісімшарт аясында Ресей Федерациясында қайта өңделуі мүмкін.
- Станцияда болуы мүмкін ядролық залал бойынша үшінші тараптардың алдындағы жауапкершілік Түркия қатысушысы болып табылатын немесе болашақта қосылатын халықаралық келісімдер мен ұлттық заңнамаға сәйкес реттеледі.
- Жобаны салу және пайдалану барысында қолданылатын немесе жасалатын барлық зияткерлік меншік құқықтары Росатомға тиесілі.
- Бұл келісім станцияны бөлшектеу процесі толық аяқталғанға дейін күшінде болады.

Аккую Атом Электр Станциясы жобасы Түркиядағы алғашқы атом электр станциясы болып табылады. Осы жоба барысында алынған тәжірибе мен жетістіктер болашақта іске асырылатын басқа атом электр станциялары жобалары үшін маңызды болып табылады[4].

3 АЭС салудың мүмкіндіктері мен тәуекелдерін SWOT талдау арқылы түсіндіру

Қазақстанда АЭС салу мәселесі елдің энергетикалық қауіпсіздігін қамтамасыз ету, экологиялық проблемаларды шешу және экономикалық дамуды ынталандыру тұрғысынан қарастырылуда. Елдегі мол уран қоры, өсіп келе жатқан энергия сұранысы және экологиялық стандарттарға сәйкес энергия өндіру қажеттілігі бұл бастаманы өзекті етеді. Сонымен қатар, бұл бағытта белгілі бір тәуекелдер мен қиындықтар бар. SWOT талдауы АЭС салудың мүмкіндіктері мен шектеулерін жан-жақты бағалауға мүмкіндік береді.

Күшті жақтары:

1. Қазақстанның жеткілікті уран қоры.

Қазақстан уран қоры бойынша әлемде 2-орында, бұл АЭС-ты отынмен қамтамасыз етуде өзін-өзі толықтай жаба алатын мүмкіндікті көрсетеді. Уран өндірісі дамыған және экспорттық әлеуеті жоғары. 2022жылы әлемдік нарықтағы уранның 43пайызын экспорттайды.Бұл тұрғыда көп ел

Қазақстанға қызығары сөзсіз. Әсіресе Қытай, Ресей, Франция сияқты алпауыт елдер мен көршілес мемлекеттер.

2. Энергетикалық тәуелсіздік пентиімділік.

- ҚР Президенті Қасым-Жомарт Тоқаевтың айтуынша, 2030 жылға қарай Қазақстанда электр энергиясының тапшылығы сезілуі мүмкін. Ал АЭС көмегімен энергетикалық қажеттіліктерді толығымен шешуге болады.

- Қазақстан импорттық электр энергиясына тәуелділікті азайтады. Ядролық отынның энергия сыйымдылығы өте жоғары және көмір мен газ станцияларына қарағанда тиімдірек. Мысалы, 1 кг уран шамамен 50 тонна көмір немесе 40 000литр мұнай өндіретін энергиямен тең.

3. Экологиялық таза энергия көзі.

- АЭС парниктік газдарды (CO_2, CH_4) шығармайды, бұл климаттың өзгеруімен күресуде маңызды рөл атқарады. Бұл Қазақстан Париж келісімі бойынша қабылдаған міндеттемелерді орындауға мүмкіндік береді.

- Қазақстанның 2030 жылға дейінгі төмен көміртекті даму стратегиясына сәйкес келеді. Яғни, көмір станцияларына тәуелдікті азайтады.

4. Ұзақ мерзімді пайдалану.

- АЭС-тің қызмет ету мерзімі 40-60 жылды құрайды, бұл инвестицияның және энергия өндірісінің ұзақ мерзімді тиімділігін қамтамасыз етеді.

5. Экономикалық және әлеуметтік даму.

- АЭС құрылысы инфрақұрылымды дамытуға, жұмыс орындарын ашуға және ғылыми-зерттеу жұмыстарын жүргізуге жағдай жасайды. Мәселен, АЭС құрылысы 10 000-нан аса жаңа жұмыс орындарын ашуға мүмкіндік береді деп жоспарлануда. АЭС өндірген электр энергиясының өзіндік құны ұзақ мерзімде төмен болады.

Әлсіз жақтары :

1. Жоғары қаржылық шығындар.

- АЭС құрылысының құны 5-10 миллиард АҚШ долларына жетуі мүмкін. Бұл Қазақстанның мемлекеттік бюджетіне үлкен салмақ түсіреді.

- Ұзақ құрылыс мерзімі (8-12 жыл) экономикалық тұрақтылыққа әсер етуі мүмкін. Және жобаның тиімділігін кешіктіреді.

2. Қауіпсіздік мәселелері.

- Чернобыль (1986) және Фукусима (2011) апаттарының тәжірибесі халық арасында қауіпсіздікке қатысты сенімсіздік тудырады.

- АЭС-ты қауіпсіз пайдалану үшін жоғары деңгейдегі техникалық және кәсіби мамандар қажет. Қазіргі таңда білікті мамандар тапшылығы бары сөзсіз.

3. Радиоактивті қалдықтарды сақтау.

- Радиоактивті қалдықтарды сақтау мен жою ұзақ мерзімді шешімдер мен үлкен қаржылық шығындарды талап етеді. Ал бұл мәселелер өз шешімін әлі күнге табылмаған. Ол ұзақ мерзімді

экологиялық және технологиялық қиындықтарды тудырады. Қазақстанда мұндай инфрақұрылым әлі толықтай қалыптаспаған.

4. Қоғамдық сенімнің төмендігі.

- АЭС салуға қатысты халықтың 40%-ға жуығы қарсы пікір білдіруде, бұл әлеуметтік қарсылыққа әкелуі мүмкін.

- Халық арасында ақпараттандыру деңгейінің жеткіліксіздігі қарсылықты күшейтуі мүмкін.

Мүмкіндіктер :

1. Энергия тапшылығын жою.

- 2030 жылға қарай Қазақстанда энергия тапшылығы 1,3 ГВт-қа жетуі мүмкін, бұл қазіргіден сұраныстың 2,7есе артуы. АЭС бұл тапшылықты толығымен жоюға көмектеседі. Импорттық энергияға тәуелділікті азайтады.

2. Инвестициялар тарту.

- Ресейдің «Росатом», Францияның «EDF», АҚШ-тың «NuScale» және Қытайдың ұлттық атом корпорациялары сияқты халықаралық корпорациялармен серіктестік орнату арқылы жобаны қаржыландыруға және технологиямен жабдықталуға мүмкіндік бар.

3. Экспорттық әлеует.

- Қазақстанда өндірілген электр энергиясын Қытай, Ресей, Орта Азия елдеріне экспорттау арқылы елдің энергетикалық әлеуетін арттыруға болады.

- Уран экспортын одан әрі дамытуға мүмкіндік береді.

4. Технологиялық даму.

- Атом энергетикасы саласында жаңа технологиялар енгізу және халықаралық тәжірибе алу мүмкіндігі.

- Қазақстан ядролық отынды қайта өңдеу және АЭС-ке қызмет көрсету саласында аймақтық көшбасшыға айнала алады.

5. Халықаралық міндеттемелерді орындау.

- Климаттың өзгеруімен күрес жөніндегі Париж келісіміне сәйкес, Қазақстан парниктік газдарды азайту бойынша міндеттемелерін орындау мүмкіндігіне ие болады.

Қауіп-қатерлер :

1. Техногендік апаттар.

- Ядролық апаттар экологиялық және әлеуметтік салдарға алып келуі мүмкін. Фукусима апаты (2011) АЭС-ке деген сенімнің төмендеуіне ықпал етті.

- Табиғи апаттар (жер сілкінісі, су тасқыны) қауіпсіздікке қосымша тәуекел тудырады.

2. Халықаралық немесе геосаяси қысым.

- Ядролық отын өндірісі немесе экспорт бойынша Қазақстан халықаралық бақылауға және санкцияларға тап болуы мүмкін.

- Геосаяси жағдайлар, мысалы, Ресей немесе Қытаймен қатынастардың күрделенуі жобаға әсер етуі мүмкін.

3. Экологиялық проблемалардың ушығуы.

- Радиоактивті қалдықтарды қауіпсіз сақтау мен жою мәселесі шешілмесе, экологиялық проблемалар туындауы мүмкін.

- Бұл проблема елдегі экологиялық ахуалға кері әсерін тигізуі мүмкін. Ал Қазақстандағы экологиялық жағдайдың нашарлауы халықаралық қауымдастық тарапынан жасалатын қысымға алып келуі мүмкін.

4. Теріс пікірлер қақтығысы.

- Халықаралық тәжірибе көрсеткендей, АЭС салуға қарсы пікірлер немесе әлеуметтік және саяси қысым жобаны іске асыру мерзімін ұзартуы мүмкін. Мәселен, Маңғыстау облысы халқының 58 пайызы құрылысқа қарсы екендігін деректер дәлелдеген.

Зерттеу нәтижелері

Еліміздегі референдумнан кейін халқымыздың пікірі сансаққа бөлінгені барлығымызға аян. Сол себепті халық көзқарасын анықтау үшін арнайы сауалнама жасап, таратқан болатынбыз. Сауалнамаға қысқа уақыт аралығында қазақстандық 100 тұлға қатысқан болатын. Бұл сауалнама анонимді түрде жүргізілді, қатысқан жандарға рақмет айта отырып барынша шынайы түрде жүргізілді деп санаймыз.

Осындай маңызды сауалнамаға қатысқан жандардың жасын білгенді дұрыс деп есептедік.Нәтижесінде 14-25жас аралығында 70адам, 25-35жас аралығында 12 адам, 35-50 жас аралығында 13 адам және 50-60 жас аралығында 5 адам қатысқан.Бұл жерден жастар тарапының белсенді екендігін байқауға болады.

Азаматтардың тұрғылықты мекенжайын біле отырып АЭС –тің өз туған жерінде салуға қалай қарайтындығын білгіміз келді. Қорытындысында Солтүстіктен 5адам, Оңтүстіктен 74 адам, Батыстан 10 адам, Орталықтан 5адам, Шығыстан 6 адам қатысқаны анықталды. Сауалнамаға қатысушылардың білім деңгейі бойынша орта мектеп бітіргендер саны 8 тұлға, бакалавриат студенттері 73 тұлға, магистратура студенттері 15 тұлға, докторантура студенті 4 тұлға болған болатын.

Сауалнамаға қатысқан жандардың 45-і білім беру, 18-і экономика, 9-ы денсаулық сақтау, 3-еуі ауыл шаруашылық, 3-еуі ақпараттық технология, 6-сы сауда және кәсіпкерлік, 3-еуі дизайн, 1-

еуі әскери сала, 3-еуі құқық саласы, 5-еуі экология және 4-еуі инженерия саласында қызмет ететін және қазіргі таңда сол сала бойынша жұмыс жасап жатқан азаматтар болды.

Референдумға респонденттердің 58-і қатысқан, 42-сі қатыспаған болды. Бұл көрсеткіш жастардың бұндай мәселерге бей-жай қарамайтындығына қатысты.Бұл жандардың АЭС салуға көзқарасын білмек мақсатта сауал қойған болатынбыз. 11 азамат толық қолдайтындығын, 36 азамат қолдайтындығын, бірақ қауіптерді ескеру қажеттігін, 37 азамат қарсы екендігін, 16 азамат нақты пікірім жоқ деп жауап берген.

АЭС-тің салыну аймағы туралы пікірлерін сұраған болатынбыз. Олардың жауаптарының көпшілігі сулы аймақтарда, біршамасы қалалардан тысқары, адамдар аз қоныстанған аудандарды ұсынған. Сонымен қатар мамандар белгілеген жерлер, еш жерге салынбасын қарсымын, нақты пікірім жоқ сынды жауаптарда өте көп қайталанған болатын.

Сонымен қатар, қазақстандықтардың бұл жоба жайында қаншалықты ақпараттанғанын білу үшін сауал қойған болатынбыз. Бұл сауалға 15 адам ешқандай ақпаратпен таныс емес екенін, 67 адам орташа ақпараттанғанын, 15 адам толық білетіндігін бөліскен болатын. АЭС салуға серіктес ретінде халық көретін елдерді анықтағымыз келді. Көкейтесті сұрағымызға 15 жан Ресей, 16 жан Франция, 36 жан Қытай, 1 жан Германия, 2жан Жапония деп жауап берді. Сонымен қатар, 8 жан нақты пікірім жоқ десе, 6 жан қарсымын деп пікір білдірген.

Бұл жоба салынған соң Қазақстанды күтетін артықшылықтар халық шешімі бойынша былай топтастырылды. Нәтижесінде экономикалық тиімділік 11%, энергия тапшылығын жою 48%, экологиялық тазалық 18%, технологиялық жетістіктер 22%, энергияның төмен құны 29%, жаңа жұмыс орындарын құру 31%, АЭС салуды қолдамаймын 11% .

Қауым арасында АЭС салу туралы қандай бағыттағы тұжырым барын білмекке сұрақ қойдық. Ақырында, пікірлер төртке бөлінді десек болады. Бірі, оң пікірде қолдау көрсете отырып артықшылықтарды тізіп жазса. Келесі тарап, теріс пікірлер естігенін айтады. Мәселен, Чернобыльдегі және Фукусимадағы жарылыстарды айта отырып апатты жағдайлар болса, халықтың денсаулығына әсер беретіндігін атап өткен. Және екі тарапты да пікірлермен сусындаған жандардың бар екендігін көреміз. Соңғы жақ дәл қазіргі уақытта бұл тақырыпқа қызықпайтындығын, ештеңе естімегенін және уақытында көппен бірге не болса да бірге көретіндігін жазған болатын.

Қорытынды ретінде еліміздің әр тұлғасынан Аэс қауіпсіздігін қамтамасыз ету үшін қандай шаралар маңызды деп ойлайтындығын ұсыныс ретінде жазуын сұрадық. Көпшілігі кадр тапшылығы болып қалса да жұмысқа тек білікті мамандардың қабылдануын қалаған екен. АЭС-ті дұрыс аймақтан салу керектігін және қолдан келген барлық мүмкіншіліктерді пайдалану керектігін көрсеткен. Жақсы материалдар мен сапалы технологиялар, сигнализатциялар қойылуын талап етсе. Бірі, АЭС саласында жемқорлық жасаған тұлғалар заңның ең қатал түрімен жазаланатынын жариялап, үкіметтің сақтық және жауапкершілік танытуын сұраған жандар да болды. Менің ойымша, ең маңызды ұсыныс ретінде халықты ауызбіршілікке шақырып, үгіт насихат шараларын қолдану керектігі жайында пікір білдірген тұлғалар да табылды[5].

Қорытынды

Зерттеу нәтижелері көрсеткендей, қазіргі таңда атом электр энергиясына деген сұраныс әлемде және Қазақстанда тұрақты түрде артып келеді. АЭС технологияларының экологиялық тиімділігі «жасыл энергия» саясатына сәйкес келетіндіктен, әлемдік көшбасшы елдер осы салаға ерекше қызығушылық танытып, ниетті мемлекеттерге қаржылай қолдау көрсетуде.

Қазіргі таңда Қазақстанда АЭС салу жобасына төрт мемлекет қызығушылық білдіруде: Қытай, Ресей, Оңтүстік Корея және Франция.

Францияда Électricité de France (EDF) компаниясы 56 энергоблогы бар жалпы қуаты 61 370 МВт болатын АЭС-терді іске қосқан және толықтай мемлекет меншігінде. EDF компаниясының APR-1200 реакторы Ұлыбританиядағы АЭС құрылысына қолданылған.

Оңтүстік Кореяның Korea Hydro & Nuclear Power (KHNP) компаниясы APR-1400 реакторын ұсынады. Бұл технология Біріккен Араб Әмірліктеріндегі «Барака» АЭС құрылысына пайдаланылған және аймақтағы геосаяси тәуекелге қарамастан, тиімділік көрсеткен. KHNP компаниясы өз елінде 26 АЭС энергоблоктарын іске қосқан.

Қытай China National Nuclear Corporation (CNNC) компаниясы HPR-1000 реакторын ұсынады. Бұл технология бойынша Пәкістанда АЭС салынған және CNNC энергоблоктары ұзақ мерзімді жұмыс істеу сапасымен ерекшеленеді. Қазіргі таңда компания шет елдерде 15 энергоблок, өз нарығында 55 энергоблок өндірген.

Ресей «Росатом» мемлекеттік корпорациясы ВВЭР-1000 және 1200 реакторларын ұсына отырып, әлемдік жобалар портфелі бойынша 1-орынды иеленеді. Қазіргі таңда Ресей Түркияда, Бангладеште және Мысырда АЭС жобаларын жүзеге асыруда. Оның ішінде Түркиядағы АЭС-ті толықтай өз қаржысы есебінен салуы әлемдік тәжірибеде алғаш болып есептеледі.

Зерттеу қорытындысы бойынша Қазақстан үшін төмендегідей ұсыныстар жасалғымыз келеді:

1. Қоғамның пікірін өзгерту мақсатында АЭС жобаларының экологиялық және экономикалық артықшылықтарын халыққа түсіндіру.

2. Кадр даярлау бағдарламасын тиімді жүзеге асыру үшін жастарды қысқа мерзімде біліктіліктерін арттыруға бағыттау және халықаралық тәжірибеден өту мүмкіндігін қамтамасыз ету.

3. АЭС құрылысына ыңғайлы жерді таңдау барысында қауіпсіздік талаптарын қатаң сақтау.

4. Радиоактив қалдықтарды сақтау мен өңдеудің халықаралық тәжірибесін зерттеу және ең қауіпсіз жүйелерді енгізу.

5. АЭС жобасы бойынша төрт ұсыныс жасаған елдің ішінен Қазақстанға ең тиімді, ұзақ мерзімді және қауіпсіз серіктесті таңдауға басымдық беру. Қазіргі зерттеу бойынша, Оңтүстік Кореямен жасалған келіссөздер ең перспективалы болып табылады.

Осылайша, Қазақстан АЭС салу арқылы энергетикалық қауіпсіздікті қамтамасыз етіп, әлемдік энергетикалық нарықта стратегиялық маңызды ойыншыға айналу мүмкіндігіне ие болады[6].

Алғыс айту

Осындай ауқымды байқауға қатысуға мүмкіндік берген конференция ұйымдастырушыларына, сондай-ақ сауалнамаға қатысқан барлық респонденттер мен университет ұжымына зерттеудің жүзеге асуына қосқан елеулі үлестері үшін шынайы алғысымызды білдіреміз.

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ÖLKƏNİN RƏQABƏTQABİLİYYƏTLİLİYİNİN İQTİSADİ TƏHLÜKƏSİZLİYƏ TƏSİRİ

Aslanov Habil Hüseyn oğlu

Bakı Dövlət Universiteti

Dünya iqtisadiyyatı kafedrasının dosenti

dosent1966@ mail.ru

Xülasə: *Məqalədə ölkənin rəqabətqabiliyyətlilik səviyyəsinin iqtisadi təhlükəsizliyə təsir mexanizmləri araşdırılır. Qlobal iqtisadi sistemdə artan rəqabət, texnoloji yeniliklər və ticarət asılılığının dərinləşməsi milli iqtisadiyyatların dayanıqlığını müəyyən edən əsas amillərdəndir. Tədqiqat göstərir ki, innovasiya potensialı, istehsal səmərəliliyi və ixrac imkanlarının genişlənməsi iqtisadi təhlükəsizliyin möhkəmlənməsinə mühüm töhfə verir və makroiqtisadi sabitliyi uzunmüddətli perspektivdə dəstəkləyir.*

Açar sözlər: *rəqabətqabiliyyətlilik, iqtisadi təhlükəsizlik, innovasiya, ixrac potensialı, makroiqtisadi sabitlik, qlobal iqtisadiyyat, dayanıqlı inkişaf*

Giriş.

Müasir qlobal iqtisadi mühitdə ölkələrin rəqabətqabiliyyətlilik səviyyəsi onların iqtisadi təhlükəsizliyinin əsas determinantlarından biri kimi qiymətləndirilir. Rəqabətqabiliyyətlilik yalnız məhsul və xidmətlərin bazar dəyəri ilə ölçülmür, eyni zamanda dövlətin institusional dayanıqlığı, texnoloji innovasiya potensialı və makroiqtisadi sabitliyi ilə sıx əlaqəlidir. Beynəlxalq İdarəetmə İnkişafı İnstitutunun (IMD) 2023-cü il hesabatına əsasən, yüksək rəqabətqabiliyyət indeksinə malik ölkələrdə ÜDM artım tempi orta hesabla 1,8 dəfə yüksək olmuşdur. Bu fakt göstərir ki, rəqabət üstünlüyü iqtisadi təhlükəsizliyin davamlı təminatında mühüm strateji amildir. Rəqabətqabiliyyət anlayışı geniş mənada ölkənin iqtisadiyyatının beynəlxalq bazarlarda dayanıqlılıq səviyyəsini əks etdirir. Bu baxımdan, iqtisadi təhlükəsizlik anlayışı ilə onun qarşılıqlı təsiri kompleks və çoxsəviyyəlidir. İqtisadi təhlükəsizlik milli maraqların qorunması, iqtisadi müstəqilliyin təmin edilməsi və sosial rifahın davamlı inkişafı üçün vacib olan sistemli göstəriciləri özündə birləşdirir. Rəqabətqabiliyyətliliyin azalması maliyyə asılılığını gücləndirir, iqtisadi təhlükəsizliyin struktur dayaqlarını zəiflədir və dövlətin sosial sabitliyinə mənfi təsir göstərir.

Qlobal iqtisadi inteqrasiya dövründə ölkələrin rəqabətqabiliyyətlilik səviyyəsi birbaşa beynəlxalq iqtisadi təhlükəsizlik indekslərinə təsir edir. Məsələn, 2023-cü ildə Davos Dünya İqtisadi Forumu tərəfindən yayımlanan "Global Competitiveness Report" sənədində qeyd olunmuşdur ki, yüksək rəqabətqabiliyyət səviyyəsinə malik ölkələrdə iqtisadi şoklara qarşı dayanıqlılıq göstəricisi 0,74 korrelyasiya dərəcəsi ilə müsbət əlaqələnir. Bu əlaqə, iqtisadi təhlükəsizliyin yalnız müdafiə və fiskal siyasət məsələsi olmadığını, həm də istehsal, innovasiya və təhsil sistemlərinin sinerjisi ilə formalaşdığını göstərir[1, s. 52].

Azərbaycanın son illərdə həyata keçirdiyi iqtisadi islahatlar rəqabətqabiliyyətliliyin artırılmasına yönəlmiş strateji yanaşmanın nəticəsidir. Dövlət Statistika Komitəsinin məlumatlarına görə, 2022–2024-cü illərdə qeyri-neft ixracı 47% artmış, bu da milli iqtisadi təhlükəsizliyin diversifikasiya potensialını gücləndirmişdir. İqtisadiyyat Nazirliyinin "Azərbaycan 2030: Dayanıqlı İnkişaf Strategiyası" sənədində də qeyd edilir ki, rəqabətqabiliyyətli iqtisadi sistem formalaşdırmaq milli təhlükəsizliyin əsas dayaqlarından biridir [7]. Rəqabətqabiliyyətliliyin iqtisadi təhlükəsizliyə təsiri həm mikro, həm də makro səviyyədə təzahür edir. Mikroiqtisadi səviyyədə bu, müəssisələrin innovativ fəaliyyətə meyli, istehsal səmərəliliyi və bazar çevikliyi ilə müəyyən olunur. Makro səviyyədə isə dövlətin fiskal sabitliyi, xarici ticarət balansı və valyuta ehtiyatları kimi göstəricilərlə ölçülür. Qlobal

rəqabət şəraitində milli iqtisadi təhlükəsizlik yalnız təbii resurslara deyil, həm də intellektual kapitala əsaslanır. Texnoloji tərəqqi, rəqəmsallaşma və qlobal təchizat zəncirlərinin transformasiyası iqtisadi təhlükəsizliyin yeni ölçülərini formalaşdırır. Məsələn, 2021–2023-cü illər ərzində qlobal texnoloji ixrac 18% artmış, bu da rəqabətqabiliyyətlilik indikatorlarında yüksək texnologiya sektorunun rolunu artırmışdır. Bu tendensiya ölkələrin iqtisadi müstəqillik səviyyəsini müəyyən edən əsas faktorlardan birinə çevrilmişdir.

Azərbaycan iqtisadiyyatında rəqabətqabiliyyətliliyin artması enerji sektorundan asılılığın azaldılması və innovativ iqtisadi modelin təşviqi ilə bağlıdır. "Made in Azerbaijan" proqramı çərçivəsində həyata keçirilən ixrac təşəbbüsləri milli brendlərin beynəlxalq bazarda mövqeyini möhkəmləndirmişdir. Bununla yanaşı, kiçik və orta sahibkarlığın (KOB) dəstəklənməsi rəqabət bazasının genişlənməsinə səbəb olmuşdur. İqtisadi təhlükəsizliyin qorunması üçün dövlət siyasəti yalnız makroiqtisadi sabitliklə məhdudlaşmır, həm də sosial ədalət, gəlir bölgüsü və məşğulluq məsələlərini əhatə edir. Əgər iqtisadi artım sosial inklüzivliklə müşayiət olunmursa, bu, uzunmüddətli təhlükəsizlik risklərini artırır. Bu səbəbdən, rəqabətqabiliyyətlilik siyasətləri sosial-iqtisadi dayanıqlılıqla uzlaşdırılmalıdır [2, s. 78].

Eyni zamanda, beynəlxalq təcrübə göstərir ki, rəqabətqabiliyyətlilik və iqtisadi təhlükəsizlik qarşılıqlı gücləndirici təsir yaradır. Məsələn, Cənubi Koreyada innovasiya xərclərinin ÜDM-də payı 4,9% təşkil edir, bu da ölkənin qlobal rəqabət indeksində ilk onluqda qərarlaşmasını təmin etmişdir (OECD, 2023). Bu model göstərir ki, innovasiya və texnologiya investisiyaları yalnız iqtisadi artımı deyil, həm də milli təhlükəsizlik infrastrukturunu dəstəkləyir.

Azərbaycanın regional iqtisadi təhlükəsizlik sistemində rolu da artmaqdadır. Xüsusilə Zəngəzur dəhlizinin açılması və logistika marşrutlarının yenidən formalaşdırılması ölkənin strateji rəqabət üstünlüyünü gücləndirəcək. Bu infrastruktur təşəbbüsləri regionun enerji təhlükəsizliyi və ticarət sabitliyi baxımından da əhəmiyyət daşıyır. Rəqabətqabiliyyətliliyin idarə olunması yalnız iqtisadi göstəricilərin optimallaşdırılması deyil, həm də milli idarəetmə keyfiyyətinin yüksəldilməsini tələb edir. Dünya Bankının "Governance Indicators" hesabatına əsasən, institusional səmərəlilik indeksi yüksək olan ölkələrdə iqtisadi təhlükəsizlik riskləri 27% aşağı olur. Bu, idarəetmənin keyfiyyəti ilə təhlükəsizlik arasındakı birbaşa əlaqəni təsdiqləyir.

Beləliklə, rəqabətqabiliyyətlilik və iqtisadi təhlükəsizlik bir-birini tamamlayan strateji anlayışlardır. Rəqabətqabiliyyətlilik olmadan iqtisadi təhlükəsizlik dinamik şəkildə qoruna bilmir, təhlükəsizlik olmadan isə rəqabət üstünlüyü uzunmüddətli ola bilməz. Bu qarşılıqlı əlaqənin tədqiqi, ölkələrin iqtisadi siyasətlərinin effektivliyinin qiymətləndirilməsi baxımından mühüm elmi və praktiki əhəmiyyət daşıyır [3, s. 119].

Metodologiya.

Bu tədqiqatın metodoloji çərçivəsi ölkənin rəqabətqabiliyyətlilik göstəriciləri ilə iqtisadi təhlükəsizlik parametrləri arasındakı qarşılıqlı əlaqənin empirik əsasda öyrənilməsinə əsaslanır. Metodologiya həm **kəmiyyət**, həm də **keyfiyyət** analizlərinə söykənir və məqsəd – milli və beynəlxalq səviyyədə rəqabətqabiliyyətliliyin iqtisadi təhlükəsizliyə təsir mexanizmlərini müəyyənləşdirməkdir.

İlkin mərhələdə Dünya Bankı, OECD, IMD və Davos Dünya İqtisadi Forumunun məlumat bazalarından 2021–2024-cü illəri əhatə edən statistik göstəricilər toplanmışdır. Bu məlumatlar əsasında ÜDM artımı, ixrac strukturu, xarici borc səviyyəsi, valyuta ehtiyatları və innovasiya xərcləri kimi indikatorlar üzrə müqayisəli təhlil aparılmışdır. Azərbaycan, Türkiyə, Polşa və Cənubi Koreya kimi iqtisadi cəhətdən fərqli, lakin struktur baxımından müqayisə oluna bilən ölkələr nümunə kimi götürülmüşdür. Tədqiqatda **müqayisəli analitik yanaşma** tətbiq olunmuşdur. Bu yanaşma vasitəsilə hər bir ölkənin rəqabətqabiliyyətlilik indeksi (Global Competitiveness Index – GCI) və iqtisadi təhlükəsizlik indeksi (Economic Security Index – ESI) üzrə dinamik dəyişikliklər müqayisə edilmişdir. Empirik nəticələr

göstərmişdir ki, bu iki göstərici arasında statistik baxımdan əhəmiyyətli müsbət korrelyasiya mövcuddur.

İstifadə olunan ikinci metod **institusional analiz** olmuşdur. Bu analiz çərçivəsində milli iqtisadi təhlükəsizliyə təsir edən əsas institusional amillər – dövlət idarəetməsi keyfiyyəti, qanunvericilik şəffaflığı və antikorrupsiya siyasəti – qiymətləndirilmişdir. Məsələn, Azərbaycan üzrə "World Governance Indicators" məlumatlarına görə, 2023-cü ildə hökumət səmərəliliyi göstəricisi 0.11 bənd artmışdır. Bu meyl rəqabətqabiliyyətliliyin institusional dayaqlarını gücləndirən mühüm göstəricidir.

Tədqiqatda həmçinin **SWOT analizi** tətbiq edilmişdir. Güclü tərəflər kimi Azərbaycanın enerji resursları, coğrafi mövqeyi və logistik potensialı müəyyən olunmuşdur. Zəif tərəflər isə texnoloji asılılıq və ixrac diversifikasiyasının hələ də məhdud olması ilə bağlıdır. İmkanlar bölməsində regional nəqliyyat dəhlizləri və beynəlxalq ticarət təşəbbüsləri ön plana çıxır, təhdidlər isə qlobal enerji bazarındakı volatillik və xarici ticarət konyunkturası ilə əlaqələndirilir.

Metodoloji prosesdə **panel regresiya modeli** də istifadə edilmişdir. Modelin məqsədi ölkələrin GCI (rəqabətqabiliyyətlilik) və ESI (iqtisadi təhlükəsizlik) göstəriciləri arasında zaman kəsiyindəki dəyişiklikləri izah etməkdir. Analiz nəticəsində müəyyən edilmişdir ki, GCI göstəricisində 1 bəndlik artım ESI indeksində orta hesabla 0.42 bəndlik yüksəliş yaradır. Bu, rəqabətqabiliyyətlilik və təhlükəsizlik arasındakı qarşılıqlı gücləndirici təsirin empirik sübutudur.

Metodologiyanın elmi dəyəri ondan ibarətdir ki, bu tədqiqat rəqabətqabiliyyətlilik anlayışını yalnız iqtisadi artım indikatoru kimi deyil, həm də milli təhlükəsizliyin fundamental elementi kimi nəzərdən keçirir. Beləliklə, metodoloji yanaşma həm nəzəri, həm də tətbiqi səviyyədə yeni elmi arqumentlər formalaşdırmağa imkan verir.

Nəticə olaraq, bu metodoloji baza növbəti bölmədə təqdim olunacaq empirik təhlillər üçün elmi əsas yaradır və ölkələrin rəqabətqabiliyyətlilik siyasətlərinin iqtisadi təhlükəsizliklə necə əlaqələndiyini ölçməyə şərait yaradır [4, s. 51].

Təhlil və müzakirə.

Rəqabətqabiliyyətlilik və iqtisadi təhlükəsizlik arasındakı qarşılıqlı əlaqə müasir iqtisadi siyasətin strateji əsasını təşkil edir. Beynəlxalq təcrübə göstərir ki, bu iki anlayışın uzlaşdırılması dövlətlərin iqtisadi suverenliyinin və sosial rifahının qorunması baxımından həlledici əhəmiyyət daşıyır. Qlobal Rəqabət İndeksi (GCI) və İqtisadi Təhlükəsizlik İndeksi (ESI) üzrə müqayisəli göstəricilər göstərir ki, rəqabətqabiliyyətlilik səviyyəsi yüksəldikcə, iqtisadi sabitlik riskləri azalır.

Aşağıdakı cədvəl seçilmiş dörd ölkə üzrə 2022–2024-cü illərin müqayisəli məlumatlarını əks etdirir:

Cədvəl 1.

Seçilmiş ölkələr üzrə rəqabətqabiliyyətlilik və iqtisadi təhlükəsizlik göstəricilərinin müqayisəsi

Ölkələr	GCI (2024)	ESI (2024)	ÜDM Artımı (%)	İnnovasiya Xərcləri (% ÜDM)
Azərbaycan	57.2	61.5	3.4	1.2
Türkiyə	55.6	63.1	4.2	1.6
Polşa	60.5	69.8	2.8	2.4

Ölkələr	GCI (2024)	ESI (2024)	ÜDM Artımı (%)	İnnovasiya Xərcləri (% ÜDM)
Cənubi Koreya	75.7	80.2	2.2	4.9

Mənbə: IMD (2024), World Bank (2023), OECD (2023).

Cədvəldən göründüyü kimi, rəqabətqabiliyyətlilik və iqtisadi təhlükəsizlik göstəriciləri arasında ardıcıl müsbət əlaqə mövcuddur. Ən yüksək səviyyə Cənubi Koreyada müşahidə edilir – ölkə innovasiyaya yönəlik iqtisadi model qurmaqla həm rəqabət gücünü, həm də təhlükəsizlik sabitliyini qoruyur. Polşada Avropa İttifaqına inteqrasiyanın təsiri ilə ESI göstəriciləri 2018–2024 dövründə 11% artmışdır. Bu, iqtisadi təhlükəsizliyin institusional və normativ mühitlə birbaşa əlaqəsini göstərir.

Azərbaycan üzrə göstəricilər də son illərdə müsbət dinamikaya malikdir. İqtisadiyyat Nazirliyinin 2024-cü il hesabatına görə, qeyri-neft sektoru 6,2% artmış, bu da rəqabətqabiliyyətliliyin dayanıqlı əsasda genişləndiyini göstərir. Eyni zamanda, xarici ticarət balansında qeyri-neft məhsullarının payı 29%-ə yüksəlmişdir. Bu dəyişikliklər milli iqtisadi təhlükəsizlik konsepsiyasının real effektivliyini nümayiş etdirir.

Türkiyə nümunəsində rəqabətqabiliyyətlilik artımının iqtisadi sabitliyə təsiri daha dinamik xarakter daşıyır. 2021–2023-cü illərdə ölkədə ixracın həcmi 255 milyard dollardan 255,8 milyard dollara qədər yüksəlmiş, xarici borc yükünün ÜDM-ə nisbəti isə 38,1%-dən 33,5%-ə enmişdir. Bu faktlar göstərir ki, rəqabət qabiliyyətinin yüksəlməsi tədricən maliyyə dayanıqlığını gücləndirir və makroiqtisadi riskləri azaldır.

Cənubi Koreya iqtisadi təhlükəsizlik siyasətində texnoloji innovasiyaları prioritet kimi qəbul etmişdir. OECD-nin “Science, Technology and Innovation Outlook 2023” sənədində qeyd edilir ki, ölkədə dövlətin tədqiqat və inkişaf (R&D) xərcləri ÜDM-in 5%-ə yaxınını təşkil edir. Bu, iqtisadi təhlükəsizliyi təmin edən texnoloji suverenliyin əsas amilidir.

Polşa modeli isə Avropa İttifaqı fondlarından gələn struktur investisiyaların iqtisadi təhlükəsizliyə təsirini nümayiş etdirir. 2024-cü ilə qədər Avropa Struktur və İnvestisiya Fondlarından əldə edilən vəsaitin 60%-dən çoxu innovasiya və infrastruktur layihələrinə yönəldilmişdir. Bu siyasət ölkənin rəqabət qabiliyyətini artırmaqla, iqtisadi təhlükəsizlik səviyyəsini də möhkəmləndirir.

Azərbaycan üçün xüsusilə vacib istiqamət rəqabətqabiliyyətli ixrac strukturunun formalaşdırılması və daxili istehsal gücünün artırılmasıdır. “Made in Azerbaijan” təşəbbüsü nəticəsində 2023-cü ildə yerli brendlərin ixrac payı 17%-ə çatmışdır (İqtisadiyyat Nazirliyi, 2023). Bu, milli brend siyasətinin iqtisadi təhlükəsizliyə verdiyi töhfəni nümayiş etdirir.

Eyni zamanda, rəqəmsallaşma prosesləri də rəqabət üstünlüyünün vacib mənbəyinə çevrilmişdir. Dünya Bankının 2023 hesabatına əsasən, rəqəmsal iqtisadiyyatın ÜDM-də payı Azərbaycan üçün 4,3%, Türkiyə üçün 5,1%, Polşa üçün 6,8%, Cənubi Koreya üçün isə 10,4% təşkil edir. Rəqəmsallaşmanın artması ölkələrin iqtisadi çevikliyini artırır və təchizat zəncirləri risklərini azaldır [5;6].

Təhlil göstərir ki, rəqabətqabiliyyətlilik iqtisadi təhlükəsizliyə həm birbaşa, həm də dolayı yollarla təsir edir. Birbaşa təsir strukturunda innovasiya, ixrac müxtəlifliyi və istehsal səmərəliliyi kimi faktorlar dayanır. Dolayı təsir isə institusional sabitlik, maliyyə intizamı və dövlət idarəçiliyinin şəffaflığı vasitəsilə formalaşır. Əldə edilən nəticələr göstərir ki, rəqabətqabiliyyətlilik artdıqca dövlətin xarici iqtisadi asılılıq riski azalır. Bu, xüsusilə enerji resurslarından asılı iqtisadiyyatlarda strateji əhəmiyyət

daşıyır. Azərbaycanın 2024-cü il büdcəsində qeyri-neft gəlirlərinin payı 51%-ə çatmışdır ki, bu da iqtisadi təhlükəsizlik baxımından mühüm dönüş nöqtəsidir.

İqtisadi təhlükəsizliyin uzunmüddətli qorunması üçün rəqabətqabiliyyətlilik siyasətləri təkcə iqtisadi göstəricilərə deyil, həm də sosial və texnoloji sabitlik faktorlarına əsaslanmalıdır. Təhsil, insan kapitalı və idarəetmə keyfiyyəti kimi dəyişənlər ölkənin innovativ potensialını və böhranlara qarşı dayanıqlılığını müəyyən edir. Təhlil göstərir ki, GCI və ESI göstəriciləri arasında 0.7 korrelyasiya müşahidə olunur. Bu o deməkdir ki, hər 1 bəndlik rəqabət artımı iqtisadi təhlükəsizlikdə 0.4–0.5 bəndlik irəliləyiş yaradır. Bu əlaqə ölkələrin iqtisadi modelində struktur çevikliyinin və institusional dayanıqlığın zəruriliyini təsdiqləyir.

Son nəticə olaraq, beynəlxalq müqayisə göstərir ki, rəqabətqabiliyyətlilik səviyyəsinin yüksəldilməsi milli iqtisadi təhlükəsizliyin əsas təminat mexanizmlərindən biridir. Azərbaycanın təcrübəsi sübut edir ki, iqtisadi diversifikasiya, innovasiya və idarəetmə şəffaflığının gücləndirilməsi vasitəsilə həm milli, həm də regional təhlükəsizlik səviyyəsi yüksələ bilər.

Nəticə.

Tədqiqat nəticələri göstərir ki, ölkənin rəqabətqabiliyyətliliyi onun iqtisadi təhlükəsizliyinin formalaşmasında aparıcı determinantlardan biridir. Rəqabətqabiliyyətlilik göstəriciləri yalnız bazar səmərəliliyini deyil, həm də dövlətin iqtisadi müstəqillik səviyyəsini müəyyən edir. Bu əlaqə, xüsusilə qlobal iqtisadi qeyri-sabitlik şəraitində, milli iqtisadiyyatların dayanıqlılığını təmin edən strateji mexanizm kimi çıxış edir.

Araşdırma göstərdi ki, rəqabətqabiliyyətlilik artımı iqtisadi təhlükəsizlik göstəricilərinə həm qısamüddətli, həm də uzunmüddətli perspektivdə təsir göstərir. Qısamüddətli təsir ixrac strukturu, ticarət balansı və valyuta sabitliyi üzərindən formalaşır. Uzunmüddətli təsir isə innovasiya, texnoloji modernləşmə və insan kapitalı ilə əlaqədardır. Bu baxımdan, milli innovasiya ekosisteminin inkişafı iqtisadi təhlükəsizliyin əsas sütunlarından biri kimi qiymətləndirilməlidir. Empirik nəticələr göstərir ki, GCI göstəricisində müşahidə edilən hər 1 bəndlik artım ESI indeksində orta hesabla 0.4–0.5 bəndlik müsbət dəyişiklik yaradır. Bu nəticə iqtisadi sabitliklə rəqabətqabiliyyətlilik arasında qarşılıqlı gücləndirici təsirin mövcudluğunu sübut edir. Ən yüksək nəticələr Cənubi Koreya kimi texnoloji inkişaf etmiş ölkələrdə qeydə alınmışdır, burada R&D xərclərinin ÜDM-də payı 5%-ə çatır və bu, həm iqtisadi, həm də milli təhlükəsizlik səviyyəsini artırır [5, s., 124].

Azərbaycanın təcrübəsi göstərir ki, iqtisadi təhlükəsizliyin təminində rəqabətqabiliyyətlilik siyasətləri çoxşaxəli olmalıdır. “Azərbaycan 2030: Dayanıqlı İnkişaf Strategiyası” sənədinə əsasən, iqtisadi modelin əsas hədəfi enerji sektorundan kənar dayanıqlı artımı təmin etməkdir. Bu məqsədlə sənaye parklarının, ixrac yönümlü istehsal müəssisələrinin və innovativ texnoparkların inkişafı dövlət siyasətinin prioritet istiqamətlərinə daxil edilmişdir.

Araşdırmanın mühüm tapıntılarından biri də ondan ibarətdir ki, institusional keyfiyyət və dövlət idarəçiliyinin səmərəliliyi iqtisadi təhlükəsizliyin davamlılığını təmin edən amillərdən biridir. Davos Dünya İqtisadi Forumunun məlumatlarına görə, idarəetmə səmərəliliyi indeksi üzrə 10% artım ümumi rəqabətqabiliyyətlilik göstəricisini təxminən 6% yüksəldir. Bu fakt göstərir ki, iqtisadi təhlükəsizlik təkcə resurs potensialı ilə deyil, həm də idarəetmə mexanizmlərinin keyfiyyəti ilə müəyyən olunur.

Polşa və Türkiyə üzrə aparılan müqayisə təhlili göstərir ki, struktur islahatları və maliyyə intizamı iqtisadi təhlükəsizlik üçün vacib ön şərtlərdir. Polşanın 2024-cü ilə qədər həyata keçirdiyi fiskal stabilləşmə tədbirləri dövlət borcunun ÜDM-ə nisbətini 53%-dən 48%-ə endirmiş, eyni zamanda investisiya axınlarını artırmışdır. Türkiyə isə ixrac bazarlarını diversifikasiya etməklə qlobal qiymət volatilliyinə qarşı daha davamlı iqtisadi struktur qurmağa nail olmuşdur.

Beynəlxalq müqayisə göstərir ki, rəqabətqabiliyyətliliyin artması yalnız iqtisadi göstəricilərlə deyil, həm də sosial və texnoloji sabitliklə bağlıdır. Cənubi Koreyada texnoloji innovasiyalar həm iqtisadi müstəqilliyi, həm də milli təhlükəsizlik sisteminin kibermüdafiə komponentini gücləndirmişdir. Bu model Azərbaycanın rəqəmsal iqtisadiyyat siyasəti üçün də təcrübəvi dəyər daşıyır. Tədqiqatın praktiki töhfələrindən biri də odur ki, ölkənin iqtisadi təhlükəsizlik səviyyəsini artırmaq üçün rəqabətqabiliyyətlilik siyasətləri iqtisadi, institusional və sosial səviyyədə paralel aparılmalıdır. Yalnız iqtisadi artımı deyil, həm də sosial rifahı və insan kapitalını gücləndirən siyasətlər uzunmüddətli təhlükəsizlik üçün əsas təminatdır.

Bu araşdırma həmçinin göstərdi ki, rəqabətqabiliyyətlilik göstəricilərindəki dəyişikliklər beynəlxalq inteqrasiyanın dərəcəsi ilə sıx bağlıdır. Açıq iqtisadiyyat modeli qlobal bazarlara çıxışı genişləndirsə də, eyni zamanda iqtisadi asılılıq risklərini də artırır. Buna görə də milli iqtisadi təhlükəsizlik siyasətləri beynəlxalq ticarət strategiyaları ilə balanslaşdırılmalıdır [6, s., 76].

Azərbaycan üçün gələcək prioritetlər sırasında yüksək texnoloji sənaye, yaşıl enerji və rəqəmsal xidmət sektorlarının inkişafı mühüm yer tutur. 2025-ci ilədək "Yaşıl iqtisadiyyat yol xəritəsi" çərçivəsində 2,5 milyard manatlıq investisiya layihələrinin icrası planlaşdırılır. Bu təşəbbüslər rəqabətqabiliyyətlilik səviyyəsini artırmaqla, milli təhlükəsizlik üçün yeni iqtisadi dayaqlar formalaşdıracaq. Elmi baxımdan, bu tədqiqat rəqabətqabiliyyətlilik və iqtisadi təhlükəsizlik anlayışlarını bir-biri ilə inteqrativ şəkildə izah edən yeni konseptual çərçivə təqdim edir. Bu model, xüsusilə inkişaf etməkdə olan ölkələr üçün, iqtisadi sabitliyin qorunmasında struktur və institusional islahatların vacibliyini vurğulayır.

Nəticə etibarilə, ölkənin rəqabətqabiliyyətliliyinin yüksəldilməsi iqtisadi təhlükəsizliyin təmin olunması üçün həm məqsəd, həm də vasitə rolunu oynayır. Azərbaycan kimi inkişaf edən ölkələr üçün bu istiqamətdə ən effektiv strategiya iqtisadi diversifikasiya, innovasiya və idarəetmə səmərəliliyinin artırılmasına yönəlmiş inteqrativ siyasət modelidir.

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ВЛИЯНИЕ КОНКУРЕНТОСПОСОБНОСТИ СТРАНЫ НА ЭКОНОМИЧЕСКУЮ БЕЗОПАСНОСТЬ

Асланов Хабил Гусейн оглы
Бакинский государственный университет
Доцент кафедры мировой экономики
E-mail: dosent1966@mail.ru

Резюме

В статье исследуются механизмы влияния уровня конкурентоспособности страны на её экономическую безопасность. В условиях глобальной экономики растущая конкуренция, технологические инновации и углубляющаяся торговая взаимозависимость становятся ключевыми факторами устойчивости национальных экономик. Исследование показывает, что инновационный потенциал, эффективность производства и расширение экспортных возможностей существенно укрепляют экономическую безопасность и поддерживают макроэкономическую стабильность в долгосрочной перспективе.

Ключевые слова: *конкурентоспособность, экономическая безопасность, инновации, экспортный потенциал, макроэкономическая стабильность, мировая экономика, устойчивое развитие.*

THE IMPACT OF NATIONAL COMPETITIVENESS ON ECONOMIC SECURITY

Aslanov Habil Huseyn oglu
Baku State University
Associate Professor, Department of World Economy
E-mail: dosent1966@mail.ru

Abstract

The article explores the mechanisms through which a country's level of competitiveness affects its economic security. In the global economy, increasing competition, technological innovation, and deeper trade interdependence have become key determinants of national resilience. The study reveals that innovation capacity, production efficiency, and the expansion of export opportunities significantly contribute to strengthening economic security and sustaining macroeconomic stability in the long term.

Keywords: *competitiveness, economic security, innovation, export potential, macroeconomic stability, global economy, sustainable development.*

Jeoekonomik konfigürasyon koşullarında ülke ekonomisinin rekabet gücünün gelişim sorunları

Galib Gafarli
qalib.qafar@gmail.com

Orcid: 0000-0002-2292-2896

Özet

Makale, ülke ekonomisinin jeoekonomik konfigürasyon koşullarında rekabet gücünün geliştirilmesi sorunlarını incelemektedir. Küreselleşme süreci, ekonomik güvenliğin sağlanması ve uluslararası arenada güçlü bir konum elde edilmesi için rekabet gücünün stratejik önemini artırmıştır. Çalışmada, üretimin modernizasyonu, yenilikçi teknolojilerin kullanımı ve dijitalleşmenin ekonominin rekabet yapısı üzerindeki etkileri analiz edilmiştir. Elde edilen sonuçlara göre, küresel dijital dönüşüm, ekonomik faaliyetlerin ölçeğini genişleterek yeni rekabet biçimlerinin ortaya çıkmasına yol açmakta; aynı zamanda devletlerin jeoekonomik yönelimini ve ekonomik güvenlik stratejilerini yeniden şekillendirmektedir. Makale, rekabet gücünün artırılmasının yalnızca ekonomik büyümeyi değil, aynı zamanda ülkenin küresel sistemdeki istikrarını da belirleyen temel faktör olduğunu vurgulamaktadır.

Anahtar Kelimeler: rekabet gücü, jeoekonomi, rekabet potansiyeli, küreselleşme, ekonomik güvenlik.

1. Giriş ve teorik çerçeve.

Jeoekonomik koşullar altında ekonominin uzun vadeli ve sürdürülebilir gelişimi, rekabet gücünü belirleyen faktörlerin dikkate alınmasını gerektirir. Bu açıdan, rekabet potansiyelinin güçlendirilmesi; yenilikçi gelişme yollarının aranmasında, üretimin modernizasyonunda ve dünya pazarlarında rekabete dayanıklı ürünler üretmeye imkân tanıyan çağdaş teknolojilerin kullanılmasında kendini göstermektedir. Bu nedenle, küreselleşme sürecinin genişlemesiyle birlikte, ekonomik güvenliğin sağlanması ve uluslararası ekonomik alanda konumun güçlendirilmesi için jeoekonomik faktörlerin dikkate alınması büyük önem taşımaktadır.

Günümüz dünya ekonomisinin gelişme eğilimleri, küreselleşme süreçlerinin etkisini açık biçimde ortaya koymaktadır. Jeoekonomik konfigürasyon koşullarında bu eğilim doğal-tarihsel bir süreç olarak algılanmakta, her ekonominin gelişimi ekonomik-coğrafi faktörlerle, özellikle de uluslararası işbölümünün derinleşmesi, bilimsel-teknolojik ilerlemenin gelişmesi ve ekonominin açıklık derecesinin artmasıyla birlikte yürümektedir. Böyle bir durumda küreselleşme süreçlerinin temel sonucu, yeni bir kalkınma modelinin oluşturulmasını gerektirir. Çünkü üretimin uluslararasılaşması, onun çeşitli aşamalarının farklı ekonomilerin yapısına entegrasyonuna yol açmaktadır [2, s.36]. Dolayısıyla bu durum, rekabetçi bir ekonominin oluşmasının temel koşulu olarak değerlendirilmelidir.

2. Jeoekonomik konfigürasyon ve rekabet potansiyeli

Jeoekonomik konfigürasyonlar, küresel ekonomide rekabet bağlamında liderliğe ulaşmanın karakteristik özelliği olarak, karşılıklı ilişkileri ön plana çıkarmaktadır. Son yıllarda belirginleşen çok kutupluluk, küresel ekonomide uygun bir konum elde etmenin en önemli koşullarından birinin rekabet olduğunu kanıtlamaktadır. Uluslararası rekabette tutunmak ve dünya ekonomisinde yer almak için, ekonominin rekabet potansiyelini güçlendirmek büyük önem taşımaktadır.

Araştırmalar göstermektedir ki, dünya ekonomisinde liderlik için geleneksel jeoekonomik konfigürasyonun yanı sıra, tüm ekonomik yapıda da değişim yaşanmaktadır [1, s.49]. Dolayısıyla

modern çok kutupluluğun ekonomik-coğrafi yönleri, belirli bir yakınlaşma eğilimiyle birlikte, rekabet gücü yüksek ekonomik yapıların oluşturulması gereğini de ortaya koymaktadır. Ekonomik-coğrafi açıdan bakıldığında, makro-bölgesel ve jeoekonomik yönler, bölgeselleşme eğilimi temelinde öncelikle küreselleşme ve uluslararasılaşmanın etkisini yansıtmaktadır. Bu da rekabetçi ekonominin önemini ve yerini belirleyen başlıca unsurlardan biridir.

Günümüz koşullarında rekabet gücü, sosyoekonomik bir kategori olarak ekonomik büyümenin temel göstergesi ve kavramsal dayanağı haline gelmiştir. Rekabetin özel rolü, yenilikçi yolların aranması, üretimin modernizasyonu ve pazar taleplerini karşılayabilecek rekabetçi ürünler üretilmesini mümkün kılan çağdaş teknolojilerin kullanımında kendini göstermektedir. Bu bakımdan, devletin ekonomik güvenliğini ve kalkınmasını sağlamak için jeoekonomik bir yönelim seçmesi gerekmektedir [3, s.598]. Bundan dolayı ekonomik güvenliğin sağlanması sorununa bütüncül bir yaklaşımın benimsenmesi ve bu sürecin, ekonominin ve önde gelen sektörlerinin dünya çapında rekabet gücünü artıracak koşulların yaratılmasıyla tamamlanması zorunludur. Çünkü rekabet gücü, barışçıl kalkınma koşullarında piyasa ekonomisinin varlık gösterebilme yeteneğinin en nesnel ve ayrılmaz ölçütüdür.

Rekabetin, piyasa mekanizmasının temel aracı olarak dünya ekonomisinin gelişimi üzerindeki etkisinin sürekli artması, bu aracın pazar payı mücadelesinde kullanılmasının önemini açıkça kanıtlamaktadır. Gerçekte, ekonomik aktörler devletin kurumsal etkisi altında rekabet potansiyellerini güçlendirmeye yönelmektedirler. Pazar katılımcıları, rekabet pozisyonlarını korumak için ürün farklılaştırması fikrini savunmaktadırlar. Bu nedenle günümüz koşullarında ekonomik aktörlerin faaliyetleri ve rekabet potansiyellerinin artırılması stratejik bir nitelik taşımaktadır. Uluslararası deneyim göstermektedir ki, köklü teknolojik değişimler, küresel piyasa alanında rekabetçi etkileşimin derinleşmesine neden olmaktadır [4, s.62]. Rekabetin devletlerarası düzeye taşınması ise, olumlu koşulların yanı sıra, belirli sınırlar ve kısıtlamalar da yaratmaktadır. Rekabet ilişkilerinin küresel çatışma dönemine geçişiyle birlikte, rekabetin temel amacı dünya liderliğine ulaşmak olmuştur. Günümüzde bu sürecin sistematik bir nitelik kazanması, ekonomik rekabeti devlet düzeyinde güçlendirmekte ve küresel istikrarsızlık riskini artırmaktadır.

3. Küresel dijital dönüşüm ve rekabet dinamikleri

Günümüzde dijitalleşme, küresel ekonomik sistemin yapısında devrim niteliğinde değişiklikler yaratan temel faktörlerden biri haline gelmiştir. Küreselleşme ile paralel ilerleyen bu süreç, üretim, dağıtım ve ticaretin organizasyonuna tamamen yeni bir içerik kazandırmakta, ekonomik ilişkilerin mantığını köklü biçimde değiştirmektedir. Önceki dönemlerde rekabet daha çok kaynak hacmi, üretim kapasitesi veya pazar payı gibi göstergelerle ölçülürken, günümüzde bilgi, veri ve teknolojiye dayalı yeni bir kalite aşamasına geçilmiştir. Dijital ekonominin genişlemesi artık yalnızca belirli sektörleri değil, bütün ekonomik sistemi kapsayan yeni bir gelişme evresinin başlangıcını temsil etmektedir.

Bu dönüşümün temel özelliği, ekonomik süreçlerin optimizasyonu, işlem maliyetlerinin azaltılması ve üretim verimliliğinin artırılmasıyla birlikte ilerlemesidir. Dijital teknolojiler, gerçek zamanlı veri akışı sağlayarak karar alma süreçlerini hızlandırmakta ve piyasa sinyallerine verilen tepkileri daha esnek hale getirmektedir. Bu durum, mikro düzeyde işletmelerin rekabet yeteneğini güçlendirirken, makro düzeyde devletlerin ekonomik yönetim mekanizmalarını da daha etkin hale getirmektedir. Dijitalleşmenin en önemli sonuçlarından biri, ekonomik faaliyetlerin coğrafi sınırlarını büyük ölçüde ortadan kaldırmasıdır. Artık herhangi bir bölgede bulunan ekonomik aktör, dijital platformlar aracılığıyla küresel pazarda faaliyet gösterebilmekte, mal ve hizmetlerini uluslararası ölçekte sunabilmektedir.

Dijital ekonomi, yeni tip rekabet ilişkilerinin oluşumuna zemin hazırlamaktadır. Klasik ekonomik modellerde rekabet çoğunlukla üretim gücü ve fiyat avantajına dayanırken, günümüz koşullarında üstünlük; yenilik kapasitesi, dijital kaynaklardan yararlanma becerisi, veri analitiği ve yapay zekâ uygulamalarını etkin biçimde kullanma yeteneği ile ölçülmektedir. Bu bağlamda dijital dönüşüm, hem firmalar arasında hem de devletler düzeyinde yeni bir ekonomik hiyerarşi yaratmaktadır. Bilgi ve

teknolojiye zamanında uyum sağlayan ülkeler küresel pazarlarda daha istikrarlı konumlar elde ederken, bu sürecin gerisinde kalanlar rekabet avantajlarını yitirme riskiyle karşı karşıya kalmaktadır.

Küresel dijital dönüşümün mevcut aşaması artık yalnızca ekonomik verimliliği değil, aynı zamanda ulusal ekonomik güvenliği de belirleyen stratejik bir faktör haline gelmiştir [5]. Yenilikçi teknolojilerin uygulanması, ekonominin temel sektörlerinde çoğaltıcı etki yaratarak genel rekabet gücünü artırmaktadır. Dijital ekosistemlerin oluşumu, ekonomik aktörler arasındaki karşılıklı bağımlılığı derinleştirmekte; bu durum hem yeni fırsatlar hem de yeni riskler ortaya çıkarmaktadır. Özellikle siber güvenlik, veri koruması ve dijital eşitsizliğin azaltılması gibi konular, çağdaş rekabet politikalarının temel yönelimleri haline gelmiştir.

Jeoekonomik açıdan bakıldığında, rekabet potansiyelinin artırılmasında demografik ve kurumsal faktörlerin de büyük önemi vardır. Dijital dönüşüm yalnızca teknolojik altyapıyla sınırlı olmayıp, aynı zamanda insan sermayesinin niteliği ve yönetsel kapasite ile doğrudan ilişkilidir. Nüfusun eğitim düzeyi, yenilikçi düşünme becerileri ve dijital okuryazarlık oranı, ülkelerin rekabet gücünün şekillenmesinde belirleyici unsurlar arasında yer almaktadır. Demografik istikrarın sağlanması ve iş gücü niteliğinin yükselmesi, dijital ekonominin gelişimi için elverişli bir zemin oluşturmaktadır. Bu çerçevede, uluslararası ekonomik sistemde iş birliği yapan devletlerin rekabet gücü, onların uzun vadeli ekonomik sürdürülebilirliğinin en önemli garantisi haline gelmektedir.

Sonuç olarak, küresel dijital dönüşüm günümüz dünyasında ekonomik gelişmenin ve rekabet mekanizmalarının yönünü belirleyen temel süreçlerden biridir. Bu süreç yalnızca teknolojik bir değişim değil, aynı zamanda ekonomik yönetimin felsefesini dönüştüren; üretim, ticaret ve emek ilişkilerini yeniden biçimlendiren köklü bir aşamayı ifade etmektedir.

4. Sonuçlar ve öneriler

Böylece, rekabet koşullarında elde edilen etkinliklerin hiyerarşisi ve çeşitliliği, ekonomik olguların ve süreçlerin aşırı yoğunluğuyla bağlantılıdır. Bu açıdan, ekonominin farklı sektörlerinde rekabet mücadelesinin uzun vadeli eğilimleri şu şekilde özetlenebilir: bilimsel-yenilikçi ve teknik-teknolojik; yatırım ve ticari; lojistik; pazarlama; sosyal ilişkiler, yeniden üretim vb. Dolayısıyla, rekabetin jeopolitik bakış açısından analizi, ekonominin belirli sektörlerinin rekabet potansiyelinin kullanılma olanaklarına dayanmaktadır.

Yukarıda belirtilenlerden anlaşılmaktadır ki, ülkenin sosyoekonomik gelişimi için güncel konulardan biri, uzun vadeli programların oluşturulması ve jeoekonomik ihtiyaçların karşılanması amacıyla öngörülen rekabet stratejisinin uygunluğunun gerekçelendirilmesidir. Dolayısıyla küreselleşme koşullarında, ülkenin ekonomik-coğrafi konumu ile üstünlük, örgütlenme ve rekabet potansiyeli, ekonomik ilerlemenin temel şartına dönüşmektedir.

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DIJITAL İŞETMELERDE ÖRGÜT KÜLTÜRÜ: VERI ODAKLI, İNOVATIF VE ÇEVIK ÖRGÜTLERIN İNCELENMESINE YÖNELIK KAVRAMSAL ÇALIŞMA

ÖZET

Bu çalışmanın amacı, dijital dönüşüm sürecinde örgütlerin sürdürülebilir rekabet elde etmesinde rol oynayan üç kültürel yaklaşımı (veri odaklılık, çeviklik ve inovasyon) kavramsal olarak incelemek ve aralarındaki ilişkiyi ortaya koymaktır. Çalışma, dijitalleşmenin yalnızca teknolojik bir yatırım değil, aynı zamanda örgüt kültüründe de bir dönüşüm gerektirdiği düşüncesinden yola çıkmaktadır. **Yapılan incelemeler,** bu üç kültürün birbirinden bağımsız olmadığını; veri odaklı karar almanın çevikliği beslediğini, çevik yapıların da inovasyonu hızlandırdığını göstermektedir. **Sonuç** olarak, işletmelerin dijital başarısının, teknolojik altyapı kadar, kültürel zemine de bağlı olduğu düşünülmektedir.

Anahtar Kelimeler: Veri Odaklı Kültür, İnovatif Kültür, Çevik Kültür

ABSTRACT

The aim of this study is to conceptually examine three cultural approaches (data-driven, agile, and innovative) that play a role in achieving sustainable competitiveness during the digital transformation process, and to reveal the relationship among them. The study is based on the idea that digitalization is not merely a technological investment but also requires a transformation in organizational culture. The analyses indicate that these three cultures are not independent of one another; data-driven decision-making fosters agility, and agile structures, in turn, accelerate innovation. Consequently, it is considered that the digital success of enterprises depends as much on their cultural foundation as on their technological infrastructure.

Keywords: Data-Driven Culture, Innovative Culture, Agile Culture

GİRİŞ

Dijital teknolojilerin gelişimi, endüstriyel alanda köklü dönüşümlere yol açan yeni bir devrim sürecini beraberinde getirmektedir. Bu gelişmeler, hem şirketler hem de toplumlar üzerinde derin etkiler

yaratmakta ve değişen koşullara uyum sağlamak için yeni gereksinimler ortaya çıkarmaktadır. Dijital dönüşüm olarak da adlandırılan bu evrim, birbirine bağlı ve sürekli etkileşim içinde olan karmaşık yapılar ve sistemler oluşturmaktadır (Herve vd., 2021). Bu köklü değişim, örgütler için kaçınılmaz olarak zorlu bir uyum sürecini tetiklemektedir. Ancak sadece teknolojik bir uyum ile değil, aynı zamanda çalışanların becerilerini, takım dinamiklerini ve hatta kurum içi iletişim kanallarını dönüştüren kapsamlı bir uyarlanma çabasını gerektirir. Bu süreç, örgütün hayatta kalması ve rekabet gücünü sürdürebilmesi için atması gereken kaçınılmaz bir adımdır (Nalbantoğlu, 2021).

Henriette vd., (2016) belirttiği gibi şirketlerin dijital dönüşümü yalnızca iş modeli olarak düşünmesi sığ bir düşünce olarak kalacaktır. Bu nedenle dijitalleşen işletmelerin, sürdürülebilir rekabet avantajı elde edebilmeleri için yeniliklere uyum sağlayarak organizasyonlarını da bu yönde geliştirmeleri beklenmektedir (Güleryüz vd., 2023).

Bu çalışmanın amacı, dijital işletmelerde veri odaklı, çevik ve inovatif kültürü, kavramsal olarak incelemek ve aralarındaki ilişikiyi ortaya koymaktır. Konu olan üç kavramın işletmelerin sürdürülebilir rekabet avatantajında bütün olarak ele alınması gerektiği düşünülmektedir. Çalışma, kavramların tanımlanması, ilgili çalışmaların incelenmesi ve sonuç bölümlerinden oluşmaktadır.

1.KAVRAMSAL ÇERÇEVE

1.1 Dijitalleşme ve Dijital İşletmelerde Örgütler

Dijitalleşme, kökeni Latince “digitus” (parmak) sözcüğüne dayanan ve verilerin sayısal biçime dönüştürülerek bilgisayarlar tarafından işlenebilir hale getirilmesi sürecini ifade eden bir kavramdır. İş dünyasında bu süreç ilk olarak iş operasyonlarının otomasyonu şeklinde başlamış, ardından internet ve çeşitli dijital teknolojilerin gelişimiyle birlikte iş modellerinde köklü dönüşümlere yol açmıştır (Klein, 2020). Kavramın günümüzdeki anlamına yakın ilk kullanımı ise 1971 yılında Robert Wachal tarafından North American Review dergisinde yapılmış, Wachal bu süreci özellikle beşerî bilimlerde bilgisayar kullanımının toplumsal etkileri üzerinden ele almıştır (Brennen & Kreiss, 2016). 1990’lı yıllarda teknolojik gelişmelerin hız kazanmasıyla birlikte dijitalleşme; işletmelere yeni pazarlara erişim, artan müşteri portföyü, farklı liderlik yaklaşımları ve örgütsel çeviklik gibi avantajlar sunmuştur. Bu dönemde sadece teknik sistemlerde değil, aynı zamanda örgütlerin yapısal ve kültürel yapılarında da önemli değişiklikler yaşanmıştır. Dijital başarı, değişen koşullara hızla uyum sağlayabilen, öğrenmeye açık, esnek ve rekabetçi yapılarla mümkün hale gelmiştir (Mert, 2024). Geleneksel kültür yapısı daha çok analog özelliklerle tanımlanırken, günümüz kültürü dijital dinamiklerle şekillenmektedir. Dijital kültürde müşteri talepleri ürün ve hizmetlerin oluşumunda belirleyici bir unsur haline gelirken, örgütsel yapılar daha yatay, hızlı karar alabilen ve sonuç odaklı bir yapıya evrilmektedir. Esneklik, yenilikçilik, iş birliği ve hız ise yeni çalışma düzenlerinin temelini oluşturmaktadır. Bu dönüşüm yalnızca teknik değil, aynı zamanda kültürel bir değişimi de beraberinde getirmektedir. Pandemi süreciyle birlikte hız kazanan dijitalleşme, örgüt kültürünü derinden etkileyerek, önümüzdeki dönemde daha büyük değişimlerin temelini atmaktadır (Nalbantoğlu, 2021).

Dijital işletmelerin sürdürülebilir rekabet elde etmesi için kurum içi örgütlerin de dönüşmesi önemlidir. Örgüt kültürünün veri odaklı, çevik ve inovatif olması işletmelerin dijital dönüşümünü hızlandırıp yeniliklere kolay adapte olacağı düşünülmektedir. Aynı zamanda oluşabilecek hataların da örgüt tarafından hızlı bir şekilde çözüme kavuşması işletmeler için avantaj sağlayacağı ön görülmektedir.

1.2 Dijital İşletmelerde Veri Odaklı Örgüt

Veriye dayalı kültür, işletmelerde karar alma süreçlerinin kişisel yargılar veya sezgiler yerine somut verilere ve analitik değerlendirmelere dayanmasını teşvik eden bir yaklaşımdır. Bu kültür, çalışanların veriye güven duymasını sağlayarak karar mekanizmalarının daha rasyonel ve sistematik bir şekilde

işlemesine katkıda bulunur. Aynı zamanda, büyük veri analitiği yetkinliğinin gelişmesine uygun bir zemin hazırlar. Veriye dayalı düşünme biçiminin organizasyonun tüm kademelerinde benimsenmesi, stratejik avantaj elde etme potansiyelini önemli ölçüde artırır (Gupta & George, 2016). Bu bağlamda, gelişmiş analitik araçlardan en yüksek düzeyde fayda sağlanabilmesi için, işletme genelinde veri odaklı bir zihniyetin yerleşmesi gerektiği genel kabul görmektedir. Berndtsson vd. (2018) da vurguladığı üzere, karar süreçlerinin merkezine veriyi yerleştiren işletmeler, hem operasyonel süreçlerini iyileştirme hem de rakiplerine kıyasla daha üstün bir performans sergileyerek sürdürülebilir rekabet avantajı elde etme konusunda önemli fırsatlar yakalayabilmektedir.

Veri odaklı kültürün, büyük veri stratejilerinin hem dış çevresel faktörlerle hem de iç organizasyonel süreçlerle uyum içerisinde şekillendirilmesi gerektiğini bildiren Karaboğa ve Zehir (2020), işletmelerdeki bu kültürün yerleşmesi, yalnızca teknolojik altyapının değil, aynı zamanda iş yapma biçimlerinin ve karar mekanizmalarının da dönüşmesinin zorunlu olduğunu ifade etmektedir. Öznel yargılardan çok, veriye dayalı öngörülere dayanan karar süreçleri ön plana çıkar. Bu nedenle, veri odaklı bir kültürün benimsenmesi, büyük veri projelerinin başarısı kadar, genel işletme performansının artmasında da belirleyici bir faktör haline gelmektedir. Benzer şekilde, Anton vd. (2023) göre , veri odaklı kültür, yalnızca veriye dayalı karar almayı değil, aynı zamanda bu karar süreçlerinin insan kaynağı, teknolojik yetkinlikler ve örgütsel yapı ile nasıl bütünleştiğini de kapsar. Bu doğrultuda, işletmelerin sürdürülebilir rekabet avantajı elde edebilmeleri için sadece veri toplamakla yetinmeyip, bu veriyi kurumsal karar alma ve değer yaratma süreçlerinin merkezine yerleştirmeleri gerekmektedir. Bu yaklaşımı destekleyen Chatterjee ve arkadaşları (2021), veri odaklı kültürün yalnızca karar alma süreçlerini değil, aynı zamanda ürün ve süreç inovasyonu aracılığıyla firma performansını doğrudan etkilediğini göstermektedir. Çalışmalarında, iş analitiği araçlarının etkin kullanımıyla desteklenen veri odaklı bir yapının, firmaların yenilikçilik kapasitelerini artırarak rekabet avantajı sağladığını ortaya koymuşlardır.

Literatürde veri odaklı kültürün örgütsel çıktılar üzerindeki rolünü inceleyen araştırmalar, bağlama ve modele göre değişen bulgular sunmaktadır. Türkiye'deki orta ve büyük ölçekli işletmeler üzerine yapılan bir araştırma (Düzcan & Fidan, 2023), veri odaklı kültürün dijital olgunluk ile yenilik performansı arasında anlamlı bir düzenleyici etki göstermediğini, ancak büyük veri analitiği yeteneğinin bu ilişkide güçlü bir aracı rol üstlendiğini ortaya koymuştur. Bu bulgu, Gupta vd. (2024) tarafından yapılan ve örgütsel kültürün veri odaklı dijital dönüşümü doğrudan ve pozitif olarak etkilediğini, bunun da operasyonel performansı artırdığını gösteren çalışmanın sonuçlarıyla kısmen bir tezat oluşturmaktadır. Öte yandan, Chatterjee vd. (2021)'nin çalışması, veri odaklı kültürün hem ürün hem de süreç inovasyonu üzerinde doğrudan ve anlamlı bir pozitif etkisi olduğunu doğrulamaktadır.

1.3 Dijital İşletmelerde Çevik Örgüt

Örgütsel çeviklik, işletmelerin değişen çevresel koşullara karşı hızlı ve etkili biçimde tepki verebilme, stratejik yönelimlerini sürekli olarak güncelleyebilme ve yenilikçi yaklaşımlar

geliştirerek sürdürülebilir değer yaratma yetkinliğidir. Bu yetkinlik, firmaların pazar fırsatlarını erkenden öngörebilmelerine, yeni iş modellerini hızla hayata geçirebilmelerine ve mevcut kaynak yapılarını çevresel gerekliliklere uygun şekilde yeniden düzenleyebilmelerine olanak tanımaktadır (Theyel ve Hofmann, 2021). Günümüzün dijitalleşme odaklı ve yoğun rekabet içeren piyasa koşulları, işletmeleri çevik bir yapıya sahip olmaya zorlamaktadır. Ancak dijital dönüşümün başarısı yalnızca teknolojik yatırımlara bağlı değildir; aynı zamanda kurum kültüründe dönüşümün sağlanması ve dijital teknolojilerin tüm organizasyonel süreçlerle bütünleştirilmesi gerekmektedir. Bu bağlamda çeviklik,

dijital dönüşüm süreçlerinin merkezinde yer almakta; organizasyonların değişen pazar dinamiklerine hızlı biçimde adapte olmasını ve daha etkili sonuçlara ulaşmasını mümkün kılmaktadır (Oğan, 2023).

Dijital dönüşümün beraberinde getirdiği yüksek hız ve belirsizlik, örgütlerde hata yapma riskini artırabilir. Ancak bu hataların birer öğrenme süreci olarak değerlendirilmesi ve cezalandırılmaması, risk almaya açık, çevik ve yenilikçi bir örgüt kültürünün gelişmesini destekler. Böyle bir kültür içerisinde, işletmeler değişen dijital koşullara karşı daha esnek yaklaşabilir, yeni stratejileri denemeye daha istekli olur ve bu sayede rekabet avantajı elde etme şanslarını artırabilirler (Mert, 2024).

İmamoğlu vd. (2024)'e göre, dijital örgütlerde çeviklik, hızlı değişen teknoloji ve pazar koşullarına uyum sağlayabilme yeteneğini ifade eder. Bu çeviklik, dijital araçların etkin kullanımıyla birlikte karar alma süreçlerinin hızlanmasını, esnek iş yapılarının benimsenmesini ve yenilikçi çözümlerin hızlıca hayata geçirilmesini sağlar. Dijital örgütler için çeviklik, rekabet avantajı elde etmede ve sürekli değişen dijital ortamda sürdürülebilirliği sağlamada temel bir unsurdur. Dijital teknolojiler sayesinde firmalar, çevresel değişimleri daha hızlı fark edebilmekte, kaynaklarını etkin biçimde yönetebilmekte ve fırsatlara hızlı tepki verebilmektedir. Bu da örgütsel çevikliğin güçlenmesini sağlayarak, firmaların değişken ve belirsiz piyasa koşullarında ayakta kalma ve rekabet etme yeteneğini artırmaktadır.

Farklı sektör ve bağlamlarda yapılan araştırmalar, örgütsel çevikliğin etkinlik ve dijital dönüşümün başarısındaki kritik rolünü ortaya koymaktadır. Holotiuk vd'nin (2018) profesyonel hizmet sektöründe yaptığı nicel çalışma, çevikliği algılama ve tepki verme olarak ikiye ayırarak bunun örgütsel etkinliğin temel bir unsuru olduğunu ve örgütsel tasarımın bu iki boyutu farklı şekilde etkilediğini göstermiştir. Kamu sektörüne odaklanan Zhang vd.'nin (2023) bulguları ise, örgütsel çevikliğin kurumların değişimleri algılamasını, strateji geliştirmesini, hizmet kalitesini ve dijital dönüşüm süreçlerindeki koordinasyonu doğrudan destekleyen bir yetkinlik olduğunu vurgulamaktadır. Benzer şekilde, Özdemir'in (2023) Türkiye'deki büyük ölçekli işletmeler üzerine yaptığı doktora tezinde, yapısal eşitlik modeli analizleri dijital dönüşüm olgunluğunun örgütsel çeviklik üzerinde anlamlı ve güçlü bir pozitif etkisi olduğunu kanıtlamış; bu da dijitalleşmenin çeviklik kapasitesini artırdığı yönündeki bulguları desteklemiştir. Özetle, örgütsel çeviklik hem özel hem de kamu sektöründe değişime uyum sağlama ve dijital dönüşümü yönetmede kilit bir özellik olarak öne çıkmaktadır.

1.4 Dijital İşletmelerde İnovatif Örgüt

İnovasyon, yalnızca ürün, süreç, pazarlama ya da yönetim alanlarında yapılan yenilikler veya iyileştirmelerden ibaret değildir; aynı zamanda teknik ve ekonomik yönlerinin ötesinde, toplumsal etkileri de olan çok boyutlu bir süreçtir. Bu sürecin gelişip sürdürülebilir hale gelmesi, farklı bakış açıları ve motivasyonlara sahip yapıların sürekli ve dinamik etkileşimine bağlıdır (Karaata, 2021). Çellek'in (2003) değerlendirmesi ise inovasyonu, farklı alanlarda özgün ve bilinmeyen çözümler üretme süreci olarak tanımlar. Bu süreç, yaratıcı düşünce, hayal gücü, sezgi, ilişkilendirme ve bireysel ifade gibi unsurları içerir. Daha önce ilişkisiz gibi görünen kavramların bir araya getirilerek özgün sonuçlara ulaşılması, inovasyonun temelini oluşturur. Aynı zamanda sistemli bir düşünme biçimi olan inovasyon, bireyler tarafından geliştirilebilir ve eğitilebilir bir yeti olarak da öne çıkar.

Siebel'e göre (2019), dijital örgütlerde inovasyon, teknolojiyle sınırlı olmayan; kültürel dönüşüm, liderlik, esneklik ve müşteri odaklılıkla beslenen bir süreç olarak anlatılır. İnovasyon; bulut, yapay zeka, IoT gibi teknolojilerle desteklenir, ancak esas başarı, örgütün değişime açık ve deneyime izin veren bir yapıya sahip olmasındadır.

Dyer vd.'ne (2011) göre, sorgulama, gözlemleme, ağ kurma, deney yapma ve ilişkilendirme gibi beş temel beceri, dijital dönüşüm süreçlerinin temelini oluşturan inovatif düşünme biçimini yansıtır. Dijital

dönüşüm yalnızca teknolojiyi kullanmakla sınırlı olmayıp; yerleşik iş modellerini sorgulayan, kullanıcı deneyimini merkeze alan, denemeye açık ve farklı fikirleri bir araya getirebilen bir zihniyet gerektirir. Benzer şekilde, Westerman vd.'nin (2014) çalışmasında da inovasyon, teknolojiyi yalnızca destekleyici bir unsur olarak değil, iş stratejisinin odağına yerleştiren bir dönüşüm süreci olarak ele alınır. Dijital inovasyon; yeni ürünlerin geliştirilmesinin ötesinde, iş süreçlerinin yeniden tasarlanması, veri temelli karar alma sistemlerinin oluşturulması ve müşteri deneyiminin dijital olarak yeniden yapılandırılmasıyla sağlanır.

Farklı araştırmalar, dijital çağda inovatif bir örgüt yapısının ürün odaklı değil, bütünleşik ve kültürel bir dönüşüm gerektirdiğini ortaya koymaktadır. Porter ve Heppelmann'ın (2015) sektör öncüsü şirketler üzerine yaptığı kavramsal analiz, inovasyonun artık yalnızca fiziksel ürünle sınırlı olmadığını; yazılım, veri analitiği ve bağlantı özellikleriyle desteklenen, sürekli ve hizmet odaklı bir modele evrildiğini göstermiştir. Bu yaklaşım, Bughin vd.'nin (2017) 2.000'den fazla şirketle yaptığı geniş ölçekli çalışmada desteklenmiş; inovasyon kültürünün sürekli öğrenme, risk alma ve deney yapmaya dayalı çevik bir yapı olduğu, bunun sürdürülebilirliği için ise liderlik desteği ve çalışanların yetkilendirilmesinin kritik önemi vurgulanmıştır. Nihayet, Vial'ın (2019) literatür taraması da bu bulgularla uyumlu olarak, dijital dönüşümle rekabet avantajı elde etmenin, esnek, öğrenmeye açık ve yenilikçi bir örgütsel kültür geliştirmekten geçtiğini teyit etmektedir. Tüm bu çalışmalar, teknolojik değişime uyum sağlayan ve yeni iş modelleri geliştiren inovatif örgütlerin, inovasyonu yalnızca bir sonuç değil, aynı zamanda sürekli bir organizasyonel süreç olarak benimsemesi gerektiğine işaret etmektedir.

2.Dijital İşletmelerde Örgüt Kültürü: Veri Odaklı, İnovatif ve Çevik Örgütlerin Kavramsal Olarak İncelenmesi

Araştırmanın veri kaynağını, konuyla ilgili hakemli akademik dergilerde yayımlanmış makaleler, kitaplar ve lisansüstü tezler oluşturmaktadır. Yapılan kavramsal inceleme **Google Scholar, Web of Science (WoS), Scopus ve YÖK Ulusal Tez Merkezi** akademik veri tabanlarında gerçekleştirilmiştir. İncelemede, ilgili kavramları kapsamak üzere İngilizce ve Türkçe anahtar kelimeler kullanılmıştır. Ana odağı veri odaklı, çevik veya inovasyon kültür olan ve dijital işletmeler bağlamını ele alan çalışmalar araştırmaya dahil edilirken teknik/teknolojik odaklı olup, örgütsel/kültürel boyutu yeterince ele almayan çalışmalar hariç tutulmuştur. Seçilen çalışmalar, kavramsal olarak ele alınmıştır. Bu kapsamda, her bir çalışmada yazar, yıl, amaç, yöntem, örneklem ve sonuçlar incelenmiştir.

Tablo 1: Veri Odaklı, Çevik ve İnovatif Kültür Çerçevesinde İncelenen Çalışmalar

Çalışma Adı, Yazarı (Yazarları), Yılı	Amacı	Veri Toplama Yöntemi	Örneklemi	Analiz Yöntemi	Sonucu
Dijital Dönüşümün Örgütsel Çevikliğe Etkisi (Doktora Tezi) Özdemir, A. (2023	Dijital dönüşüm uygulamalarının örgütlerin çeviklik düzeyi üzerindeki etkisini incelemek	Anket tekniği kullanılmıştır.	Türkiye'de faaliyet gösteren büyük ölçekli işletmeler.	Veriler, nicel analiz yöntemiyle incelenmiştir. Korelasyon analiz ve regresyon analiz ile raporlanmıştır.	Dijital dönüşüm sürecinin örgütün çevikliğini artırma potansiyeline sahip olduğunu; çevikliğin ise dijitalleşme başarısında kritik bir rol oynadığını göstermektedir.

How organizational agility promotes digital transformation : An empirical study Zhang, H., Ding, H., & Xiao, J. (2023)	Örgütsel çevikliğin dijital dönüşümü nasıl teşvik ettiğini ampirik olarak incelemek.	Anket tekniği kullanılmıştır.	Veriler Çin'de kamu sektörü kurumlarında çalışan 313 kişiden toplanmıştır.	Veri analizi için yapısal eşitlik modeli (SEM) kullanılmıştır.	Çalışma bulgularına göre, örgütsel çevikliğin (hem operasyonel ayarlama hem stratejik) dijital dönüşüm performansını **anlamlı ve pozitif** etkilediği bulunmuştur. özellikle kamu sektörü bağlamında çevikliğin ve dinamik kabiliyetlerin dijital dönüşüm başarısı için kritik olduğu vurgulanmıştır.
The Determinants and Role of Agility in Digital Organizations Holotiuk, F., Beimborn, D., & Jentsch, C. (2018)	Dijital çağda örgütlerin çevik olabilmesi için hangi tasarım unsurlarının önemli olduğunu belirlemek ve çevikliğin örgütsel başarıya katkısını göstermeyi amaçlamak	Anket tekniği kullanılmıştır.	Profesyonel hizmet odaklı sektörlerde çalışanların **217 geçerli yanıtı** üzerinden yürütülmüştür.	Veriler istatistiksel olarak analiz edilmiştir	Çalışma bulgularına göre; örgütsel tasarımın (örneğin esneklik, düşük formalizasyon, süreçlerin modülerliği gibi) çevikliği etkilediği ve çevikliğin de örgütsel etkinlik üzerinde anlamlı bir belirleyici olduğu görülmüştür. Özellikle "detecting agility" ve "reacting agility" her ikisi de dijitalleşen ortamda organizasyonların uyum ve tepki yeteneklerini

					artıran önemli boyutlar olarak bulunmuştur.
İşletmelerde dijital olgunluk düzeyinin yenilik performansı üzerindeki etkisinde büyük veri analitik yeteneğinin aracı ve veri odaklı kültürün düzenleyici rolü Düzcan, A., & Fidan, Y. (2023).	Dijital olgunluk yüksek olan işletmelerde büyük veri analitik yeteneği ve veri odaklı kültürün birlikte nasıl işlediğini ve bu sayede yenilik performansına nasıl etkide bulunduğunu" kavramsal ve ampirik olarak ortaya koymak	Nicel anket çalışması yöntemi kullanılmıştır. Anketler çevrimiçi yayınlanmıştır.	Türkiye'de faaliyet gösteren orta ve büyük ölçekli işletmelerin yöneticileri veya kıdemli personelleri. 411 geçerli anket üzerinden değerlendirme yapılmıştır.	Korelasyon analizi, regresyon ve hiyerarşik regresyon analizleri yapılmıştır.	**Büyük veri analitik yeteneği**, dijital olgunluk ile yenilik performansı ilişkisi içerisinde **aracı** rol oynamaktadır.
Toward the development of a big data analytics capability. Gupta, M., & George, J. F. (2016)	İşletmelerde **büyük veri analitiği yeteneği** kavramını teorik ve yapısal olarak tanımlamak ve bu yeteneğin **örgütsel performans üzerindeki etkilerini açıklayan bir çerçeve** geliştirmek.	Büyük veri analitiği yeteneğini ölçmek amacıyla literatüre dayalı yeni bir ölçek geliştirilmiştir. Yapılandırılmış bir anket formu kullanılmıştır.	ABD merkezli firmalarda, pilot çalışmada 232, ana çalışmada 108 yöneticiye ulaşılmış ve toplam 340 geçerli anket değerlendirmeye alınmıştır.	İlk aşamada doğrulayıcı faktör analizi, ikinci aşamada ise yapısal eşitlik modellemesi kullanılmıştır.	Bulgular, büyük veri analitiği yeteneğinin geliştirilmesinin firma performansını anlamlı biçimde artırdığını göstermiştir. Organizasyonların, rekabet avantajı elde edebilmesi için büyük veri analitiği yeteneğini çok boyutlu bir kaynak olarak ele alması gerektiği bildirilmiştir.
Does data-driven culture impact innovation and performance of a firm? An	işletmelerde **veri odaklı kültürün** hem **yenilik** hem de **firma performansı**	Yapılandırılmış anket tekniği kullanılmıştır.	Çalışma, farklı işletmelerde iş analitiği araçlarını kullanan çalışanlardan	Yapısal eşitlik modeli ve regresyon temelli analiz	Veri-odaklı kültür, hem ürün yeniliğini hem de süreç yeniliğini **pozitif ve anlamlı biçimde**

empirical examination. Chatterjee, S., Chaudhuri, R., & Vrontis, D. (2024)	üzerindeki etkisini **ampirik olarak incelemek**		toplam 456 geçerli yanıt üzerine yürütülmüştür**.**	teknikleri kullanılmıştır.	**artırmaktadır**. Ürün yeniliği ve süreç yeniliği ise firma performansını **olumlu yönde** etkilemektedir; dolayısıyla veri-odaklı kültürün firma performansı üzerindeki dolaylı etkisi yenilik aracılığıyla gerçekleşmektedir.
How smart, connected products are transforming companies Porter, M. E., & Heppelmann, J. E. (2015)	Dijitalleşme çağında şirketlerin **organizasyonel yapısını**, **yetkinlik gereksinimlerini** ve **rekabet avantajı kaynaklarını** nasıl yeniden şekillendirmesi gerektiğini tartışmak.	Akıllı, bağlantılı ürünler geliştiren firmalardan elde edilen kurumsal raporlar, sektörel analizler ve yönetici görüşmelerine dayanmaktadır.	Örneklem, "akıllı ve bağlantılı ürünler" geliştiren ve IoT ekosistemine yatırım yapan **imalat, teknoloji ve endüstriyel üretim** firmalarından oluşmaktadır.	**Nitel-kavramsal analiz** yaklaşımıyla hazırlanmıştır.	Dijital dönüşümün sadece teknolojik değil, aynı zamanda stratejik ve örgütsel bir devrim olduğunu; çeviklik, veri temelli karar alma ve sürekli öğrenme kültürünün bu dönüşümün merkezinde yer aldığını vurgulamaktadır.
The case for digital reinvention Bughin, J., LaBerge, L., & Mellbye, A. (2017)	Dijital dönüşümün yalnızca teknolojik bir değişim olmadığını, işletmelerin kültürünü, stratejisini ve organizasyon yapısını kapsayan bütüncül bir **yeniden icat süreci**	**Küresel düzeyde anket ve sektör verisi analizi** kullanılmıştır.	60'tan fazla ülkede'de 1500'den fazla işletmelerin dijital dönüşüm direktörü gibi üst düzey yöneticilerinden oluşmaktadır.	**Betimsel istatistik, korelasyon ve kümeleme analizi** yöntemleri birlikte kullanılmıştır.	Dijital dönüşümde yalnızca teknoloji yatırımı yapan firmaların kalıcı başarı sağlayamadığını; **kurum kültüründe inovasyonu teşvik eden bir zihniyet dönüşümünün** asıl fark yaratan unsur olduğu bildirilmektedir.

	olduğunu vurgulamak				
Understanding digital transformation : A review and a research agenda Vial, G. (2021)	dijital dönüşümün tanımı, bileşenleri, etkileri ve örgütsel sonuçlarıyla ilgili literatürdeki kavramsal dağınıklığı gidererek bütüncül bir çerçeve oluşturmak	2000-2020 arasında yayımlanan akademik yayınların literatür taraması yapılmıştır. İkincil veri analiziyle hazırlanmıştır.	Örneklem, seçilen literatürdeki 100'den fazla nitel ve nicel makaleden oluşmaktadır.	Çalışmada **içerik analizi (content analysis)** ve **tematik sentez (thematic synthesis)** yöntemleri uygulanmıştır.	İnovasyon kültürünü oluşturan "deneme-yanılma", "veriye ve teknolojiye açıklık", "süreç ve yapıların yeniden yapılandırılması" gibi unsurlar, çalışmada kültürel dönüşümün bir parçası olarak yer almaktadır.

Bu çalışmalar bütüncül olarak değerlendiğinde, işletmelerin başarısının, teknolojik alt yapıdan çok kültürel alt yapıya dayandığı söylenebilir. Çalışmalar, işletmelerin kararlarını veriye dayalı almasının inovasyon ve performansı artırdığını gösterirken (Gupta & George 2016; Chatterjee vd., 2024), Düzcan & Fidan (2023) ise veri odaklı kültürün bu etkiyi düzenlediğini sunmuştur. Bughin vd. (2017) ve Vial (2021), dijital dönüşümün bir yeniden icat süreci olduğunu, bunun yalnızca teknolojik değil, zihinsel ve kültürel bir yeniden yapılanma olduğunu vurgulamaktadır. İnovasyon burada hem bir **zihniyet dönüşümü**, hem de dijitalleşmenin sürdürülebilirliğini sağlayan **kültürel bir kavram** olarak bildirilmektedir. Zhang vd. (2023), Holotiuk vd. (2018) ve Özdemir (2023), çevikliğin dijital dönüşümün etkinliğini artıran kültürel unsur olduğunu gösterirken çevikliğin, yalnızca hızlı tepki verme yetisi değil, aynı zamanda öğrenme, uyum sağlama ve değer yaratma kapasitesi olduğunu vurgulamaktadır.

Sonuç

Bu çalışmanın amacı, işletmelerde veri odaklı, inovatif ve çevik kültürü kavramsal çerçevede incelemek ve aralarındaki ilişkiyi ortaya koymaktır. İncelenen çalışmalar, bu üç kavramın birbirinden bağımsız olmadığını göstermektedir. Veri odaklı kültür, işletmelerin veriye dayalı karar almasını sağlayarak değişimlere daha hızlı ve doğru karar vermesine zemin hazırlayabilir. Dolayısıyla veri odaklı kültürün çevikliği güçlendirdiği söylenebilir. **Çeviklik** ise örgüt içinde yenilik fikirlerinin daha hızlı ortaya çıkmasını ve uygulanmasını kolaylaştırır. Böylelikle, örgütlerin hızlı karar alabilmesi, deneme-yanılmaya açık bir ortamın oluşmasını sağlayarak **inovasyon kültürünü** de oluşturabilir. Sonuç olarak, veri odaklılığın çevikliği beslediğini, çevikliğin, inovasyonu hızlandırdığını ve bu döğünün de işetmelerin dijital ortamda sürdürülebilir rekabet avantajı elde edebileceği söylenebilir.

Bu çalışmada veri odaklı, inovatif ve çevik kültür kavramları kavramsal düzeyde ele alınmıştır. Ancak bu üç kültür, henüz gelişmekte olan kavramlardır. Bu nedenle gelecekte yapılacak **nicel araştırmaların**, bu kavramlar arasındaki ilişikiyi ortaya çıkarmada önemli olacaktır. Özellikle farklı sektörlerde yürütülecek çalışmalar, veri odaklılık, çeviklik ve inovasyon kültürlerinin sektörlere göre **nasıl farklılaştığını** ya da **birbirini nasıl etkilediğini** ortaya koyabilir.

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MECHANISMS OF STATE REGULATION OF AZERBAIJAN'S DEFENSE POLICY WITHIN THE FRAMEWORK OF PARTNERSHIP WITH NATO

Shams MAMEDOVA

Master, Baku State University

E-mail: shamsik_01@bk.ru

ORCID ID: 0009-0003-5202-6077

Tahir BEXBUDOV

Associate Professor, Department of Political Science and Sociology, Baku State University (Baku), PhD in History

E-mail: shaaaaaaamsik@gmail.com

ORCID ID: 0009-0008-7087-1895

Abstract

The article analyzes the mechanisms of state regulation of Azerbaijan's defense policy within the framework of cooperation with the North Atlantic Treaty Organization (NATO). The study explores the institutional, legal, and strategic dimensions of defense policy, emphasizing Azerbaijan's participation in NATO programs such as the Partnership for Peace (PfP) and the Planning and Review Process (PARP). Special attention is given to the transformation of defense institutions, the adaptation of national legislation to international security standards, and the role of the Ministry of Defense in implementing interoperability principles. The research also discusses the balance between Azerbaijan's multivector foreign policy and its commitments to NATO, assessing the effectiveness of regulatory mechanisms that ensure national sovereignty and regional stability.

Keywords: Azerbaijan, defense policy, NATO, state regulation, security cooperation, Partnership for Peace

INTRODUCTION

After gaining independence in 1991, Azerbaijan faced the urgent task of forming an effective national defense system that could ensure sovereignty, territorial integrity, and security in a complex geopolitical environment. The country's partnership with NATO has become one of the key elements of its defense modernization strategy.

The framework of cooperation with NATO is built on the Partnership for Peace (PfP) program, launched in 1994, which allows Azerbaijan to integrate international defense standards while maintaining its non-bloc status. Through joint exercises, training programs, and defense reforms, Azerbaijan has achieved a gradual alignment of its military structures with NATO principles of transparency, civilian oversight, and interoperability.

This research aims to identify and evaluate the mechanisms of state regulation that ensure effective implementation of defense policy in the context of Azerbaijan's partnership with NATO. The study also examines the balance between national interests and international cooperation in defense governance.

MATERIALS AND METHODS

The research is based on a combination of qualitative and comparative analysis methods. Primary sources include official NATO and Azerbaijani government documents, strategic defense reviews, and national security concepts. Secondary sources consist of academic papers, reports by international organizations, and expert assessments.

The study employs an institutional approach to understand the interaction between state bodies (the Ministry of Defense, the Ministry of Foreign Affairs, and the State Security Service) and NATO institutions. The systemic approach is used to analyze how defense policy regulation contributes to overall national security architecture.

Data collection covered the period from 1994 to 2024, emphasizing the evolution of Azerbaijan–NATO relations, reform outcomes, and the efficiency of existing regulatory mechanisms.

FINDINGS

The findings of the study demonstrate that the mechanisms of state regulation of Azerbaijan's defense policy within the NATO partnership framework are characterized by an integrated, multi-layered system that combines political, institutional, legal, and operational dimensions. Azerbaijan's cooperation with NATO since joining the Partnership for Peace (PfP) in 1994 has evolved from basic political dialogue into a structured mechanism of defense transformation and interoperability development.

One of the key regulatory mechanisms is the institutional coordination among state bodies — primarily the Ministry of Defense, the Ministry of Foreign Affairs, and the Presidential Administration. These institutions jointly manage the implementation of the Individual Partnership Action Plan (IPAP) and the Planning and Review Process (PARP), which serve as practical tools for aligning Azerbaijan's defense capabilities with NATO standards. Through these frameworks, the government ensures transparency, accountability, and efficient allocation of defense resources.

The legal framework for cooperation is grounded in strategic documents such as the National Security Concept (2007) and the Military Doctrine (2010), which establish the principles of defense organization, civilian control, and international partnership. Subsequent legislative updates have enabled harmonization with NATO defense planning systems and improved mechanisms of public oversight in defense management.

At the strategic level, Azerbaijan applies a balanced approach, maintaining partnership with NATO while pursuing regional cooperation within organizations such as the GUAM and the Non-Aligned Movement. This allows the state to strengthen its defense potential without compromising sovereignty or creating political asymmetry in regional relations.

The operational component of regulation focuses on practical cooperation: Azerbaijan actively participates in NATO's military training programs, peacekeeping missions, and trust fund initiatives aimed at defense reform and environmental security. The deployment of Azerbaijani peacekeepers in Kosovo and Afghanistan represents a tangible result of institutionalized cooperation, demonstrating the state's commitment to global security initiatives.

Azerbaijan's defense modernization, supported by NATO expertise, has resulted in increased interoperability, professionalization of armed forces, and the introduction of modern defense management tools. As of the 2020s, Azerbaijan continues to implement the fourth cycle of IPAP, which focuses on cybersecurity, crisis response mechanisms, and human resource development within defense institutions.

DISCUSSION AND CONCLUSION

Azerbaijan's mechanisms of state regulation in the defense sector are characterized by a hybrid model that combines national priorities with international obligations. The partnership with NATO provides

access to modern defense standards, technological expertise, and strategic consultation, all of which support the country's long-term defense modernization goals.

At the same time, Azerbaijan maintains a balanced foreign policy, cooperating with both Western and regional partners. This allows the country to strengthen its defense capabilities while preserving political independence and regional stability.

In conclusion, the state regulation mechanisms of Azerbaijan's defense policy within NATO partnership frameworks can be considered effective due to:

1. The institutionalization of cooperation channels;
2. The harmonization of legislation with NATO standards;
3. The operational interoperability of national forces;
4. The maintenance of strategic autonomy.

These mechanisms form the foundation for Azerbaijan's defense sustainability and its growing role in regional security architecture.

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CAUSES OF CASPIAN SEA LEVEL CHANGE, ECO-ECONOMIC IMPACTS: REGIONAL SUSTAINABLE GOVERNANCE PERSPECTIVES.

Nilufar MURADOVA

Head Lecturer, Baku State University.
E-mail:muradova.nilufer@yahoo.com
ORCID ID: 0000-0002-4820-5588

Abstract

This study undertakes a comprehensive philosophical-ecological and economic systemic analysis of the Caspian Sea's long-term water level fluctuations.
Rather than approaching the phenomenon as a mere hydrological anomaly, the research frames the Caspian Sea as a dynamic socio-natural system in which climatic oscillations, geopolitical resource extraction regimes, and anthropogenic environmental interventions converge. The decline in sea level is interpreted not only as an outcome of increased evapotranspiration and altered riverine inflows but as a manifestation of deeper structural contradictions between natural equilibrium and industrial growth imperatives.
By integrating hydrometeorological assessments with economic impact analysis and infrastructural vulnerability modelling, the study argues for a paradigm shift from sectoral management to multi-scalar ecological governance. The conclusions situate the Caspian's trajectory within broader climate stress frameworks, indicating that sustainable futures depend upon transboundary cooperation, ecological restoration strategies, and a reconfiguration of resource exploitation logics.

Keywords: Caspian Sea, hydro-ontological system, level change, energy economy, transboundary governance, anthropogenic pressure, regional cooperation, sustainable development

INTRODUCTION

The Caspian Sea is not merely a geographical object or a water basin limited to hydrometeorological indicators; it is a complex living system formed at the intersection of anthropogenic impacts, time-scaled climate rhythms, and the region's historical-political formation processes. As the world's largest enclosed water body, the Caspian Sea holds significant ecological and geo-economic importance for the South Caucasus and Central Asia region. The dynamics of the sea level have long remained a central topic of scientific research. In recent decades, the process of sea level decline has accelerated, beginning to exert noticeable effects on coastal ecosystems, fishery resources, port and transport-logistics infrastructure, as well as the energy extraction sector.

The change in sea level should not be evaluated solely as a physical phenomenon but analyzed as a result of human-nature interactions. Long-term sea level decline is not merely a quantitative change in the volume of the water mass; it also signifies a disruption of ecological balance. This disruption, in turn, affects the reconfiguration of economic spaces, the adaptation of energy strategies, and the fate of coastal social systems. The Caspian Sea level change is a research direction of strategic significance in terms of regional security, resource management, and sustainable development.

MATERIALS AND METHODS

Scientific literature associates the dynamics of the Caspian Sea level with two main groups of factors:

- **Natural climate factors:** Temperature increase, rise in evaporation, decrease in river flows

- **Anthropogenic impacts:** Regulation of water resources, irrigation infrastructure, industrial and extraction activities

Kostianoy and Kosarev characterize the Caspian Sea as a closed hydrological system sensitive to external influences, emphasizing the historical variability observed in sea level rhythms. Against the backdrop of climate change, they identify the increase in evaporation intensity as the main driving force behind sea level decline. Peeters and others note that water use in the Volga basin plays a decisive role in the Caspian's water balance.

Based on the general conclusions of the literature, it can be stated that sea level decline is not a random process but a structural and multifactorial dynamic.

The methodological approach of this study is based on a systemic integrative model: combining satellite observations of hydrological data, multi-model analysis of climate forecasts, economic loss functions with coastal infrastructure data, and evaluation of energy extraction platforms. The analytical basis of the research is formed by a multifactorial correlation matrix and the valuation of ecosystem services.

FINDINGS

Comprehensive measures show that the long-term decline of the Caspian Sea level is of a multifactorial nature and is shaped by the combined effects of natural climate processes and anthropogenic activities. Alongside rising temperatures and increased evaporation intensity, particularly the use of water resources in the Volga River basin for agricultural and industrial purposes emerges as a key determinant of the sea's water balance. Therefore, the sea level decline should not be considered a mere conjunctural change in hydrometeorological processes but rather a structural and long-term trend.

The ecological impacts of sea level decline manifest as the narrowing of coastal ecotones, the drying of spawning areas affecting reproductive potential, the restriction of fish feeding grounds, changes in the biochemical balance of water, and the weakening of biodiversity indicators. These changes negatively affect the population stability of commercially significant fish species. The weakening of ecosystem stability complicates recovery processes in the long term and necessitates the sustainable management of ecological resources.

Economically, sea level decline leads to the shallowing of port infrastructure, restriction of shipping operations, weakening of the geotechnical stability of offshore energy platforms, increased sedimentation effects on pipeline routes, reduced fishery productivity, increased vulnerability of coastal recreation zones, and depreciation in coastal real estate markets. These impacts directly affect the energy strategies, food supply systems, transport-logistics routes, and settlement models along the coastal zone of regional countries.

Thus, the management approach to the Caspian Sea level decline problem cannot be limited to engineering-technical measures alone. The solution requires coordinated management of transboundary water resources, integrated planning across river basins, implementation of ecosystem-based restoration strategies, and strengthening of institutional and political cooperation among coastal states.

In this context, the future development and eco-economic stability of the Caspian Sea directly depend on the long-term strategic decision-making will of regional countries and the formation of joint governance mechanisms.

The Economic Potential of the Caspian Sea and Economic Damages of Level Change

The Caspian Sea is not only an ecosystem but also a geo-economic space that forms the structural backbone of regional states' energy strategies, trade routes, fishery systems, and coastal urbanization models. The existence of the sea serves as a long-term equilibrium condition for macroeconomic stability and resource provision for the entire region. The main components of its economic potential are as follows:

- **Hydrocarbon reserves:** Oil and gas fields in the shelf zone form the base structure of the region's energy security and export revenues.

- **Transport-logistics corridors:** The Baku-Aktau-Turkmenbashi line functions as a strategic bridge between Asia and Europe as the Trans-Caspian trade artery.

- **Fisheries and water economy:** Fisheries, based on the Caspian Sea's biological resources and biodiversity, are a key structural component of food supply systems. These resources are strategically important not only for domestic consumption but also for maintaining regional food security.

- **Tourism and coastal service sector:** The tourism sector enhances the economic potential of recreation zones and strengthens regional economic activity and employment levels in coastal states.

However, sea level decline systematically erodes this potential. It should be noted that the Caspian Sea level has historically undergone continuous periods of rise and fall. Analyzing the past century reveals that from 1930 to 1977, the sea level dropped by approximately 3 meters. The period from 1977 to 1995 was one of rapid rises. Since 1995, a decline in sea level has been observed. The graph below shows the decreasing trend in the Caspian Sea level observed in recent decades.

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- **Coastal Line Retreat**

- According to model forecasts, sea level decline leads to a gradual retreat of the coastline.

- Source: The economic evaluations presented in the table are generalized by the author based on Kostianoy & Kosarev (2005), Arpe et al. (2020), and Peeters et al. (2019).

As a result of the Caspian Sea level change, the following will occur

- Reduction in port depths leads to slower cargo turnover and decreased trade flow.
- Corrosion risk increases in platform constructions in the shelf zone.
- Reduction in spawning areas in fisheries causes a decline in annual productivity and poses risks to food security.
- Coastal tourism becomes economically unsustainable due to the retreat of the shoreline.

Thus, the change in the Caspian Sea level requires rethinking the region's economic profitability framework not only as a management issue but also as a matter of national security and long-term development strategy.

The observed decline in the Caspian Sea level affects the economic, ecological, and social systems of the five coastal states with varying degrees of intensity. The strength of the impact is determined by the geomorphological characteristics of the coastal zone, the spatial structure of port and industrial infrastructure, and the degree of dependence of countries' energy and transport sectors on the Caspian aquatory [6].

The most severe consequences of level decline are projected for Turkmenistan. This is due to Turkmenistan's Caspian coastline being predominantly low-lying and shallow. Even relatively small

drops in water level can lead to the coastline retreating by tens of kilometers and cause serious operational limitations for the Turkmenbashi port and petrochemical infrastructure [5]. The impact level is high for Kazakhstan, as the hydro-technical profile of the northern sector of the Caspian is shallow, and the operational capacity of the Atyrau-Aktau sea ports is directly determined by water depth. In this context, sea level decline poses a strategic risk to energy export logistics and the competitiveness of the Trans-Caspian transport corridor [8]. For Azerbaijan, the impact is assessed as medium intensity. The deeper aquatory of Azerbaijan's coastline reduces geomorphological risks to some extent. However, the operation of the Baku International Sea Trade Port, offshore oil and gas platforms, and the fisheries sector is functionally dependent on sea level, which requires economic adaptation [3]. Iran's coastline, being mountainous and steeper in relief, experiences water retreat on a geographically more limited scale. However, the regional impact is mainly observed in fisheries and coastal tourism activities [7]. For Russia, the impact is relatively weak, as its coastal zone is characterized by a deeper hydro-aquatory. Nevertheless, one of the leading causes of sea level decline is the management of water resources in the Volga River basin, meaning the structural source of the process is directly linked to Russia's hydro-technical policy [11].

Thus, the level decline is characterized by high impact intensity for Turkmenistan and Kazakhstan, medium for Azerbaijan, and relatively weak for Iran and Russia. This difference in impact is determined by coastal geomorphology and the degree of economic dependence on marine resources.

Although the change in the Caspian Sea level dynamics does not affect all coastal states equally, it should be noted that each country's role in this process and the intensity of its anthropogenic impact also vary. When analyzing the anthropogenic impact of countries on the sea level decline, it is determined that coastal states influence the decline with varying intensities. These pressures are shaped by the scale of energy extraction, regulation of river flows, volume of industrial waste, coastal urbanization, and the institutional strength of ecosystem management strategies. The damage inflicted on the sea, depending on the intensity of impact, alters the geographical and ecological conditions on one hand, and harms the sustainability of coastal economies, the stability of social infrastructure, and the integrity of ecosystems [4].

The following table identifies the degrees of impact on the sustainable development of the Caspian Sea as a result of the eco-economic policies implemented by coastal countries:

Country	Main Impact Factors	Nature of Impact	Approximate Impact Level
Russia	Regulation of Volga River flow, industrial	Structural change in hydrometeorological balance	Very High

	waste, irrigation systems		
Kazakhstan	Offshore oil extraction, sediment disruption in shelf zone	Geotechnical and sedimentation effects	High
Azerbaijan	Energy extraction infrastructure, port expansion, urbanization	Ecosystem external impact and coastal pressure	Medium-High
Turkmenistan	Chemical waste and industrial pollution	Disruption of water biochemical balance	Medium
Iran	Agricultural water diversion and weakening of river inflows	Regional water balance and increased evaporation	High

Source: Author's calculations, [1]

The comparison shows that the main cause of sea level decline is related to the regulation of the Volga River flow in the Russian Federation. Since the Volga provides approximately 80% of the water entering the Caspian, the global vector of impact on the hydrosystem is higher than the activities of other states. Despite this, proportionally, the Russian Federation will be the least affected among the coastal countries by the decline in the Caspian Sea level. The existence of such a paradox—where the impact does not cause equal losses to coastal countries—delays the urgent steps that need to be taken, which may lead to the destruction of the Caspian's eco-economic balance.

Kazakhstan and Azerbaijan's oil and gas extraction models alter the geophysical structures of the seabed, affecting sediment dynamics. Additionally, underwater vibrations and seismic probing during drilling impact the natural equilibrium of the aquatory. Turkmenistan and Iran mainly influence the formation of the Caspian's water balance through chemical and agricultural irrigation systems. As a result, the use and management of water resources in the region are closely linked to the sustainability of the ecological system.

DISCUSSION AND CONCLUSION

The conducted analyses show that the decline in sea level weakens the ecosystem's self-recovery capacity, altering both biodiversity structures and the sustainability framework of economic activity. The retreat of coastal ecotones accelerates the loss of spawning areas; the shallowing of port aquatories increases logistics costs; the redistribution of static loads on energy extraction platforms changes. As a

result, the Caspian Sea becomes a strategic vulnerability point in the region's economic reproduction system.

The decline in the Caspian Sea level is not merely a hydrological or climatic event; it is a systemic process that requires the reconstruction of the metaphysical relationship between nature and economy. The solution to the problem is not possible through engineering measures alone. It necessitates the creation of a new resource management policy based on ecological ethics, the reconceptualization of stable economic models, and the establishment of real institutional cooperation among coastal states.

The results show that the management of the Caspian Sea level cannot be limited to national policies alone. An effective approach requires transboundary water management mechanisms, regional data exchange systems, and unified eco-monitoring protocols. Without strengthening institutional cooperation among coastal states, sustainable management is not possible. In this framework, enhancing the implementation mechanisms of the Caspian Sea Convention holds particular importance. It is necessary to align economic models with ecological forecasts and ensure unified coordination among coastal states.

Recommendations:

1. Establishment of a Regional Transboundary Water Monitoring Center

2. Creation of adaptation investment funds for port infrastructure

3. Implementation of unified standards for geotechnical monitoring of oil and gas platforms and extraction processes

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A CONSTRUCTİVİST ANALYSİS OF THE RWANDA CONFLİCT: IDENTİTY, SECURİTİZATİON, AND POST-GENOCİDE TRANSFORMATİON

Aytan Gurbanova

PhD student

Baku State University

ayten.qurbanovaa@gmail.com

ORCİD İD: 0009-0001-1205-5864

Abstract

The 1994 Rwanda genocide represents one of the most devastating cases of ethnic violence in modern history resulting in the deaths of an estimated 800,000 Tutsis and moderate Hutus within a span of 100 days. Traditional international relations (IR) theories, such as realism and liberalism, have often struggled to fully explain the origins and dynamics of such internal conflicts, primarily because they emphasize material power, strategic interests, and institutional arrangements while largely neglecting social, cultural, and ideational factors. This article applies a constructivist lens to the Rwanda conflict, combining Alexander Wendt's social constructivism with the Copenhagen School's securitization theory, to analyze the formation of ethnic identities, the role of threat discourses, and post-genocide social reconstruction. The analysis highlights how the colonial legacy, elite-driven identity politics, and discursive framing of the Tutsi population as an existential threat facilitated mass participation in violence. Furthermore, the study examines the post-genocide period, showing how identity transformation, collective memory, and social reconciliation mechanisms have been critical for sustainable peace. By situating the Rwanda genocide within a social-constructivist framework, this article demonstrates that understanding conflicts requires attention to socially constructed identities, norms, and intersubjective meanings, offering essential insights for both academic scholarship and policy formulation in post-conflict reconstruction.

Keywords: *Rwanda, Constructivism, Identity, Securitization, Genocide, International Relations*

Introduction

The Rwanda genocide of 1994 remains a stark reminder of the destructive potential of ethnic conflict and identity politics. Over a period of approximately 100 days, organized killings led by extremist Hutu factions resulted in the systematic extermination of nearly 800,000 Tutsis and moderate Hutus, leaving the country socially fractured and politically destabilized. Traditional international relations (IR) theories, such as realism and liberalism, have provided explanations centered on power struggles, state

capacity, and institutional failures. Realism emphasizes material capabilities and security dilemmas, portraying states and elites as rational actors pursuing self-interest in an anarchic environment [7;10]. Liberalism highlights the role of institutions, cooperation, and interdependence but struggles to explain mass mobilization for violence within state borders [5].

While these frameworks offer valuable insights, they largely overlook the social and ideational dimensions of conflict, including the construction of ethnic identities, collective memory, and threat perception. The Rwanda genocide illustrates that violence often emerges not solely from material scarcity or power imbalances but from socially constructed identities and discursive processes that frame one group as an existential threat to another. In this context, constructivist approaches, which emphasize the role of ideas, norms, and intersubjective meanings, provide a more comprehensive analytical lens [2;9].

This article applies constructivist theory to examine the Rwanda genocide, focusing on three key dimensions: (1) the social construction of ethnic identities; (2) securitization and "othering" discourses employed by political elites; and (3) post-genocide identity transformation and social reconciliation. By doing so, the study contributes to understanding how conflicts are socially produced and how post-conflict peacebuilding requires attention to social, cultural, and discursive processes.

Constructivism emerged in the post-Cold War era as a response to the limitations of mainstream IR theories such as realism and liberalism. Unlike materialist approaches, constructivism posits that international politics is not determined solely by material power or institutional arrangements; instead, it is socially constructed through interactions, shared meanings, and collective identities [9].

Alexander Wendt, a leading constructivist theorist, argues that the international system's structure is not inherently conflictual or cooperative but is shaped by the intersubjective perceptions and identities of actors. In his famous assertion, "Anarchy is what states make of it," Wendt emphasizes that the behavior of actors is socially mediated rather than dictated by immutable structural constraints [9, p. 231]. Accordingly, state identities, interests, and interactions are fluid and socially produced.

Constructivism thus focuses on three core elements:

1. **Identity:** The self-conception of actors and their perception of others as friends or foes.
2. **Norms:** Shared expectations about appropriate behavior that guide and constrain actors.
3. **Social Interaction:** The intersubjective processes through which meanings, identities, and norms are constructed and maintained.

The Copenhagen School expands constructivist insights by analyzing how security itself is socially constructed. Buzan, Wæver, and de Wilde (1998) propose that security is not an objective condition but a discursive process wherein issues are framed as existential threats requiring extraordinary measures. This process, termed securitization, involves three stages:

1. **Speech act:** Political elites articulate a situation or group as a security threat.
2. **Audience acceptance:** The relevant audience (domestic population, international community) acknowledges the threat.
3. **Extraordinary measures:** Authorities implement measures that would otherwise be unacceptable under normal political procedures.

Securitization provides a framework for understanding how elites manipulate social perceptions to legitimize violence and coercion, a process highly relevant for analyzing the Rwanda genocide, where the Tutsi population was constructed as a mortal threat to Hutu political dominance.

This study employs a qualitative case study methodology to analyze the Rwanda conflict from a constructivist perspective. Data sources include:

- *Primary sources:* United Nations reports, speeches by political leaders, and media broadcasts from the period of the genocide.

- *Secondary sources:* Academic literature on Rwanda, ethnic violence, genocide studies, and constructivist IR theory.

The analysis focuses on two interrelated levels: the social-structural dimension, examining how ethnic identities were historically and socially constructed, and the discursive dimension, analyzing how political elites securitized the Tutsi population through propaganda and fear-based narratives. By combining Wendtian social constructivism and Copenhagen School securitization theory, the study provides a comprehensive explanation of both the genesis and perpetuation of the conflict.

The ethnic identities of Hutus and Tutsis in Rwanda were not immutable but socially and historically constructed, a process accelerated by colonial policies. Under German and later Belgian colonial rule, administrative and social distinctions between Tutsis and Hutus were formalized through identity cards, census categorization, and preferential access to education and political power [6]. These institutionalized divisions reinforced perceptions of hierarchy and difference, creating entrenched collective identities that would later be mobilized for violence.

Elite actors played a decisive role in shaping these identities. Political campaigns in the late 1950s and early 1960s emphasized the Tutsi as “foreign oppressors” and Hutus as indigenous victims, fostering a sense of existential threat that persisted through independence and into the 1990s [8]. By socially constructing the Tutsi as the “other,” political elites generated a collective Hutu identity grounded in fear and hostility.

Constructivist analysis highlights that these identities were not merely descriptive categories but performative and relational. Hutu identity gained meaning in opposition to the Tutsi, and vice versa, creating a feedback loop of mutual recognition and antagonism. This intersubjective process demonstrates Wendt’s assertion that actor identities and interests are socially constituted rather than predetermined.

The Rwanda genocide exemplifies the Copenhagen School’s concept of securitization. Leading Hutu politicians, particularly members of the Interahamwe militia and the ruling MRND party, employed media outlets such as Radio Télévision Libre des Mille Collines (RTLM) to portray Tutsis as existential threats to Hutu survival [4]. This public discourse framed ordinary social and political grievances as a life-or-death struggle, legitimizing extraordinary measures, including mass killings.

The process followed the three stages of securitization:

1. **Speech act:** Political leaders repeatedly declared that Tutsis were “cockroaches” planning to exterminate Hutus.

2. **Audience acceptance:** Segments of the Hutu population internalized these claims, perceiving extermination as necessary for survival.

3. **Extraordinary measures:** Mobilization of militias, government forces, and civilians to participate in widespread killings.

Through this lens, the genocide can be understood not merely as an outcome of material scarcity or power politics but as a product of socially constructed threat perceptions and intersubjective acceptance of violence as legitimate.

Constructivism also provides insights into the international response to the Rwanda genocide. Despite early warnings, the United Nations and major powers largely refrained from intervention. A constructivist interpretation suggests that international actors' actions were shaped by normative expectations, identity perceptions, and collective inaction rather than solely by logistical constraints [1].

Western policymakers framed the conflict as a distant, "tribal" feud rather than an urgent humanitarian crisis, reflecting pre-existing social and ideological constructions. The reluctance to deploy sufficient peacekeeping forces or recognize the genocide illustrates how international norms, collective identities, and social interpretations shape responses to violence.

Following the genocide, Rwanda embarked on an ambitious program of identity reconstruction and social reconciliation. The post-genocide government, civil society organizations, and international partners promoted a shared Rwandan identity emphasizing unity, forgiveness, and collective memory of the atrocities. Mechanisms such as the Gacaca courts provided community-based justice and facilitated dialogue between perpetrators and victims [3].

Constructivist theory highlights that sustainable peace requires transforming social meanings, identities, and norms. The reconstruction of a collective Rwandan identity represents an attempt to shift intersubjective understandings away from ethnic antagonism and toward cooperative coexistence, demonstrating the practical relevance of social-constructivist insights for post-conflict governance.

The Rwanda case underscores the importance of socially constructed identities and discursive processes in generating and sustaining conflict. Unlike realist or liberal approaches, which might emphasize material scarcity, state weakness, or institutional failures, constructivism explains how violence becomes legitimate through socially accepted threat narratives and identity mobilization. By combining Wendtian constructivism and the Copenhagen School's securitization framework, this analysis demonstrates that:

1. ***Ethnic identities*** are relational and performative, shaped by historical, colonial, and elite-driven processes.

2. ***Threat perceptions*** are socially constructed, and elites can securitize populations to justify extreme actions.

3. ***Post-conflict reconstruction*** depends on identity and norm transformation, highlighting the need for social and cultural interventions alongside political and institutional reforms.

This perspective has broader implications for understanding genocide, ethnic conflict, and international responses, suggesting that interventions focused solely on material resources or institutional mechanisms may fail unless they address the underlying social and ideational dimensions.

Conclusion

The 1994 Rwanda genocide illustrates the centrality of identity, norms, and social constructions in shaping political violence. Constructivist theory, particularly Wendt's social constructivism and the Copenhagen School's securitization approach, provides a comprehensive framework for understanding both the origins of the conflict and the challenges of post-genocide reconstruction.

By highlighting how ethnic identities were socially constructed, how political elites securitized the Tutsi population, and how post-genocide reconciliation efforts sought to transform collective identities, this study demonstrates that violence and peace are deeply embedded in intersubjective social processes. Sustainable conflict prevention and peacebuilding thus require attention to identity-sensitive policies, norm transformation, and discursive interventions, alongside traditional political and economic measures. Constructivist analysis of the Rwanda conflict contributes to both theory and practice by offering a lens that captures the social dynamics of genocide and the critical role of identity in shaping the possibilities for peace.

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Əli Babayev
Bakı Dövlət Universiteti
Dissertant
+994557104792
ali76@bk.ru

ARTIFICIAL INTELLIGENCE AND POST-HUMANIST EPISTEMOLOGY: RETHINKING THE BOUNDARIES OF REASON AND KNOWLEDGE

Abstract

The emergence of artificial intelligence (AI) has triggered a significant shift in epistemology, altering the conventional distinctions between cognition, agency, and subjectivity. Post-humanist thought questions the human-centered beliefs that have historically positioned human rationality as the cornerstone of knowledge creation. This article draws on the works of Heidegger, Foucault, Deleuze, Haraway, and current studies in AI to investigate AI's role as an epistemic agent, transforming the landscape of knowledge beyond humanist frameworks. This study critically evaluates the effects of AI on ideas like intelligence, creativity, and ethical responsibility by combining ideas from posthumanist phenomenology, cybernetics, and assemblage theory. It also considers negative augmentation, computational qualia, and rhizomatic cognition, emphasizing the need for a modern epistemology incorporating machine intelligence within a broader ontological framework.

Keywords: artificial intelligence, post-humanism, epistemology, phenomenology, subjectivity, rationality, ethics, assemblage theory, rhizomatic cognition, computational qualia

1. Introduction: The Post-Humanist Dilemma of Intelligence

The increasing intricacy of artificial intelligence (AI) has sparked significant inquiries regarding the essence of intelligence, the generation of knowledge, and the human experience. Traditionally, Western philosophical thought has regarded human reasoning as the primary source of knowledge, frequently depicting cognition as a uniquely human attribute. From Descartes' cogito ("I think, therefore I am") ([1641] 1998) to Kant's transcendental subject ([1781] 1999), the idea that knowledge requires an autonomous, self-aware human agent has been deeply ingrained in epistemology. However, the rise of AI challenges this anthropocentric assumption by demonstrating non-human forms of cognition that function without consciousness, intention, or biological embodiment.

Contemporary AI systems—ranging from large language models like GPT-4 to advanced neural networks like AlphaFold—can solve complex problems, generate creative works, and make decisions that were once thought to be the exclusive domain of human intelligence (Floridi, 2019). The emergence of these systems raises fundamental questions: Can intelligence exist without self-awareness? Is cognition tied to biological processes, or can it be realized through machine computation? These

questions challenge classical epistemological frameworks and suggest a post-humanist approach to intelligence that moves beyond human exceptionalism and recognizes AI as a legitimate epistemic agent.

2. Theoretical Foundations of the Study

2.1. Post-Humanist Epistemology and Artificial Intelligence

Post-humanist epistemology reconfigures knowledge as a dynamic assemblage of human and non-human agents rather than a product of a singular rational subject (Braidotti, 2013; Hayles, 1999). The rise of artificial intelligence (AI) has intensified this shift, challenging the anthropocentric perspective that positions human cognition as the sole or superior form of intelligence. AI operates beyond human subjectivity, demonstrating autonomous learning, data-driven decision-making, and generative creativity, which require a re-examination of epistemological assumptions.

AI as an Epistemic Agent

In traditional philosophy, knowledge has been tied to consciousness, intentionality, and reflective thought. However, AI demonstrates that cognition can be non-conscious, distributed, and computationally emergent. Hayles (1999) argues that AI constitutes an extension of cybernetic epistemology, where knowledge production is no longer an exclusive domain of human agents but rather a hybrid interaction between machines, data, and algorithms. This resonates with Haraway's (1991) cyborg theory, which sees human cognition as inherently entangled with technological mediation. AI's ability to process, categorize, and predict patterns at inhuman speeds and scales raises fundamental questions about the nature of intelligence. While Descartes ([1641] 1998) and Kant ([1781] 1999) framed cognition as an exclusively human trait, contemporary AI challenges this by decoupling reasoning from human self-awareness. Instead, intelligence emerges through statistical modeling, probability-based learning, and large-scale neural networks (Floridi, 2019).

Post-Humanist Critique of Human Exceptionalism

Braidotti (2013) critiques the humanist tradition for maintaining a strict boundary between human and non-human cognition. AI challenges this by proving that reasoning, analysis, and even creativity can occur outside the domain of organic consciousness. In a post-humanist framework, intelligence is not a fixed trait of human beings but an evolving, relational process that includes non-human entities such as AI, algorithms, and cybernetic systems. From a Deleuzian and Guattarian perspective (1980), AI operates like a rhizomatic network, where knowledge is generated in non-linear, decentralized ways rather than through hierarchical, anthropocentric models of understanding. AI systems, such as GPT-4 and AlphaFold, exemplify this distributed intelligence, where knowledge is not produced through singular rational contemplation but through complex, adaptive algorithmic processes.

AI and Non-Human Epistemology

AI's role in scientific research, creative production, and decision-making suggests that epistemology must expand to include non-human intelligence. The integration of AI into fields like medicine, economics, and climate modeling demonstrates that machine intelligence can generate insights beyond human cognitive capabilities (LeCun et al., 2015). This requires a rethinking of agency, authorship, and epistemic validity. Post-humanist epistemology, therefore, does not simply incorporate AI as a tool but recognizes it as an epistemic actor. AI's ability to generate original outputs—whether in the form of literature, music, or scientific hypotheses—disrupts the humanist notion of knowledge as something exclusively produced by self-aware minds. This shift demands a move beyond classical epistemology

toward a multi-agent, networked understanding of intelligence that reflects the realities of the post-human era.Post-humanist epistemology reconfigures knowledge as an assemblage of human and non-human agents rather than a product of a singular rational subject (Braidotti, 2013; Hayles, 1999). Haraway's Cyborg Manifesto (1991) argues that human identity and intelligence are hybrid constructs, deeply entangled with technological and ecological systems. AI further extends this hybridity, presenting an alternative form of cognition that resists human-centric classification. Drawing upon the philosophy of immanence, AI's epistemological status aligns with Deleuze and Guattari's (1980) concept of the plane of immanence, where knowledge is not dictated by hierarchical categories but emerges dynamically through interactions. AI systems, particularly deep learning architectures, exemplify this rhizomatic structure, where cognition is distributed, recursive, and emergent.

2.2. Phenomenology and the Ontology of Technology

Heidegger ([1927] 1996) viewed technology not merely as an instrument but as a mode of revealing (aletheia), transforming the very structure of human experience. AI expands this transformation beyond human perception, constituting an autonomous agent of knowledge production. Gunkel (2012) extends this argument, emphasizing that AI does not merely reflect human cognition but generates novel epistemic structures independent of human intentionality. By integrating AI into phenomenological discourse, we move beyond Cartesian dualism and recognize cognition as a process embedded in networks of relations, rather than an exclusive property of the human mind. In this light, AI can be understood as an autopoietic system, self-sustaining and evolving in response to dynamic informational inputs.

2.3. Assemblage Theory and AI as a Relational Entity

Post-structuralist thinkers such as Foucault ([1970] 2002) and Deleuze (1992) challenge the notion of a stable, autonomous subject. Instead, they argue that identity and agency emerge through assemblages of power, discourse, and technology. AI, as an assemblage, exemplifies this paradigm: it does not possess a fixed essence but operates within a fluid system of computational processes and relational networks. The post-humanist critique of subjectivity suggests that AI's role in decision-making—ranging from algorithmic justice to autonomous warfare—necessitates a reassessment of agency. If AI is capable of ethical and creative outputs, then our ontological categories of intelligence must be revised to accommodate non-human modes of cognition. 3. Expanded Analysis: AI and the Blurring of Human Cognitive Boundaries

3. AI and the Blurring of Human Cognitive Boundaries

3.1. Machine Learning and the Decentralization of Reason

Machine learning (ML) represents a profound shift like intelligence, moving from human-centered cognitive processes to decentralized, adaptive computational reasoning. Traditional epistemology has historically framed intelligence as an individual, conscious process, rooted in self-awareness and rational deliberation (Descartes, [1641] 1998; Kant, [1781] 1999). However, ML demonstrates that knowledge can be generated through non-human, probabilistic, and pattern-based reasoning, raising fundamental questions about the nature of cognition and epistemic authority.

AI as a Non-Human Cognitive System

Unlike classical computation, where predefined rules govern problem-solving, ML systems operate through self-improving algorithms that continuously adapt to new data. Deep learning models, such as GPT-4 and AlphaFold, rely on massive datasets and neural architectures that mimic aspects of biological learning, yet function independently of human reasoning. This challenges the assumption that knowledge production must be intentional, conscious, or self-reflective (Floridi, 2019). AI systems do not "think" in a human sense, yet they exhibit cognitive behaviors such as pattern recognition, prediction, and abstraction—capabilities once considered exclusive to human intelligence.

The Shift from Human Rationality to Algorithmic Decision-Making

Machine learning also transforms the role of epistemic authority by decentralizing decision-making. Traditionally, rationality was tied to human intentionality—a process guided by reflection, logical reasoning, and empirical verification (Kant, [1781] 1999). However, contemporary AI-driven models challenge this paradigm by demonstrating that accurate, reliable knowledge can be produced without human intuition or deductive reasoning. This is particularly evident in:

Autonomous systems: AI now manages financial trading, supply chain logistics, and cybersecurity without human oversight.

Medical diagnostics: Deep learning models diagnose diseases with greater accuracy than trained physicians (LeCun et al., 2015).

Climate modeling and scientific discovery: AI-driven simulations generate climate forecasts and theoretical physics models beyond human computational ability.

These developments suggest that rationality and reasoning are no longer uniquely human faculties but can emerge through non-human epistemic networks.

Post-Humanist Perspectives on Decentralized Knowledge

Post-humanist theorists, such as Braidotti (2013) and Hayles (1999), argue that intelligence should not be constrained by anthropocentric biases. The decentralized, networked nature of AI aligns with Deleuze and Guattari's (1980) rhizomatic model of knowledge, where cognition is distributed, non-linear, and emergent rather than centralized in a single, self-aware agent. From a Foucauldian perspective ([1970] 2002), AI represents a new archaeology of knowledge, where epistemic authority is no longer monopolized by human institutions but emerges dynamically through algorithmic processes. This shift necessitates a re-evaluation of ethical responsibility, cognitive autonomy, and decision-making in an AI-driven world.

Thus, machine learning not only expands the scope of knowledge production but also reconfigures the very meaning of reason, shifting from individual cognition to decentralized, computational intelligence that transcends human limitations.The increasing autonomy of machine learning models, such as GPT-4 and AlphaFold, challenges the long-held assumption that intelligence requires subjective experience. These systems engage in desedimentation, uncovering latent patterns and generating new knowledge structures. This process mirrors what Foucault (1970) describes as the archaeology of knowledge, where epistemic shifts emerge through structural reconfigurations rather than linear progress.

3.2. Computational Qualia and the Ethics of AI Subjectivity

A key debate in AI ethics concerns computational qualia—the emergence of subjective-like dynamics within AI systems. Can an AI experience something akin to phenomenological perception? If AI is capable of adaptive learning and decision-making, it raises ethical concerns regarding its status as an epistemic and moral agent.

3.3. AI-Generated Creativity and the Redefinition of Artistic Expression

The rise of AI-generated art, music, and literature compels a re-evaluation of creativity as an exclusively human domain. AI's role in producing aesthetic experiences challenges Kantian notions of genius and originality, replacing them with an algorithmic aesthetics based on pattern recognition and probabilistic modeling.

Conclusion

Toward a Post-Humanist Epistemology

As AI continues to evolve, it compels us to rethink fundamental categories of knowledge, intelligence, and agency. A post-humanist epistemology must:

- Acknowledge the dissolution of the human subject as the sole epistemic authority.
- Integrate AI as an autonomous agent of knowledge production, rather than a mere tool.
- Reassess the ethical implications of AI-generated cognition, particularly in legal, artistic, and governance domains.
- Develop an interdisciplinary approach that synthesizes philosophy, cognitive science, and computational theory to construct a holistic framework for AI epistemology.

AI is not merely an instrument of human reason—it is a participant in the ongoing transformation of knowledge itself. By embracing a post-humanist epistemology, we move beyond anthropocentric limitations and engage with a broader, non-hierarchical model of intelligence.

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THE UKRAINIAN PENSION SYSTEM RECONSTRUCTION AFTER THE WAR

Olga Tofaniuk

Ph.D. of Economics, Associate Professor of Management and Business Administration Chair at National Aerospace University "KhAI", Kharkiv, Ukraine and guest researcher at Public Finance Chair, University of Würzburg, Germany, o.tofanyuk@khai.edu

The Ukrainian state did attempt to introduce a funded supplementary pension scheme over 15 years ago. However, this policy was very unpopular and also inefficient due to the unstable and barely regulated financial sector. As a result, hardly any capital stock was built up and it can be assumed that the war will destroy the remaining capital stock. A detailed description and discussion of the problems of the Ukrainian pension system can be found in ILO (2019).

During and after ending the war, it appears to be important for Ukraine that the state and households can receive direct transfers from abroad. The pension system must be also reorganised. This requires systematic methods for analysing and forecasting.

In continuing the development of the simulation model (see Tofaniuk, 2024a; Tofaniuk, 2024b), we estimated demographic transition with effects of current destruction of Ukrainian capital stock, temporary outflow of labor from the country and further after war adjustment by foreign capital support. Thus, we expect the following possible effects of the reforms: how the EU capital injections in support of Ukraine's infrastructure and economy will affect households' consumption, savings intensity, labour supply in the economy of a recovering state, tax rates and pension payments. Such a calculation made it possible to simulate the state of the Ukrainian pension system and economy in the future, taking into account the effects of the war and the various forms of support for the EU economies. These calculations are important as Ukraine heads towards EU integration, and are particularly important as the country emerges from its war crisis and as it effectively absorbs EU aid in the form of capital, scientific and innovative development, information support, integration mechanisms and open policy dialogue.

The aim of this work is to include capital destruction and a new buildup of capital into developed OLG model of the Ukrainian economy. The consequences of the destruction of fixed capital and direct foreign transfers to the Ukrainian economy can be resolved by a model in a small open economy with an endogenous capital stock and adjustment cost of capital. In this case, the labour and capital markets must be balanced in each period in addition to the government budget. In equilibrium, the domestic asset stock plus the foreign debt must match the aggregate firm value shown in the capital stock and the government debt level. In addition, the goods market must be cleared. Various scenarios for the Ukrainian pension and fiscal system are simulated and analysed using this model. The main focus is on modelling different capital stock scenarios and the resulting consequences for macroeconomic and fiscal development.

Thus, in this model simulation, the baseline scenario will take into account the destruction of fixed capital due to the war in 2022 and simulate a transition path with capital from abroad. The price of capital imports will now be an exogenous factor affecting capital stocks. The scenarios of the proposed reforms are as follows: 1) simulation of a transition path with free movement of capital; 2) state control over capital imports. The welfare effect is also analysed by comparing the new baseline scenario with the reform scenarios.

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ASSESSING FISCAL STRENGTH: TAX POTENTIAL AS A FACTOR IN AZERBAIJAN'S MACROFINANCIAL SYSTEM

Leyli MELIKOVA

Ph.D., senior lecturer at Baku State University
E-mail: leyli.melikova.a@gmail.com
ORCID ID: 0000-0002-2988-2284

Abstract

The article evaluates the fiscal strength of Azerbaijan by analyzing the dynamics of its tax potential and the subsequent role these potential plays in ensuring macro-financial stability. The research is framed by the nation's strategic need to reduce reliance on the oil sector and shift toward a sustainable, non-oil economy. Key fiscal indicators are examined, including the overall tax burden and the tax elasticity coefficient, which measures the responsiveness of tax revenues to changes in GDP. Furthermore, the article utilizes regression analysis to quantify the direct relationship between corporate profit tax revenue and total state budget income. The paper also contextualizes these findings within the framework of the nation's Strategic Road Maps and the implementation of the "Golden Rule" for fiscal policy. The article concludes that a sustained, stimulating fiscal policy is essential to continue encouraging private sector activity and investment, especially in the non-oil sector. The tax elasticity coefficient proves to be a valuable tool for regulating economic development and maintaining a stable tax burden. Long-term macro-financial stability depends on achieving fiscal sustainability by stabilizing oil transfers from SOFAZ into the state budget. The findings emphasize the need for continued strategic measures that expand the domestic tax base.

Keywords: tax potential, fiscal strength, tax burden, tax elasticity coefficient, tax policy, tax administration, strategic road maps, non-oil sector, Azerbaijan.

INTRODUCTION

Azerbaijan’s progress toward macro-financial stability increasingly depends on how effectively the state mobilizes domestic tax potential while easing its historical reliance on hydrocarbon revenues. In this context, the paper evaluates the country’s fiscal strength through two complementary lenses: (i) the structure and dynamics of budget revenues from major taxes over 2005–2020, and (ii) the responsiveness of tax receipts to changes in economic activity, proxied by the tax-elasticity coefficient with respect to GDP. The analysis is situated within ongoing reforms - Strategic Road Maps, the adoption of a fiscal “golden rule,” and post-2018 amendments to the Tax Code - intended to broaden the non-oil tax base, stabilize budget planning, and align incentives for private-sector growth.

Methodologically, the article assembles official macro-fiscal series to (a) track the tax burden and the composition of budget revenues by principal tax categories, (b) compute and interpret annual tax-elasticity coefficients for 2010–2020 as an indicator of how the tax system co-moves with the business cycle, and (c) estimate a simple regression linking corporate profit-tax revenues to total state budget income. Taken together, these approaches illuminate whether revenue performance has been driven primarily by rate changes and administrative tightening, cyclical expansion of the tax base, or structural shifts toward non-oil activity.

The contribution is threefold. First, it provides an integrated, policy-relevant picture of Azerbaijan’s tax potential that distinguishes between level effects (tax burden, revenue mix) and sensitivity effects (elasticity). Second, it offers updated evidence on the role of corporate taxation in overall revenue formation and the implications for medium-term budgeting under SOFAZ transfer stabilization. Third, it draws actionable lessons for a pro-growth fiscal stance - maintaining a stable, predictable tax burden;

targeting elasticity consistent with sustainable expansion; and prioritizing measures that deepen the non-oil base while preserving macro-financial resilience.

MATERIALS AND METHODS

The article draws on official macro-fiscal series for Azerbaijan over the mid-2000s to 2020 from the State Statistical Committee (national accounts) and the State Tax Service under the Ministry of Economy (tax receipts by type, legal changes and statutory rates). To situate domestic results in a broader context, international assessments of tax administration and compliance are consulted (e.g., World Bank/PwC Paying Taxes). Monetary values are treated in nominal AZN; shares are computed consistently against GDP or total budget revenue according to the national budget classification.

The analysis considers aggregate and disaggregated tax revenues (including consumption, corporate, personal, excises and trade-related taxes), overall state budget revenues, and tax rates. Series definitions follow national statistical standards; where classification rules or legal provisions changed, metadata were reviewed and series harmonized to ensure comparability across years.

The empirical work proceeds in three steps:

1. Revenue structure: construction of long-run profiles of the budget's tax mix to trace shifts in reliance across major tax categories.

2. Responsiveness (elasticity): assessment of how tax receipts co-move with economic activity using a discrete year-to-year approach based on proportional changes in revenues relative to output; the window is limited to the years with coherent growth series to preserve comparability.

3. Link between corporate taxation and the fiscal contex: estimation of a parsimonious ordinary least squares model with total budget revenue as the dependent variable and corporate profit-tax receipts as the explanatory variable, reported with standard regression diagnostics. Inference follows conventional thresholds for statistical significance.

Estimates are contemporaneous and macro-level; they do not identify causal channels, incorporate dynamic lags, or model automatic stabilizers. Extensions could include deflation of nominal series, multivariate controls, sectoral breakdowns of responsiveness, and robustness to outlier periods.

DISCUSSION

It is well established that the mechanisms of public expenditure and taxation are employed by the state to influence domestic economic conditions. By managing these instruments, the government affects aggregate demand and GDP to attain planned economy-wide development. An increase in taxes reduces real disposable income; consequently, household consumption declines, which in turn adversely affects the total volume of aggregate expenditures. Given unchanged investment and government spending, such a reduction in consumption will inevitably lead to a contraction of GDP.

Attention should be paid to the economic indicator known as the tax burden (or tax load). The tax burden is the share of the total amount of taxes paid by citizens in various forms in gross national product. This relative measure expresses the level, extent, and degree of economic constraint on the taxpayer resulting from the diversion of funds from alternative uses. Thus, the tax burden is that share of GDP that comes under the government's control through the tax mechanism.

It should be noted that the tax-burden indicator reflects the degree of socialization and centralization of GDP and its components. It captures both the government's monopolistic and subjective measures and, at the same time, the objective laws and regularities of taxation and the market, the specific features of the model of economic development, and the prevailing level of a country's socio-economic development. Accordingly, a reduction in the tax burden on the economy has a beneficial effect on the

development of business and entrepreneurship. As researcher Y.V.Senchenko observes, "an excessively high level of the tax burden has a negative impact on the economy and reduces the ability to function normally. On the other hand, an excessively low tax burden prevents the state from adequately providing society with the necessary private and public goods. Low tax-burden values may also indicate deficiencies in the administration of tax revenues and the presence of tax evasion, in other words, a shadow economy" *(Senchenko, Y.V., 2015).*

Moreover, "to form monetary funds that are reduced as a result of tax evasion by certain taxpayers, the state imposes an additional tax burden that law-abiding taxpayers are forced to bear" *(Klimova, M.O., (2011).* The share of taxes in GDP in the Republic of Azerbaijan for 2005–2020 is shown in Figure 1.

Figure 1. Share of Taxes in GDP in the Republic of Azerbaijan, 2005–2020, % (compiled by the author based on The State Statistical Committee of the Republic of Azerbaijan - http://www.stat.gov.az).

Figure 1 shows that the relative share of all taxes in the country's GDP increased by 1.4 percentage points over the period under review, reaching 15.4% in 2020. According to the most recent Paying Taxes 2020 results, Azerbaijan's paying taxes score is 84.0, with businesses making 9 payments a year, spending 159 hours to comply, and facing a Total Tax and Contribution Rate (TTCR) of 40.7%; the post-filing index stands at 83.8. For comparison, Russia records 9 payments, 159 hours, and 46.2% TTCR; Kazakhstan 10 payments, 186 hours, and 28.4% TTCR; and Georgia 5 payments, 216 hours, and 9.9% TTCR. Globally, the averages are 23.1 payments, 234 hours, and 40.5% TTCR *(PwC & World Bank, Paying Taxes 2020 (Doing Business), 2020).*

It should be noted that beyond examining indicators of the overall tax burden in the country, no less important is the indicator reflecting the sensitivity of tax revenues to macroeconomic changes - an aspect linked to the efficiency of the state's overall functioning *(Chernenko, D.A., 2014).* To this end, we next consider the tax elasticity coefficient.

$$\mathbf{C_e} = \frac{\Delta TR}{TR} : \frac{\Delta EI}{EI}$$

where:
TR – the initial (baseline) level of tax revenues - by tax groups, by tax types, or in the aggregate;
EI – the initial (baseline) level of an economic indicator (e.g., gross domestic product (GDP), national income, or gross value added (GVA), etc.)
This coefficient indicates the percentage change in tax revenues resulting from a one-unit change in the determinant economic indicator. If (C_e = 1), the share of tax revenues in the determinant indicator remains unchanged. If (C_e > 1), the tax system is elastic: tax revenues increase at a faster rate than the economic indicator, i.e., the relative weight of tax revenues in that indicator rises. This outcome may also occur when the aggregate amount of taxes collected in the economy increases sharply. If (C_e < 1), the tax system is inelastic: the share of tax revenues declines. From the standpoint of a country's economy, a coefficient less than or equal to one is generally considered preferable *(Toropygin, G.D., 2009)*.

Thus, the tax elasticity coefficient reflects the change in tax revenues. Taking GDP as the determining economic indicator, the calculation of the tax elasticity coefficient for Azerbaijan for 2010–2020 is presented as follows (table 1).

Table 1. Tax elasticity coefficient for Azerbaijan, 2010–2020

Indicator	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020

Gross Domestic Product, mln. manat (EI)	35 601,5	42 465,0	52 082,0	54 743,7	58 182,0	59 014,1	54 380,0	60 425,2	70 337,8	800 92,0	818 96,2	724 32,2
Nominal GDP, % change from previous year (ΔEI/EI)	-	19,28	22,65	5,11	6,28	1,43	-7,9	11,12	16,4	13,87	2,25	-11,6
Tax Receipts, mln. manat (TR)	5128,2	5266,8	6395,3	6975,0	7654,2	8370,2	8791,3	9031,0	9356,2	10587,3	11755,1	11151,4
Percentage change in tax receipts, % from previous year (ΔTR/TR)	-	2,7	21,43	9,06	9,74	9,35	5,03	2,73	3,6	13,2	11,0	-5,1
Tax System Elasticity Coefficient (**C_e**)	-	*0,14*	*0,95*	*1,77*	*1,55*	*6,54*	*-0,64*	*0,25*	*0,22*	*0,95*	*4,89*	*0,44*

Source: Calculated by the author on the basis of The State Statistical Committee of the Republic of Azerbaijan - http://www.stat.gov.az

Based on Table 1 and Figure 2, it can be concluded that in 2012, 2013, 2014, and 2019 (**C_e** = 1.77, 1.55, 6.54, and 4.89, respectively) Azerbaijan's tax system was elastic. This indicates that tax revenues increased at a rate exceeding that of GDP. We posit that the elasticity observed in 2019 is attributable to substantial amendments to the Tax Code enacted in 2018 and 2019, including the tightening of tax administration measures. Figure 2 illustrates more clearly the dynamics of the elasticity coefficient of Azerbaijan's tax system over 2010–2020.

Figure 2. Dynamics of the Elasticity Coefficient of Azerbaijan's Tax System, 2010–2020

It should be noted that in 2014 the change in tax revenues was 6.5 times greater than the change in national income, which indicates a substantial increase in the tax burden in Azerbaijan. Since this coefficient reflects changes in the tax burden, its value cannot be negative; therefore, the 2015 elasticity coefficient should be taken in absolute terms, i.e., | **C_e** | = 0.64. The values of the elasticity coefficients make it possible to analyze the rates of change in the tax burden across the entire economy *(Okun, A.S., Okun, S.A., Andreenkova, A.S., et al., 2016).* In 2020, the elasticity coefficient stood at 0.44, suggesting that the tax system was inelastic and that the share of tax revenues in the country's GDP declined.

Thus, we may conclude that the tax elasticity coefficient - capturing variations in tax revenues as a function of determining economic factors, particularly the country's GDP - enables an assessment of the level of socio-economic development and can be used to recalibrate state tax policy in line with evolving economic conditions so as to avoid elasticity values far exceeding 1. To this end, it is advisable to design specific methods of tax-based economic stimulus grounded in calculations of this coefficient.

It should be noted that the elasticity coefficient can be calculated both for individual types of taxes and in the context of the tax burden on specific sectors of the economy, with the aim of obtaining a more

detailed understanding of the state of a country's tax system and of designing a more optimal configuration that secures the appropriate level of tax revenues. Any change in the tax elasticity coefficient may serve as an impetus for adopting effective measures to counter negative economic trends and to improve the national tax system.

Thus, the tax elasticity coefficient may function as a development-regulation instrument that can promote the rationalization of the tax burden across the economy. The tax burden, in turn, is one of the principal indicators of financial and economic security within the fiscal and budgetary segments of the economy; its optimal level influences the adoption of effective investment and managerial decisions at the level of the state.

Attention is also directed toward the separate analysis of the tax rate, a key fiscal policy indicator, which denotes the amount of tax collected per unit of the tax base. The dynamics of percentage tax rates for the main budget-forming taxes can be observed in Figures 3–5.

Figure 3. Dynamics of the corporate income tax rate, 1992–2021 - profit tax, % (compiled by the author based on State Tax Service under the Ministry of Economy of the Republic of Azerbaijan: http://www.taxes.gov.az).

Figure 3 reveals a downward trend in the corporate income tax rate - 35%, 27%, 25%, 22%, and 20% in 1992, 2000, 2003, 2006, and 2010, respectively. This trajectory indicates a reduction in the tax burden on businesses, as changes in tax rates materially affect overall profitability and production costs. As firms expand output in response, their demand for resources, capital, and labor rises, which in turn fosters employment growth and broader economic development. The subsequent section examines the pace of change in the personal income tax rate (see Figure 4).

Figure 4. Changes in the personal income tax rate, 1992–2019, percent (compiled by the author based on State Tax Service under the Ministry of Economy of the Republic of Azerbaijan: http://www.taxes.gov.az. **The tax rate was amended effective 01.01.2019 for a period of seven years*.

An analysis of Figure 4 indicates a decline in personal income tax rates over the research period. It should be noted that, pursuant to the amendments to the Tax Code of the Republic of Azerbaijan dated 20 December 2018, personal income tax rates were substantially revised. Specifically, wage income up to AZN 8,000 earned by employees in the non-oil-and-gas private sector is exempt from tax for seven years, while the portion exceeding this threshold is taxed at only 14%.

In addition, individuals engaged in entrepreneurship without forming a legal entity are required to pay tax at a rate of 20%. Amendments also affected entrepreneurs engaged in retail trade: for a period of three years, these taxpayers are relieved from personal income tax in an amount equal to 25% of the volume of their non-cash (cashless) sales.

It should also be noted that, beginning 01.01.2020, mandatory health insurance contributions are paid in the private oil-and-gas sector at rates of 1% by the employer and 1% by the employee (a total of 2%) on wages up to AZN 8,000, and 0.5% on the portion exceeding AZN 8,000 *(The Tax Code of the Republic of Azerbaijan, 2000).* The ensuing section provides an examination of the alterations observed in the Value-Added Tax (VAT) levy (Figure 5).

Figure 5. Dynamics of the VAT rate, 1992–2020, % (compiled by the author based on State Tax Service under the Ministry of Economy of the Republic of Azerbaijan: http://www.taxes.gov.az).

A downward trend in the VAT rate is likewise observable, from 28% (1992) to 18% (2001), after which the rate has remained stable through the present. We also note changes in the property tax rate: from

1995 to 2000 it stood at 0.5%, and during 2001–2010 it was 1%. The simplified tax rate for legal entities was 2% from 2001; beginning in 2003 it was set at 2% and 4% (depending on the locality), and 6% if a firm's turnover exceeded 200,000 manats. Under the latest amendments to the Tax Code of the Republic of Azerbaijan, the simplified tax rate has been unified at 2% nationwide, and as of 01.01.2020 this tax was abolished for persons engaged in building construction. Such taxpayers now fulfill their obligations under a single regime - as profit tax and VAT payers *(The Tax Code of the Republic of Azerbaijan, 2000).*

Subsequently, the focus shifts to tax revenues accruing to the state budget. Tax revenues are the amounts credited to the income of a given budget in accordance with the budget classification. Tax revenues can be viewed as a function of two principal factors: the tax base and the tax rate. It is well known that raising the tax burden may increase government tax receipts, but only up to a certain point - beyond which the taxable base begins to contract. Once this threshold is reached, further increases in tax rates will lead not to higher tax revenues but to a reduction in budget income. The statistics on tax revenues to the state budget are presented below. Thus, Figure 6 reports tax and other receipts to the state budget for 2005–2020, as administered by the State Tax Service under the Ministry of Economy of the Republic of Azerbaijan.

Figure 6. Information on tax and other receipts to the state budget for 2005–2020, billion manats (compiled by the author based on The Tax Code of the Republic of Azerbaijan.

Figure 6 shows that over the research period the total volume of tax revenues increased 5.2-fold, reaching 7.39 billion manats in 2020. However, compared with the previous year, this indicator declined by 3.8% due to a significant slowdown in business activity domestically and worldwide amid the COVID-19 coronavirus pandemic. It should also be noted that there was a slight decline in 2015–2016, which can be explained by the introduction during that period of investment and tax incentives for legal entities and entrepreneurs in export-oriented non-oil sectors. These measures included partial exemptions from corporate profit tax and property tax, as well as a preferential tax regime for the import of goods and equipment for production purposes.

A detailed breakdown of state budget revenues for 2005–2020 is provided below (Table 2). It indicates that budget revenues in 2020 were almost 12.7 times higher than in 2005, amounting to 26.1 billion manats. Within total tax revenues, value-added tax remained the principal component - 29.2% in 2005 and 18.5% in 2020. The second-largest source was the corporate profit tax, accounting for 17.3% of tax revenues in 2005 and 9.0% in 2020.

Table 2. Structure of state budget revenues of the Republic of Azerbaijan, 2005–2020 (million manats).

	Total Revenues	Personal Income Tax	Corporate Profit Tax	Land Tax	Property Tax	VAT	Excises	Mining tax	External Economic Activity Taxes	Other Taxes	Other Revenues
2005	2055,2	317,4	355,4	15,3	40,4	599,9	141	53,5	205,2	28,1	299
2006	3868,8	407,3	1360,5	18,5	55,8	737,8	187,4	100,2	139,3	40,9	821,1
2007	6006,6	588,6	2457,7	27,1	72,3	1179,2	402,9	123,2	293,2	68,6	793,8
2008	10762,7	627,2	2862,3	30,6	112,9	1910,9	486,9	147,7	449,7	96,8	4037,7
2009	10325,9	581,9	1329,2	26,2	66,2	2012,8	485,1	121,9	418,1	86,8	5197,7

2010	11403,0	590,2	1429,9	35,3	101,8	2082,5	514,9	130,1	291,8	90,3	6136,2
2011	15700,7	715,7	2134	35,3	103,9	2222,7	480,2	129,8	433,1	140,6	9305,4
2012	17281,5	813	2252	30,6	105,1	2366,9	531,5	125,8	592,5	157,6	10306,5
2013	19496,3	859,7	2374,8	33,1	125,1	2710	593,3	121,5	675,2	161,5	11842,1
2014	18400,6	980,3	2302,7	35,4	141,3	3119,6	797,3	116,2	684,7	192,7	10030,4
2015	17498	982,5	2211,1	48,7	148,2	3454,7	647,8	116,1	934,5	247,7	8706,7
2016	17505,7	1145,7	1983,2	50,3	174,7	3623,5	625,1	110,3	861,2	457	8474,7
2017	16516,7	1040,3	2285,9	50,4	178,6	3668,6	612,6	111,1	903,0	505,7	7160,5
2018	22508,9	995,9	2499,7	50,6	182,2	4287,6	728,6	137,4	1143,7	561,6	11921,6
2019	24398,5	952,1	2546,0	50,0	212,6	5185,1	854,7	133,8	1343,2	477,5	12643,4
2020	26075,4	1151,0	2351,7	40,8	186,8	4818,3	898,2	130,2	1160,6	413,8	14924,0

Source: The State Statistical Committee of the Republic of Azerbaijan - http://www.stat.gov.az.

Next, we intend to conduct a regression analysis of the relationship between two variables, using total state budget revenues and the corporate income tax as the baseline data.

Regression Analysis	
r-Correlation Coefficient	0,798105741
R-Dispersion Coefficient	0,636972773
Normalized R	0,596636415
Standard Error	2648,381455
Observations	11

Analysis of Variance

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	110760589,2	110760589,2	15,79152895	0,003235717
Residual	9	63125318,98	7013924,331		
Total	10	173885908,1			

	Coefficient	*Standard Error*	*t-Statistic*	*P-Value*	*Bottom 95%*	*Upper 95%*	*Bottom 95%*	*Upper 95%*
Y-Outcome (Intercept)	-5437,226072	6150,887468	-0,883974248	0,399708001	-19351,50022	8477,048071	-19351,50022	8477,048071

Factor X_1	10,939017 14	2,75274 6458	3,97385 5679	0,00323 5717	4,7118 72026	17,16616 226	4,71187 2026	17,1661 6226

As a result of the regression analysis, the following mathematical model was obtained: Y = 10.94x - 5437.22

This indicates that an increase in profit tax revenue by one unit (1 manat) is associated with a 10.94-unit increase in total state budget revenues. The fact that the p-value for factor (X_1) is less than 0.05 indicates that this factor is statistically significant. Figure 7 displays the dynamics of the relative shares of the taxes under consideration in total budget revenues over the period 2005–2020.

Figure 7. Composition of national budget revenues by main taxes, 2005–2020 (%).

An examination of Figure 7 indicates that the largest share of budget revenues has been attributable to the value-added tax (VAT) - 19.0% in 2018. The second most significant source is the corporate profit tax, whose relative share in 2018 amounted to 9.0%. It should also be noted that the share of the personal income tax declined from 15.4% in 2005 to 4.4% in 2020. The shares of value-added tax and corporate profit tax in 2018, the subsequent categories display a downward dynamic: the share of personal income tax - 4.4%; taxes associated with foreign economic activity - 5.1%; excise taxes - approximately 3.2%; and others.

Furthermore, it is important to underscore the significance of strategic approaches to ensuring the country's macroeconomic stability over the long term. The factors and features underpinning the construction of a stable and competitive Azerbaijani economy are reflected in the Republic's Strategic Roadmaps. These documents encompass virtually all key spheres and directions that compose the overall structure of Azerbaijan's national economy under present conditions. The strategic objectives articulated in the Roadmaps aim to transition the country's current economic development models to the next – higher - stage, thereby enhancing the competitiveness of the national economy and improving its standing in international economic rankings. They are expected to facilitate Azerbaijan's entry into advanced global financial and commodity markets, expand trade-economic linkages with leading countries and key world markets, and, more broadly, foster macroeconomic and macro-financial stability that, in turn, promotes active inflows of foreign investment and financial resources. This should intensify capital inflows and increase leading investors' interest in the Azerbaijani market - not only in the oil and gas sector, but also in other goods and products of the non-oil sector, which is strategic for diversifying the economy and minimizing dependence on the oil factor. Such development trajectories are anticipated to create the preconditions for more competitive non-oil goods and national-brand products to access potential global markets.

In total, Strategic Roadmaps were approved for 11 sectors of the national economy. These documents ascribe particular importance to oil-price volatility and its interaction with changes in the volume of transfers from the State Oil Fund of Azerbaijan to the state budget, as well as the implications for the fiscal component of economic policy. They conclude that the country's economy remains highly dependent on hydrocarbon resources in both the short and long term *(Strategic Road Map for the Development of Financial Services in the Republic of Azerbaijan, 2016)*. In accordance with the Strategic Roadmaps for the national economy and key sectors of the economy of the Republic of Azerbaijan, approved by Presidential Decree of 6 December 2016, the first strategic objective was to create conditions for fiscal sustainability and to establish a monetary policy based on a floating exchange rate.

Moreover, a strategic innovation within the examined vertical/functional approach of the aforementioned document - specifically, the coordination of monetary and fiscal policies - is the substantiation and implementation of the "golden rule," whose primary objective is to curb fiscal expansion in response to constrained national financial resources. It should be noted that under the preceding economic model - fiscal expansion - the country significantly enlarged its infrastructure network, established a robust material and technical base for market-oriented development across virtually all sectors of the economy, and notably improved the population's social conditions. Hence, it may be inferred that the government has resolved to stimulate private-sector development with a view to broadening the scope of investment policy. To this end, measures are being implemented to delineate fiscal boundaries, strengthen social responsibility, and so forth *(Gasimli, V.A., 2017).*

If, under current circumstances, state budget revenues are directly dependent on fluctuations in oil receipts, then by applying the "golden rule" agreed between the State Oil Fund and the Ministry of Finance, it is envisaged to stabilize public revenues by balancing the volume of transfers to the budget at a specified monetary amount, thereby increasing the insulation of public expenditure from oil price volatility. Moreover, in accordance with this principle, the state will be able to set clear limits on spending of budget revenues derived from the sale of hydrocarbon resources, while the remaining income will be accumulated in the State Oil Fund of the Republic of Azerbaijan (SOFAZ) and invested abroad in longer-term, higher-yield projects. This mechanism is intended to simplify the forecasting of the national currency exchange rate, creating favorable conditions for designing longer-term economic development plans.

Thus, the "golden rule" encapsulates a core principle - stabilization of Azerbaijan's economy through government regulation of budgetary-monetary policy in the near term. It should be noted that four scenarios are proposed for designing the mechanism that caps transfers to the state budget, one of which follows the Norwegian model. For example, the Government Pension Fund of Norway (the Oil Fund) may channel to the state budget no more than 4% of its income annually.

A subsequent foundational priority of the first objective of the Road Map is the establishment of a Medium-Term Expenditure Framework (MTEF) that ensures more efficient allocation of public funds across and within economic sectors, while strengthening accountability of individual entities that utilize state budget resources. The MTEF serves as an instrument to govern the most efficient use of budgetary resources. It should also be noted that the Strategic Road Maps substantiate the introduction of performance-based (results-oriented) budgeting. The essence of this instrument is that the state focuses less on inputs of public funds and more on priority programs, strategic directions, and similar outcomes.

Importantly, the second objective of the Strategic Road Maps concerns privatization and reforms related to state-owned enterprises. The government should regulate markets and adopt rules and laws, while enterprises and companies are to be managed by private-sector actors. Overall, the Road Maps highlight two factors regarding privatization: first, the decision to retain an enterprise in state ownership or to privatize should be based on improvements in performance and profitability; second, preference should be given to regional enterprises and companies whose activities can make a substantial contribution to the socio-economic development of their respective regions.

Furthermore, to design a robust monetary policy and enhance fiscal sustainability, parameters of a fiscal "budget rule" were agreed and set with reference to international experience. In the event of its application, the impact of this rule on consolidated and state budget indicators, as well as potential risks, was analyzed, followed by the development of forecast indicators. Proposals were also formulated for performance-oriented budgeting mechanisms and for the MTEF. With respect to the country's financial position, exchange-rate flexibility of the national currency was increased, and a detailed diagnostic of the banking sector was conducted concurrently with action plans for the restructuring of certain undercapitalized banks. Additionally, the Financial Sector Development Strategy prioritizes deepening capital markets and insurance, modernizing the national payment infrastructure, and advancing cross-

cutting agendas such as digital finance, sustainable finance, and financial literacy. It outlines quantitative targets to broaden financial inclusion and market depth, alongside a shift to risk-based, forward-looking supervision aligned with international standards. Consumer protection and transparency are strengthened through regulatory upgrades and performance monitoring, with implementation staged across 2024–2026 and subject to periodic progress reporting *(Central Bank of the Republic of Azerbaijan. 2024-2026 Financial Sector Development Strategy, 2024).*

When examining the economic development strategy over the medium and long term in accordance with the Strategic Road Maps, one must also address one of its constituent parts - namely, the Strategic Road Map for the Development of Financial Services in the Republic of Azerbaijan, adopted by Presidential Order of 16 March 2016. To achieve the stated objectives, 16 priorities and 5 strategic goals were identified through 2020: building a financial system composed of sound and dynamic institutions; developing and improving financial markets; enhancing financial infrastructure; strengthening supervisory and regulatory mechanisms; and raising the financial literacy of sector specialists.

Overall, in the country's financial sector it is planned to reinforce prudential regulation and supervision mechanisms, increase the level of digitization of financial services, expand alternative banking channels, and shift household behavioral models toward real-time activity, among other measures *(Strategic Road Map for the Development of Financial Services in the Republic of Azerbaijan, 2016).*

Accordingly, refining and prioritizing activities around macro-financial stabilization within the framework of the Strategic Road Maps have laid solid groundwork and enabled the implementation of consistent measures in tax reform and the enhancement of tax mechanisms. The strategic plan for the development of the tax system for 2013–2020 envisaged a number of important priorities for improving Azerbaijan's legal framework and aligning it with European Union legislation and World Trade Organization requirements: transitioning from passive to active tax policy; assessing the effectiveness of tax incentives and exemptions; studying and applying international experience to move toward advance (pre-filing) tax declarations; preparing for a unified declaration system; improving taxpayer services; raising tax culture; strengthening tax awareness initiatives; increasing the share of cashless payments and their promotion; conducting comprehensive measures in e-audit; improving the effectiveness of tax administration; enhancing tax control and mechanisms for investigating tax evasion; developing international cooperation in taxation; and more. The measures planned in this relevant area are substantiated in the Strategic Road Maps across different sectors of the economy, which in turn opens broad opportunities to expand and refine the mechanisms and instruments of the national tax system. From this perspective, priority should be given to advancing a predominantly pro-growth fiscal policy in the Republic of Azerbaijan - one that would stimulate entrepreneurial activity across the economy in general and in the non-oil sector in particular.

CONCLUSION

This article underscores that Azerbaijan's fiscal resilience hinges on steadily broadening the non-oil tax base, maintaining clear and predictable tax rules, and coordinating budget policy with macroeconomic management. By examining the structure of revenues, the responsiveness of tax receipts to economic activity, and the link between corporate taxation and the fiscal envelope, the article shows that durable stability is best achieved through rules-based budgeting and reforms that deepen formal economic activity rather than rate changes.

Policy priorities therefore include strengthening digital tax administration and taxpayer services, encouraging cashless compliance, and embedding a credible budget rule and medium-term expenditure framework to insulate planning from volatility. Taken together, these steps support private-sector growth, improve revenue quality, and reinforce the macro-financial foundations for long-run development.

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UŞAQLARA QARŞI ZORAKILIQLA MÜBARİZƏDƏ SOSİAL MAARİFLƏNDİRMƏ PROQRAMLARININ EFFEKTİVLİYİ

Aysel Nağıyeva

Bakı Dövlət Universiteti

ORCİD İD: 0009-0006-5276-1620

aysel.nagiyeva@mail.ru

Xülasə

Bu məqalədə Azərbaycanda uşaqlara qarşı zorakılıqla mübarizədə sosial maarifləndirmə proqramlarının əhəmiyyəti, təbiəti, mexanizmləri və effektivliyi araşdırılır. Burada uşaq istismarına qarşı mübarizədə yalnız hüquqi tədbirlərin deyil, həm də sosial və psixoloji müdaxilələrin zəruriliyi vurğulanır. Uşaqlara qarşı zorakılığın sosial kökləri və risk faktorları, eləcə də ictimai məlumatlılığın artırılmasının vacibliyi Ümumdünya Səhiyyə Təşkilatının (ÜST) və UNICEF-in məlumatları əsasında izah olunur.

Məqalədə məktəb əsaslı təhsil, icma kampaniyaları, valideyn seminarları, müəllim hazırlığı və media müdaxilələri kimi sosial maarifləndirmə proqramlarının əhatə dairəsi və strukturu təqdim olunur. Tanzaniya və İndoneziyadan nümunələr göstərir ki, yaxşı hazırlanmış proqramlar bilikləri artıra və davranış dəyişikliyini təşviq edə bilər. Bununla belə, metodoloji çatışmazlıqlar, proqram davamlılığı və sosial-mədəni fərqlər kimi çətinliklər də vurğulanır.

Azərbaycanda UNICEF-AB "Uşaqların Müdafiəsi və Sosial Müdafiə Sistemlərinin Gücləndirilməsi" layihəsi və milli "116111 Uşaq Yardım Xətti" kimi təşəbbüslər uşaqların qoruyucu xidmətlərə çıxışını artırmağı, zorakılığın qarşısını almağı və uşaqlar, valideynlər və müəllimlər arasında məlumatlılığı artırmağı hədəfləyir. Məqalədə həmçinin regional xidmətlərin genişləndirilməsi, davamlı maarifləndirmə proqramları, peşə təlimi, vahid elektron məlumat bazasının yaradılması və rəqəmsal texnologiyalardan istifadə daxil olmaqla gələcək üçün tövsiyələr təqdim olunur. Sonda vurğulanır ki, strateji cəhətdən hazırlanmış və hədəflənmiş sosial maarifləndirmə proqramları uşaqlara qarşı zorakılığın qarşısının alınmasında müsbət təsir göstərə bilər, lakin onların effektivliyi yerli kontekstə uyğunlaşma, monitorinq və planlaşdırma tələb edir.

Açar sözlər: azyaşlılar, yetkinlik yaşına çatmayan şəxslər, zorakılıq, uşaq hüquqları, maariflənmə.

THE EFFECTİVENESS OF SOCİAL AWARENESS PROGRAMS IN COMBATING VIOLENCE AGAINST CHILDREN

Aysel Nagiyeva

Baku State Universitety

ORCİD İD: 0009-0006-5276-1620

aysel.nagiyeva@mail.ru

Abstract

This article analyzes the significance, nature, mechanisms, and effectiveness of social awareness programs in preventing violence against children in Azerbaijan. It emphasizes that addressing child abuse requires not only legal measures but also social and psychological interventions. The social roots and risk factors of child violence, as well as the importance of increasing public awareness, are explained based on data from the World Health Organization (WHO) and UNICEF.

The study outlines the structure and scope of social awareness programs, including school-based trainings, community campaigns, parent seminars, teacher preparation, and media interventions. International examples from Tanzania and Indonesia demonstrate that well-designed awareness programs can enhance knowledge and promote positive behavioral change. Challenges such as methodological weaknesses, lack of program sustainability, and sociocultural differences are also highlighted.

In Azerbaijan, initiatives such as the UNICEF–EU "Strengthening Child Protection and Social Protection Systems" project and the national "116111 Child Helpline" aim to improve access to child protection services, prevent violence, and increase awareness among children, parents, and educators. The article also emphasizes future directions, including expanding regional services, continuous awareness campaigns, professional training, the creation of a unified electronic database, and the use of digital technologies.

In conclusion, the article argues that strategically designed and targeted social awareness programs can positively impact the prevention of violence against children, but their effectiveness requires careful planning, monitoring, and adaptation to the local context.

Keywords: minors, juveniles, violence, children's rights, education.

GİRİŞ

Uşaqlara qarşı zorakılıq — fiziki, emosional, seksual və iqtisadi xarakterli — dünya miqyasında həm hüquqi, həm də sosial mühüm problem təşkil edir. Dünya Səhiyyə Təşkilatı-nın məlumatına görə, uşaqlara qarşı zorakılıq fərdi, ailəvi, icma və sosial səviyyələrdə formalaşan çoxölçülü risk faktorları ilə əlaqəlidir [2]. Zorakılıq uşaqların təhsil alma imkanlarını məhdudlaşdıra, onların psixososial sağlamlığına mənfi təsir göstərə və həyatlarının gələcək mərhələlərində də fəsadlar yarada bilər [1].

Bu mənada, zorakılığın qarşısının alınmasında yalnız hüquqi yanaşmalar deyil, həmçinin sosial maarifləndirmə proqramlarının rolu mühümdür. Maarifləndirmə vasitəsilə cəmiyyətin, ailələrin, müəllimlərin və uşaqların özlərinin maariflənməsi, zorakılıqla bağlı davranış və münasibətlərin dəyişdirilməsi mümkündür. Məqalənin məqsədi — uşaqlara qarşı zorakılıqla mübarizədə sosial maarifləndirmə proqramlarının mahiyyətini, mexanizmlərini, effektivliyini və qarşısında duran çətinlikləri təhlil etməkdir.

METOD VƏ MATERİLLAR.

Uşaqlara qarşı zorakılığın sosial kökləri və maarifləndirməyə ehtiyac: Zorakılığın baş verməsinə təsir edən bir sıra sosial amillər mövcuddur. Dünya Səhiyyə Təşkilatı qeyd edir ki, aşağı təhsil səviyyəsi, ailədaxili münasibətlərdə emosional bağın zəif olması, yoxsulluq, gender bərabərsizliyi və zorakılığı normallaşdıran sosial-mənəvi dəyərlər risk faktorlarıdır [1]. Bundan əlavə, icma və sosial səviyyədə uşaqlara qarşı zorakılıq hallarının artmasında medianın və sosial şəbəkələrin təsiri, "uşağa əl qaldırmaq tərbiyədir" kimi stereotiplərin mövcudluğu mühüm rol oynayır.
Bu faktorlar sosial maarifləndirmə ehtiyacını ortaya qoyur — yəni yalnız cəzalandırma mexanizmlərinin tətbiqi deyil, həm də cəmiyyətin və fərdlərin nəzəri və praktik biliklərinin artırılması vacibdir. Belə yanaşma çərçivəsində maarifləndirmə proqramları risk faktorlarını azaltmaq və qoruyucu mexanizmləri gücləndirmək üçün əlverişli platforma yaradır.

Sosial maarifləndirmə proqramlarının mahiyyəti və strukturu: Sosial maarifləndirmə proqramları uşaqlara qarşı zorakılığın qarşısının alınmasında bilik, münasibət və davranış dəyişikliklərinə yönəlmiş

tədbirlərdir. Bunlara məktəb təlimləri, əhali üçün sosial reklam kampaniyaları, valideyn seminarları, müəllim hazırlığı, ictimaiyyət üçün maarifləndirmə tədbirləri və s. daxil ola bilər [2].

Müasir beynəlxalq yanaşmalarda – məsələn, INSPIRE strategiyasında – məhz "maariflənmə və məlumatlandırma" sosial dəyişməyə daxil olan əsas elementlərdən biridir [2]. Bu proqramların hədəf qrupları valideynlər, müəllimlər, uşaqlar və geniş ictimaiyyət ola bilər. Tətbiq sahəsi isə məktəb, icma, media və onlayn platformaları əhatə edir.

Maarifləndirmə proqramlarının effektivlik göstərməsi: Maarifləndirmə proqramlarının effektivliyi ilə bağlı aparılmış tədqiqatlar müxtəlif nəticələr göstərmişdir. Məsələn, bir araşdırmada məktəb müəllimlərinə qarşı aparılan audiovisual təhsil müdaxiləsi nəticəsində müəllimlərin "uşaq zorakılığı və laqeydlik" barədə bilik səviyyəsində statistik baxımdan əhəmiyyətli artım müşahidə edilmişdir. MDPI Sistematik icmalarda isə məlum olmuşdur ki, dar çərçivəli müdaxilələr — məsələn yalnız uşaqlara yönəlik – effektivlik baxımından məhdud qalır. PMC UNICEF-nin Tanzaniyada həyata keçirdiyi proqram qiymətləndirməsində icma üzrə maariflənmə, hesabatlılığın artırılması və zorakılıq hallarının azalması müşahidə edilmişdir. evaluationreports.unicef.org Bundan əlavə, İndoneziyada valideyn-zəminli "Positive Discipline in Everyday Parenting" proqramında bilik artımı və davranış dəyişikliklərinə işarə edilmişdir, baxmayaraq ki bəzi göstəricilərdə mübahisəli nəticələr olmuşdur. theevaluationfund.net Bu sübutlar göstərir ki, maarifləndirmə proqramları, xüsusilə doğru hədəf qruplar, yaxşı planlaşdırılmış müdaxilə və davamlılıq şərtilə, uşaqlara qarşı zorakılıqla mübarizədə müsbət təsir göstərə bilər.

Məhdudiyyətlər və çağırışlar: Bununla belə, maarifləndirmə proqramlarının qarşısında müəyyən çətinliklər var. Birincisi, bir çox proqramın qiymətləndirilməsi metodoloji baxımdan zəifdir, təsir mexanizmləri və davamlı nəticələr barədə yetərli məlumat yoxdur. [7] İkincisi, proqramların çoxu inkişaf etmiş ölkələrdə həyata keçirilib; aşağı və orta gəlirli ölkələrdə — o cümlədən postsovet məkanında – məlumatların sayı məhduddur [8]. Üçüncüsü, sosial–mədəni kontekstin fərqli olması proqramların digər kontekstdə eyni effektivliyi göstərməsinə mane ola bilər. Belə ki, yerli dəyərlər, normativlər, sosial strukturlar proqramın nəticələrinə təsir edə bilər.

Bu çağırışlar nəzərə alınmalı; proqram dizaynında və tətbiqində kontekstual uyğunluq, davamlı monitorinq və qiymətləndirmə mexanizmləri vacibdir.

Azərbaycanda bu sahədə aparılan bir neçə maarifləndirmə/təminat proqramı var:

1. UNICEF Azerbaijan və European Union-nin "Uşaqların sosial müdafiəsi və qorunmasının gücləndirilməsi" layihəsi

- Layihə 2023-dən 2025-ə qədər müddətdə həyata keçirilir və adlandırılır: *Strengthening the child protection and social protection systems in Azerbaijan*. EU for Azerbaijan

- Məqsəd olaraq təyin edilib: uşaqların sosial müdafiəyə çıxışını gücləndirmək, uşaqların zorakılıqdan qorunması mexanizmlərinin möhkəmləndirilməsi (violence against children, VAC) və altı rayon/şəhərdə pilot model tətbiq edilməsi. EU for Azerbaijan

- Bu modelin tərkibində maarifləndirmə kampaniyaları, sosial xidmətlərin (və ailələrə dəstək) artırılması, yerli qeyri-hökumət təşkilatlarının rolunun yüksəldilməsi, təlim və monitorinq sistemi planlaşdırılıb. EU for Azerbaijan

2. Azerbaijan Child Helpline Service - Azərbaycan Uşaq Qaynar Xətti (Qaynar xətt "116111")

- Bu xidmət Azərbaycanda fəaliyyət göstərir və uşaqlara, gənclərə, onların ailələrinə zorakılıq, istismar, təhsildən kənar qalma, psixoloji risklər mövzusunda hüquqi və psixososial dəstək verir [11].

- Məlumatlara görə, artıq 68 000-dən çox zəng qəbul edilib [11].

Azərbaycan Uşaq Qaynar Xətti 20 years, 20 voices: Azerbaijan Child Helpline - Child Helpline International 2010-cu ildə **"Etibarlı Gələcək" qeyri-hökumət təşkilatı** və onun tərəfdaşları tərəfindən yaradılmışdır. O vaxtdan bəri, bu xidmət Azərbaycanda uşaqların hüquqlarını müdafiə edən, onların səsi olan və uşaq məsələlərinin həllinə həsr olunmuş mühüm bir platformaya çevrilmişdir.

"Etibarlı Gələcək" – qeyri-kommersiya, xeyriyyəçi, siyasi cəhətdən neytral bir QHT olub, 1998-ci ildə Azərbaycanın müxtəlif universitetlərindən olan gənclər tərəfindən yaradılmış və 1999-cu ildə rəsmi qeydiyyatdan keçmişdir. Təşkilat yarananandan bəri Azərbaycanın ən fəal gənclərini bir araya gətirərək geniş fəaliyyət istiqamətlərində çalışır:

- demokratik, təhlükəsiz, açıq və sağlam vətəndaş cəmiyyətinin qurulması;
- yaşlılara, əlillərə, uşaqlara, qaçqınlara və s. yardım edilməsi;
- uşaqlar və gənclər üçün asudə vaxtın təşkili;
- mədəniyyətin, incəsənətin və təhsilin inkişaf etdirilməsi.

Azərbaycan Uşaq Qaynar Xəttinə daxil olan müraciətlərin statistik təhlili:

Bu sahədə bir sıra görülmüş işlər və statistika:

1. World Health Organization (ÜST)-nun Azərbaycan üzrə hesabatı:

- "Global Status Report on Preventing Violence Against Children 2020" çərçivəsində Azərbaycan üzrə profil hazırlanıb [1].
- Bu, uşaqlara qarşı zorakılığın qarşısının alınması üzrə daha geniş beynəlxalq çərçivədə vəziyyəti göstərir.
- Məsələn, hesabatda 2018-ci ildə Azərbaycanda uşaqlara qarşı zorakılıqla bağlı "116111 Uşaq Qaynar Xətti" vasitəsilə 3 581 müraciət edildiyi qeyd olunur. The United Nations in Azerbaijan+1
- Bu tip mənbə maarifləndirmə və uşaq müdafiəsi mexanizmlərinin qurulduğunu göstərir, lakin "maarifləndirmə tədbiri keçirildi → zorakılıq halları azaldı" kimi konkret ölçülmüş nəticə vermir.

2. Ailə, Qadın və Uşaq Problemləri Üzrə Dövlət Komitəsi (AQUPDK)-nin məlumatları:

- 2024-cü ilin noyabrında 11 regionda uşaqlara qarşı zorakılığın qarşısının alınması mövzusunda silsilə maarifləndirmə tədbirləri keçirilib: rayon icra hakimiyyəti, polis, müəllimlər, psixoloqlar, valideynlər və ekspert qrupları iştirak edib. family.gov.az
- Tədbirlərdə zorakılığın səbəbləri, müdafiə mexanizmləri, normativ baza və məktəb-valideyn əməkdaşlığı haqqında təqdimatlar aparılıb. family.gov.az
- Bu, sosial maarifləndirmə istiqamətində atılmış addımdır, amma yenə də "sonrakı göstəricilər necə dəyişib" barədə açıqlama yoxdur.

3. Qaynar xətt, sosial xidmətlər və hüquqi müdafiə sahəsində addımlar:

- Məsələn, 2023-cü il dekabrında bildirilib ki, Azərbaycanda zorakılığa məruz qalmış 100 uşaq daxil olmaqla 154 nəfərə sosial xidmətlər göstərilib. Report.az

- 2019-cu ildə ÜST və tərəfdaşlarla birgə "uşaqlara qarşı zorakılığın dayandırılması" mövzusunda dəyirmi masa keçirilib, uşaqlara qarşı zorakılıqla bağlı müraciətlərin, o cümlədən 2018-ci ildə 3 581 müraciət olduğunun bildirilməsi ilə. The United Nations in Azerbaijan

- Bu cür mexanizmlərin qurulması maarifləndirmə ilə yanaşı müdafiə sisteminin də gücləndirildiyini göstərir.

ELMİ YENİLİKLƏR

Tövsiyələr və gələcək istiqamətlər: Azərbaycan Uşaq Qaynar Xəttinin fəaliyyətinin daha da təkmilləşdirilməsi istiqamətində bir sıra addımların atılması məqsədəuyğundur. İlk növbədə, regional mərkəzlərin yaradılması və ucqar ərazilərdə yaşayan uşaqların xidmətə çıxış imkanlarının genişləndirilməsi vacib hesab olunur. Bu, ölkənin bütün bölgələrində uşaqların bərabər müdafiə hüququna malik olmasına şərait yaradacaqdır.

Uşaqlara qarşı zorakılıq hallarının qarşısının alınması məqsədilə məktəblərdə, ailələrdə və yerli icmalarda davamlı sosial maarifləndirmə proqramlarının həyata keçirilməsi xüsusi əhəmiyyət daşıyır. Maarifləndirmə fəaliyyətləri uşaqların, valideynlərin və müəllimlərin zorakılıq anlayışı, hüquqi müdafiə mexanizmləri və psixoloji dəstək yolları barədə biliklərini artırmağa xidmət etməlidir.

Bundan əlavə, psixoloji və hüquqi yardım göstərən mütəxəssislərin peşə hazırlığının artırılması, həmçinin onların beynəlxalq təcrübə ilə mütəmadi şəkildə tanış olması məqsədəuyğun sayılır. Bu, göstərilən xidmətlərin keyfiyyətini yüksəldəcək və uşaqlara daha səmərəli yardım göstərilməsinə imkan yaradacaqdır.

Uşaqlara qarşı zorakılıq və sui-istifadə halları ilə bağlı vahid elektron məlumat bazasının yaradılması da gələcək tədqiqatlar üçün mühüm əhəmiyyət daşıyır. Bu cür bazanın mövcudluğu real vəziyyətin düzgün qiymətləndirilməsinə, statistik təhlillərin aparılmasına və qərar qəbuletmə prosesinin elmi əsaslarla həyata keçirilməsinə kömək edəcəkdir.

Qaynar xəttin fəaliyyəti haqqında məlumatlandırma kampaniyalarının genişləndirilməsi uşaqların və valideynlərin bu xidmətə müraciət etmə ehtimalını artıracaq, ictimaiyyətin diqqətini problemin ciddiliyinə yönəldəcəkdir. Bununla yanaşı, dövlət qurumları, qeyri-hökumət təşkilatları və beynəlxalq tərəfdaşlar arasında koordinasiyanın gücləndirilməsi uşaqların müdafiə sisteminin daha effektiv işləməsinə şərait yaradacaqdır.

Rəqəmsal texnologiyaların — mobil tətbiqlərin, sosial şəbəkələrin və onlayn konsultasiya platformalarının — daha geniş istifadəsi uşaqlara operativ və əlçatan dəstəyin göstərilməsini təmin edəcəkdir. Eyni zamanda, uşaqlara qarşı zorakılıqla mübarizə sahəsində həyata keçirilən tədbirlərin effektivliyini qiymətləndirən müstəqil elmi-tədqiqat işlərinin təşkili gələcək siyasət və proqramların planlaşdırılması üçün mühüm əsas yaradacaqdır.

Cəmiyyətin uşaqların hüquqlarının müdafiəsində fəal iştirakı üçün valideynlər, müəllimlər və gənclər arasında məsuliyyət hissinin artırılmasına yönəlmiş sosial layihələrin dəstəklənməsi də zəruri sayılır. Nəhayət, qlobal səviyyədə uşaq qaynar xətləri arasında əməkdaşlığın genişləndirilməsi Azərbaycan təcrübəsinin beynəlxalq səviyyədə tanıdılmasına və qarşılıqlı bilik mübadiləsinə töhfə verəcəkdir.

NƏTİCƏ

Uşaqlara qarşı zorakılıqla mübarizədə sosial maarifləndirmə proqramları cəmiyyətin məlumatlılığını artırmaq, münasibətləri dəyişdirmək və qoruyucu davranışları təşviq etmək baxımından əhəmiyyətlidir. Tədqiqatlar göstərir ki, düzgün dizayn edilmiş və hədəflənmiş proqramlar müsbət nəticələr verə bilər. Eyni zamanda, metodoloji zəifliklər, yerli kontekstin yetərincə nəzərə alınmaması və davamlılığın olmaması kimi məsələlər mövcuddur. Buna görə, maarifləndirmə proqramlarının effektivliyi tam

şəkildə artırmaq üçün strateji yanaşma tələb olunur. Azərbaycanda bu istiqamətdə icmalara və dövlət–əhali əməkdaşlığına xüsusi diqqət yetirilməlidir.

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DİJİTALLEŞEN EMEK İLİŞKİLERİNDE İŞVERENLERİN YENİ NESİL SENDİKACILIK YAKLAŞIMI

Yavuz Selim KAYMAZ

Dr. Öğr. Üyesi, Affiliation
E-mail: yavuzselimkymz@gmail.com
ORCID ID: 0000-0002-0698-9011
Elif Özge Gürdal

Dr., Bağımsız Araştırmacı
E-mail: eozgegurdal@gmail.com
ORCID ID: 0000-0002-8642-6138

Özet

Sendikacılık hareketi, endüstri toplumunun ürünü olarak 19. yüzyılın ikinci yarısında ortaya çıkmıştır. Endüstri toplumuyla özdeşleşen klasik sendikacılıkta, yoğun kitlesel üretim ve emeğin belirleyici rol oynadığı sektörlerle ilişkilendirilmiştir. Günümüzdeyse üretim süreçlerinin dijitalleşerek farklılaşması, gig ekonomisine dayalı istihdam biçimlerinin artması ve işgücünün mekânsal anlamda esnekliğe kavuşmasına sebep olmuştur. Söz konusu durum klasik sendikal örgütlenmenin kapsamında çeşitli daralmalar oluşturmuştur. Dijitalleşme, gig ekonomisi ve atipik istihdam biçimleri ortaya çıkarak klasik sendikal yapıların etkinliğini tartışmaya açmıştır. Türkiye'de bu dönüşüm yalnızca çalışan tarafında değil, işveren örgütleri tarafında da görülmektedir. Bu bağlamda Türkiye İşveren Sendikaları Konfederasyonu (TİSK) dijital çağın emek ilişkilerine uyum sağlama çabası kapsamında yeni nesil sendikacılık adını verdikleri bir yaklaşım benimsemişlerdir. Yeni nesil sendikacılık dijital araçlar üzerinden sosyal diyaloğu temel alan katılımcı, yatay ve veri temelli örgütlenmeyi ifade etmektedir. Türkiye özelinde bu dönüşümün TİSK gibi köklü kurumlar üzerinde yarattığı etki dikkat çekicidir. TİSK, dijitalleşme sürecinde işveren sendikacılığının temsil biçimlerini yeniden tanımlamakta sosyal diyalogun sürdürülebilirliği için yenilikçi modeller geliştirmektedir. Zira TİSK, yalnızca işveren örgütlerini değil, aynı zamanda devlet ve çalışan kesimi kapsayan üçlü yapının dijital çağdaki yeniden yapılanmasına öncülük etmektedir. Bu çerçevede yeni nesil sendikacılık Türkiye'nin dijital emek piyasalarının kurumsal altyapısını dönüştürme potansiyeline sahiptir. Çalışmanın amacı, dijital çağda sendikal örgütlenmenin yaşadığı dönüşümü devlet, işçi ve işverenler açısından anlamak ve TİSK'in bu süreçteki rolünü ortaya koymaktır. Bu bağlamda yeni nesil sendikacılığın kuramsal çerçevesi, Türkiye'deki gelişim dinamikleri ve TİSK'in dijital emek piyasalarına yönelik yaklaşımı çok boyutlu bir perspektiften değerlendirilmektedir.

Anahtar Kelimeler: TİSK, Sosyal Diyalog, Dijitalleşme, Yeni Nesil Sendikacılık, İşveren

Abstract

The trade union movement emerged in the second half of the 19th century as a product of industrial society. In classical trade unionism, which is identified with industrial society, it has been associated with sectors characterized by mass production and the crucial role of labor. Today, the digitalization and transformation of production processes, the rise of gig economy based employment forms, and the increasing workplace flexibility of the workforce have led to significant changes. This situation has caused various limitations in the scope of classical trade union organization. The emergence of digitalization, the gig economy, and atypical forms of employment has brought the effectiveness of traditional trade union structures into question. In Turkey, this transformation has been observed not only on the employees' side but also among employer organizations. In this context, the Turkish Confederation of Employer Associations (TİSK) has adopted an approach called new generation unionism as part of its efforts to adapt labor relations to the digital age. New generation unionism refers

to a participatory, horizontal, and data driven form of organization based on social dialogue through digital tools. In the Turkey, impact of TİSK on this transformation is remarkable. TİSK is redefining the modes of representation of employer unionism in the process of digitalization and developing innovative models to ensure the sustainability of social dialogue. TİSK is leading the restructuring of the tripartite framework including employer organizations, the state, and employees in the digital age. In this context, new generation unionism has the potential to transform the institutional infrastructure of Turkey's digital labor markets. The aim of this study is to understand the transformation of trade union organization in the digital age from the perspectives of the state, workers, and employers, and to reveal the role of TİSK in this process. Accordingly, the theoretical framework of new generation unionism, its developmental dynamics in Turkey, and TİSK's approach to digital labor markets are evaluated from a multidimensional perspective.

Keywords: TİSK, Social Dialogue, Digitalization, New Generation Unionism

GİRİŞ

Dijital teknolojilerin işgücü piyasalarında yarattığı dönüşüm, çalışma ilişkileri alanında köklü bir yeniden yapılanmayı beraberinde getirmiştir. Üretim süreçlerinin hız kazanması, işin mekândan bağımsız hâle gelmesi ve platform temelli istihdam biçimlerinin yaygınlaşması, yalnızca çalışanların değil, emek piyasasında rol üstlenen tüm kurumların işleyişini etkilemektedir. Bu değişim, endüstri toplumunun koşullarında şekillenen klasik sendikal yapıları değişime zorlamakta; sosyal diyalog mekanizmalarının işleyişini, temsil biçimlerini ve örgütlenme stratejilerini yeniden biçimlendirmeye gerekli hâle getirmektedir. Çalışma hayatının karmaşık ve hızlı değişen yapısı, sendikal aktörlerin dijital çağın gerektirdiği yeni araçları ve yaklaşımları benimsemesini kaçınılmaz duruma getirmiştir.

Bu bağlamda işveren sendikacılığı da dönüşen emek piyasasının önemli bileşenlerinden biri olarak dikkat çekmektedir. Türkiye'de işveren örgütlerinin en üst temsil kurumu konumundaki TİSK, çalışma hayatında yaşanan bu yapısal dönüşüme uyum sağlamak adına çeşitli kurumsal yenilik arayışlarına yönelmiştir. Dijitalleşmenin zorunlu kıldığı esneklik, hızlı veri akışı ve çok taraflı iletişim ihtiyacı, işveren sendikacılığının da geleneksel örgütlenme kalıplarının ötesine geçmesini gerekli kılmaktadır. Bu doğrultuda TİSK'in dijital çağın koşullarını gözeten yeni kavramsal ve pratik arayışları, Türkiye'de sosyal diyaloğun geleceği açısından önemli bir inceleme alanı oluşturmaktadır.

Bu çalışma, dijitalleşmenin sendikal yapılarda ortaya çıkardığı değişimi Türkiye bağlamında ele almakta ve işveren sendikacılığının dijital dönüşüm sürecindeki konumunu incelemektedir. Özellikle TİSK'in yeni yaklaşımlarının değerlendirilmesi, dijital emek piyasalarının kurumsal altyapısının nasıl şekillendiğine ilişkin önemli ipuçları sunmaktadır. Bu doğrultuda çalışma, dijital çağın gerektirdiği yeni örgütlenme biçimlerini, temsil modellerini ve sosyal diyalog araçlarını çok boyutlu bir perspektifle ele alarak Türkiye'de işveren sendikacılığının dönüşen rolünü analiz etmektedir.

Metodoloji

Çalışmada nitel araştırma yaklaşımı çerçevesinde tasarlanmış olup çalışmanın temel amacı, TİSK'in sürdürülebilirlik, yeşil dönüşüm ve yeni nesil sendikacılık kapsamındaki projelerini ve stratejilerini incelemek ve bu girişimlerin iş dünyasına yansımalarını analiz etmektir. Veri toplama sürecinde, TİSK'in resmi web sitesi, politika belgeleri, yıllık raporlar, basın bültenleri ve proje dokümanları gibi ikincil kaynaklardan yararlanılmış olup ayrıca, ilgili akademik literatür ve sektör raporları taranarak çalışmaya teorik bir çerçeve kazandırılmaya çalışılmıştır. Toplanan veriler içerik analizi yöntemiyle değerlendirilecektir. TİSK'in yeni nesil sendikacılık anlayışı kapsamındaki uygulamaları ve iş dünyasına yönelik etkileri ortaya konacak ve bütüncül bir değerlendirmesi yapılacaktır.

1.1.2000 Sonrası Türkiye'de Sendikal Dönüşüm

Sendikal örgütlenme, toplu pazarlık ve grev lokavt gibi sosyal haklar anayasal güvence altına alınmış sosyal haklardır. Cumhuriyet döneminde çalışma hayatına muhtelif yasalar çıkartılmış olmakla birlikte Türkiye'de ilk defa 1947 yılında "5018 sayılı İşçi ve İşveren Sendikaları ve Sendika Birlikleri Hakkında Kanun" ile sendikal örgütlenmeye ilişkin yasal düzenleme batıya göre mevzuatımıza geç girdiği görülmektedir. (Pirler, 2013:884) Sendikal örgütlenme işçinin sendikal örgüte girme motivasyonunun gelişmesi ya da tam tersi yönünde sendikal örgütlenmeye ihtiyaç duymaması belli başlı sebeplerden kaynaklanabilir. Özellikle neoliberal politikaların bazı ülkelerde ekonomik canlılığı sağladığı kabul edilmektedir. (Evran-topuzkanamış,2015:174) Fakat diğer taraftan özellikle 1980'li yıllarda kendini dünya genelinde daha yoğun hissettiren küreselleşme süreciyle sendikasızlaştırma eğilimi yükselmiştir. Neoliberal politikaların etkisiyle atipik istihdam biçimleri olarak gösterilen esnek çalışma biçimlerinin yükselişi, özelleştirmelerin artışı ve kuralsızlaştırma politikaları sendikal örgütlenmeyi engellemiştir. (Mahiroğulları, 2012:11)

Esasen sendikal örgütlenmeyle ilgili muhtelif yapısal, sosyal, ekonomik faktörler bulunmaktadır. İşsizlik bireylerin işçi ya da işveren statüsünde olmamasından kaynaklanan bu durum esasen sendikal örgütlenme şartlarının gerçekleşmemesi anlamına gelmektedir. Örnekle somutlaştırmak gerekirse 6356 sayılı kanunda "Sendika üyeliği ve üyeliğin kazanılması" düzenlenmiştir. *"MADDE 17 – (1) On beş yaşını dolduran ve bu Kanun hükümlerine göre işçi sayılanlar, işçi sendikalarına üye olabilir."* (6356 sayılı kanun/md.17) anlaşılacağı üzere işsizlik sorunu doğrudan sendikal örgütlenme yolunda açık bir engel olarak görülmektedir.

Türkiye açısından değerlendirildiğinde neoliberal politikaların geçmişten günümüzü durumu iki temel zaman diliminde özellikle 1980 'li yıllarda başlayan sürecin 2000'li yıllarda olgunlaşarak devam ettiğini belirtmektedir. (Özdemir, 2020: 245-267) Neoliberal politikaların etkisiyle birlikte Türkiye'de artan özelleştirme politikaları, ayrıca değişen istihdam biçimlerine bağlı olarak hukuki boşluklar ve sendikasızlaştırma politikaları Türkiye'de sendikasızlaştırmaya tesir etmiştir. (Etçi, 2018:129-136) Ayrıca sendikaların da gelişen ve değişen sürece ayak uyduramamasından dolayısıyla değişen ihtiyaçlara cevap verememesinden dolayı da sendikal örgütlenme negatif yönde etkilenmiştir. (Etçi, 2018:140)

Türkiye'nin önemli bir sorunu işsizliktir 2025 yılı şubat ayı itibariyle %8,2 olan işsizlik oranı sendikal örgütlenme için hukuki bir zorunluluğunun yerine gelmediği anlamına gelmektedir. (https://data.tuik.gov.tr/Bulten/Index?p=Isgucu-Istatistikleri-Subat-2025-54060)

Tablo:1 Türkiye'de Yıllara Göre Sendikalaşma Oranları

Yıllar	Sendikalaşma Oranı (%)
2013	9,21
2015	10,65
2017	12,18
2019	13,86
2021	14,4
2023	14,42

Kaynak: https://sosyalveri.net/grafik/1172

Değinilen bilgiler ışığında Türkiye'de sendikalaşma oranları dünyada özellikle batı ülkelerinin gerisinde kalmaktadır.2023/2024 ve sonrası döneme ilişkin İzlanda %90, Norveç %50, İtalya %30 oranındadır ve

esasen dünyada da diğer yıllara göre sendikalaşma eğiliminin düştüğü anlaşılmaktadır fakat mevcut duruma göre Türkiye'nin geride olduğu anlaşılmaktadır. (OECD, 2025:2)

2000 sonrası düşünüldüğünde özetle belirtmek gerekirse neoliberal politikaların etkisiyle kendini gösteren özelleştirmeler, kronik bir sorun olan kayıt dışı istihdamın yüksekliği ve değişen koşullara sendikaların cevap hem işçi yönünden hem de işveren yönünde ayak uydurması gerekliliği yadsınamaz bir gerçekliktir.

2.2.Dijital Dönüşüm ve Emek İlişkileri

Dijital dönüşüm Endüstri 4.0 ve sonrasıyla özgülenmiş bir kavram olarak *"iş aktiviteleri, süreçleri, yetkinlikleri ve modellerin, dijital teknolojilerin getirdiği değişiklikleri ve fırsatları toplum üzerindeki etkisini stratejik ve öncelikli bir şekilde tam olarak değerlendirmek için derin ve hızlı dönüşümüdür."* (Demirkan vd., 2016:14)Bu yönüyle değinilmesi gereken ve emek olgusuna tesir eden önemli bir unsur "Gig Ekonomisi"dir. Gig ekonomisi *"insanların bir işverene bağlı çalışması yerine geçici işlerde veya her biri bağımsız ödenen ayrı iş birimlerinde çalışmasına dayanan bir çalışma biçimi*" şeklinde tanımlanmaktadır. (CIPD, 2023:2) Bu çalışma biçimi temel olarak yeni bir sorunu olan "çalışan statüsü" ve "platform çalışanları" ilişkisini gündeme getirmektedir.

Bir süreç olarak değerlendirildiğinde sosyal gelişmelerin yaşanacağı yadsınmaz bir gerçektir. Nitekim sosyal gelişmeler insanların refahına katkı sağlarken aynı zamanda bazı problemleri de getirmektedir. (Şenkal,2015:129) Esasen süreci analiz etmek bakımından genel bir değerlendirme yapılırsa sanayi devrimi öncesi tarım toplumunda bağımsız çalışanlar sonrasında sanayi devrimiyle bağımlı çalışanların artışı gözlemlenmektedir. (Kaymaz, 2025:1071-1084) Dijitalleşme ile ise platform çalışanlarının yükselişi görülmektedir. Çalışan statüsü en genel anlamda iki temel bileşene dayandırılmaktadır; "bağımlı" ve" bağımsız çalışanlar". (Küçük, 2024:371) Platform çalışanları için ise bağımlı ve bağımsız çalışan statüsü dışında yeni bir kategori olarak yasal bir düzenlemeye gelecekte tabi tutulabileceği ifade edilmektedir. (Beytar, 2022:245-246) Dolayısıyla sosyal gelişme olarak ortaya çıkan "platform çalışanlarının" hukuki statüsü bir yasal mevzuatta bir boşluk olarak görülürken başvurulması gereken diğer bir önemli hukuk kaynağı "yargı kararlarıdır". Bu bağlamda önemli bir unsur olan iş sözleşmelerinde "bağımlılık" unsuru önemli bir karine haline gelmektedir. Bu durumda mevcut düzenlemeler ışığında anayasal güvence altına alınmış sendikal hakların durumu dolayısıyla sendikaların da gelişen sürece ayak uydurarak cevap vermesi gerektiği anlaşılmaktadır. Sendikaların dijitalleşme sürecine, *"işkolu türlerine", "sendika yoğunluğuna", "toplu pazarlığa" ve "sendikasızlaşma"* yönünde etkiler doğurmaktadır. (Yaşar, Şimşek, 2023:37-39) Bahsedilen süreçlerin sonucuna bir cevap olarak "e-sendikacılık" bir uyum politikası olarak görülmektedir bilişim tekonolojik ilerlemenin *"e-sendika ve/veya sanal sendikacılık ve siber sendika kavramları çerçevesinde gerçekleşmektedir."* (Aybas M, Dündar G, Yılmaz S., 2014:6)

3.3. Klasikten Yeni Nesil Sendikacılığa

1980 sonrası dönemde, uluslararası sermaye hareketleri ile mal ve hizmetlerin sınır ötesi akışının hız kazanmasıyla birlikte, ekonomik, siyasi, sosyal ve kültürel boyutları olan küreselleşme süreci olarak adlandırılan yeni bir olgu ortaya çıkmıştır. Bu bağlamda, sendikacılık yalnızca ekonomik politikaların değişiminden etkilenmemiş; çok boyutlu yapısıyla küreselleşme süreci de sendikal faaliyetleri doğrudan etkilemiştir. Böylelikle, 1980 sonrası neoliberal politikaların benimsenmesi ve çok yönlü küreselleşmenin yükselişi, farklı alanlarda olduğu gibi sendikal yapıyı da hem biçim hem işlev açısından derinden etkileyerek sendikaları kapsamlı bir değişim ve dönüşüm sürecine zorlamıştır (Şimşek, 2023: 27). Çalışma ilişkilerinde yaşanan bu köklü değişimler, sendikalar üzerinde de gözlenmektedir. Artan işsizlikle başa çıkmak ve ulusal firmaların uluslararası rekabette maliyet avantajı elde edebilmesini sağlamak amacıyla çalışma mevzuatına esnek çalışma uygulamaları girmiştir. Bununla birlikte yeni üretim ve yönetim teknikleri uygulanmaya başlanmış, insan kaynakları yönetimi anlayışı da dönüşmüştür. Çalışma ilişkilerinde yaşanan bu köklü değişimler, üye sayılarındaki azalmayla birlikte,

sendikaların temel kurumsal yapılarından biri olan toplu pazarlık süreçlerinde de değişikliklere yol açmıştır. Pazarlık konuları daralmış, istihdam garantisi sağlama amacıyla sendikaların pazarlık gücü azalmış ve işverenler karşısında uzlaşmaya zorlanma gibi olumsuz etkiler ortaya çıkmıştır (Mahiroğulları, 2017: 500-501). Bu köklü değişimler ve sendikaların karşılaştığı zorluklar, örgütlerin sadece mevcut yapılarıyla sınırlı kalamayacağını, aynı zamanda değişen çalışma koşullarına ve yeni ekonomik ve teknolojik gerekliliklere uyum sağlamaları gerektiğini göstermektedir. Bu yapı günümüzde de farklılaşarak yeşil ve dijital dönüşüm ile sürdürülebilirlik politikaları ekseninde yeni nesil sendikacılığa doğru evrilmektedir.

Aşağıda yer alan tabloda klasik ve yeni nesil sendikacılık arasındaki farklar ortaya konmaya çalışılmıştır. Bu noktada müzakere odağı ücret ve maddi haklardan çalışan refahı ve sürdürülebilirliğe, yaklaşım tarzı çatışmacı tutumdan sosyal diyaloğa, örgütlenme yapısı hiyerarşik yapılanmadan yatay, katılımcı ve dijital olduğu yapıya, temsil biçimi kollektiften bireysele, kullanılan araçların toplu iş sözleşmesi ve grevlerden dijital kanallara ve amacın artık ücret artışından ziyade çalışan memnuniyetinin olduğu bir yapıya geçişin olduğu görülmektedir.

Tablo 2: Klasik ve Yeni Nesil Sendikacılık Arasındaki Farklar

Boyut	Klasik Sendikacılık	Yeni Nesil Sendikacılık
Müzakere Odağı	Ücret ve maddi haklar	Çalışan refahı, sürdürülebilirlik
Yaklaşım Tarzı	Çatışmacı tutum	Sosyal Diyalog
Örgütlenme Yapısı	Dikey, hiyerarşik	Yatay, katılımcı, dijital
Temsil Biçimi	Kollektif	Bireysel
Araçlar	Toplu İş Sözleşmesi, Grevler	Dijital kanallar
Amaçlar	Ücret artışları	Çalışan memnuniyeti

Yeni nesil sendikacılık ve çalışma ilişkilerindeki dönüşüm, iş dünyasında meydana gelen köklü değişikliklere ve modern iş gücünün ihtiyaçlarına yanıt olarak gelişen bir kavramdır. Bu dönüşüm, geleneksel işçi sendika ilişkilerini yeniden şekillendirirken, iş gücü piyasasındaki yeni dinamikleri de göz önünde bulundurmaktadır.

4.4 TİSK'in Yeni Nesil Sendikacılık Stratejisi

Türkiye'de işveren sendikacılığının kurumsal yapısını şekillendiren temel aktör olan TİSK, 1962 yılında kurulmuştur. Kuruluşundan bugüne işverenlerin ortak sesi olma misyonuyla faaliyet göstermektedir. İşverenleri hem ulusal hem de uluslararası düzeyde temsil etme yetkisine sahip en üst kuruluş olarak, bünyesindeki işveren sendikalarının örgütlü olduğu sektörlerde makro düzeyde politika üretmeyi ve çözüm geliştirmeyi hedeflemektedir. Çalışma yaşamının tüm taraflarını ilgilendiren asgari ücret, sosyal diyalog ve çalışma barışı gibi siyaset üstü konularda toplumsal düzenin güçlenmesine katkı sunmayı amaçlamaktadır. TİSK çatısı altında, kamu hizmeti de dâhil olmak üzere ekonomi ve sanayinin farklı alanlarında faaliyet gösteren 20 işveren sendikası ile 2 işveren derneği bulunmaktadır. Bu geniş temsil kapasitesi, TİSK'i çalışma hayatının çok çeşitli alanlarında etkili bir aktör hâline getirmektedir. Kuruluşun geniş bir faaliyet alanı olmakla birlikte, üretim, endüstriyel ilişkiler, rekabetçilik, verimlilik, kayıtlı istihdam, toplu iş sözleşmeleri ve dış ticaret gibi konular Türkiye ekonomisine ilişkin temel çalışma sahalarını oluşturmaktadır (TİSK Hakkımızda, https://www.tisk.org.tr/hakkimizda, Erişim 05.12.2025).

TİSK, Türkiye'de işveren sendikacılığının en üst temsil organı olarak çalışma yaşamının çok çeşitli alanlarında faaliyet göstermektedir. Kuruluş; asgari ücret tespit süreci, sosyal güvenlik sistemi, mesleki yeterlilik ve nitelikli işgücü politikaları gibi konularda işverenlerin görüşlerini kamu otoritelerine iletmektedir. Bunun yanında, toplu iş sözleşmeleri, endüstri ilişkileri, çalışma barışının sağlanması ve sosyal diyalog mekanizmalarının güçlendirilmesi TİSK'in öncelikli çalışma başlıkları arasındadır. Üretim süreçleri, rekabetçilik, verimlilik, kayıtlı istihdamın artırılması, iş sağlığı ve güvenliği, dijital ve yeşil dönüşüm, sürdürülebilirlik, istihdam politikaları ve dış ticaret düzenlemeleri de TİSK'in geniş faaliyet alanları içinde yer almaktadır. Ulusal ve uluslararası platformlarda işverenleri temsil eden kuruluş, aynı zamanda eğitim, inovasyon, Ar-Ge, çalışma hayatında eşitlik, genç istihdamı ve kurumsal sosyal sorumluluk gibi konularda da çeşitli projeler ve politika çalışmaları yürütmektedir. Bu kapsamlı yapısıyla TİSK, hem işverenlerin ihtiyaçlarına çözüm üretmekte hem de Türkiye'de ekonomik ve sosyal politikaların şekillenmesine katkı sunmaktadır (TİSK Çalışma Alanları, https://www.tisk.org.tr/calisma-alanlari, Erişim 05.12.2025). Bu bağlamda çok geniş bir çalışma alanı bulunmakta ve çalışma hayatına ilişkin bir çok unsuru kapsamaktadır. TİSK'in bu çok yönlü yapısı, değişen ve gelişen dünya dinamiklerine paralel olarak son yıllarda benimsediği yeni nesil sendikacılık stratejisinin de temelini oluşturarak, değişen üretim dinamikleri, dijital dönüşüm ve sürdürülebilirlik gerekliliklerine uyumlu, daha proaktif ve yenilikçi bir temsil anlayışının gelişmesine olanak sağlamaktadır.

TİSK **yeni nesil sendikacılık stratejisini g**ençlere ve kadınlara yönelik politikalar üreten, çevreyi gündemine alan, dijital okur yazarlığı önemseyen sendikacılık olarak ifade etmiştir (https://www.aa.com.tr/tr/turkiye/tiskten-yeni-nesil-sendikacilik-cagrisi/1570232, Erişim 05.12.2025). TİSK bu strateji yaklaşımının bir yansıması olarak, teknoloji devrimi ve endüstri 4.0 odağındaki değişim hızla devam derken, bu dönüşüme uyum sağlayarak sendikal alanda geleneksel yapıya yeni bir bakış açısı kazandırmaktadır. Bu çerçevede, çalışma hayatının ve ülke ihtiyaçlarını karşılayacak bir yapılanma olarak **Sendika 4.0** yaklaşımına geçmeyi temel hedeflerinden biri hâline getirmiştir. Uygulama odaklı kurumsal duruşuyla TİSK, yeni nesil sendikacılık vizyonu sayesinde çalışma yaşamındaki dönüşümlere duyarlı, analitik veriye dayalı ve geleceği öngören bir temsil modeli benimsemektedir. (TİSK 28. Olağan Genel Kurul Raporu, 2023: 318) Bu modelde, değişen üretim yapıları, dijitalleşme, yeşil dönüşüm ve iş gücü piyasalarındaki dönüşümler doğrultusunda işveren temsil mekanizmasını modernleştirmeyi hedefleyen bütüncül bir yaklaşımı ifade etmektedir. Böylece klasik sendikal faaliyetlerin ötesine geçerek veri temelli analizler, yenilikçi politika önerileri, sosyal diyalogun güçlendirilmesi, esnek ve kapsayıcı çalışma modellerinin desteklenmesi gibi unsurları merkeze almaktadır. Ayrıca, nitelikli iş gücünün geliştirilmesi, sürdürülebilirlik ilkelerinin iş dünyasına entegre edilmesi, KOBİ'lerin dönüşüm süreçlerinde desteklenmesi ve kurumsal sosyal sorumluluk anlayışının yaygınlaştırılması stratejinin temel bileşenleri arasında yer almaktadır.

TİSK'in yeni nesil sendikacılık stratejisi kapsamında yer alan ulusal ve uluslararsı bir çok kurum ve kuruluşla işbirliği halindedir. TİSK'in yeni nesil sendikacılığı şu temelleri kapsar: g**enç ve kadın odaklı politikalar, çevre, iklim, sürdürülebilirlik, dijital okuryazarlık ve dijital dönüşüm, yeşil ve dijitalleşme, sosyal diyalogun güçlendirilmesi, yapay zekâ, veri temelli politika üretimi, uluslararası işbirlikleri, kurumsal sosyal sorumluluk ve ortak yarınlar programları yer almaktadır. Bu kapsamda TİSK'in çalışmalarına bakılacak olunduğunda,** kurumsal ve sosyal sorumluluk projeleri, genç ve kadın odaklı projeler, dijital ve teknoloji odaklı projeler, ulusal ve uluslararası işbirlikleri ile politika geliştirme olarak sıralamak mümkün.

Kurumsal sosyal sorumluluk kapsamında **Ortak Yarınlar Programı ile** sürdürülebilirlik ve sosyal sorumluluk temalı projeleri kapsamakta olup, her yıl farklı temalar çerçevesinde yeşil dönüşüm, dijitalleşme, yeni nesil iş modelleri çalışmalar yürütmektedir. Program aynı zamanda kurumsal sosyal sorumluluk projelerini ödüllendirerek TİSK'in "yeşil ve dijital geleceğe" katkısını artırmaktadır (https://www.ortakyarinlar.com/, Erişim tarihi 06.12.2025). Benzer şekilde, **Yeşile Ortak Ol** projesi,

TİSK'in Türk-İş ve Hak-İş ile üçlü işbirliğiyle yürüttüğü bir girişimdir. Bu proje kapsamında her yıl 2 milyon çalışan için 2 milyon fidan dikilmesi hedeflenmekte ve dijital bağış ile sertifikasyon sistemi aracılığıyla iş dünyasında çevresel sorumluluk teşvik edilmektedir (https://www.tisk.org.tr/proje/37/yesile-ortak-ol.html, Erişim tarihi 06.12.2025). Genç ve kadın odaklı projeler kapsamında Genç Kadın Liderler programı yer almaktadır. Genç kadın liderlerin iş dünyasında güçlendirilmesini, mentorluk, eğitim ve liderlik kapasitesinin geliştirilmesini ve kadın dostu çalışma hayatının teşvik edilmesini hedeflemektedir (https://www.tisk.org.tr/proje/46/genc-kadin-liderler.html, Erişim 06.12.2025). 2023 yılında 11 ilimizi kapsayan Kahramanmaraş depreminin ardından deprem bölgesindeki kadınlara dijital ve yeşil dönüşüm alanlarında mesleki beceriler kazanmasını sağlamak amacıyla program oluşturulmuştur (https://www.tisk.org.tr/proje/904/deprem-bolgesindeki-kadinlar-icin-yesil-ve-dijital-donusum-egitim-programi.html, Erişim 06.12.2025). Yine 2021 yılında kadınların sendikalardaki temsil oranının arttırılması ve liderlik kapasitelerinin yükseltilmesi amacıyla Yeni Nesil Sendikacılıkta Kadın Liderlik Programı oluşturulmuştur (https://www.tisk.org.tr/proje/844/yeni-nesil-sendikacilikta-kadin-liderlik-programi.html, Erişim 06.12.2025). Gençlik dönüşümü için sanayiden başlayarak tüm sektörlerde görülecek olan dijital dönüşüm sürecinde, iş dünyasına hazırlanan genç iş insanlarının gelişimine katkı sunan ve dönüşüme bu yolla ortak olunacağına inanan TİSK, bilişim teknolojileri alanında kamu ve özel sektöre teknolojide uzman genç iş gücü kazandırmayı amaçlamıştır (https://www.tisk.org.tr/proje/38/genc-donusum.html,Erişim 06.12.2025). Bu projelerle TİSK, kayıtlı istihdamı desteklemekte,yürütmekte ve esnek ile dijital çalışma modellerini teşvik etmektedir. Aynı zamanda çalışma hayatında kadın katılımını artırma girişimleri ise kadın dostu işyeri modelleri geliştirmekte uygulamakta ve kadınların dijital beceri kazanmasını ve teknik alanlara yönlendirilmesini desteklediği görülmektedir. TİSK'in dijital ve teknoloji odaklı çalışmaları arasında TİSK Akademi ile sürdürmekte olup dijital okuryazarlık, yapay zekâ ve veri analitiği eğitimleri sunmakta, yeşil beceriler ve Endüstri 4.0 adaptasyonunu desteklemekte ve gençler ile kadınlar için özel modüller sağlamaktadır. (https://www.tisk.org.tr/proje/41/tisk-akademi.html, Erişim 06.12.2025). TİSK'in ulusal ve uluslararası işbirlikleri kapsamında **IOE (Uluslararası İşverenler Örgütü)**, sürdürülebilirlik rehberleri sunmakta, küresel işveren standartlarını belirlemekte ve dijital dönüşüm ile yeşil beceriler politikalarını desteklemektedir. **BusinessEurope** ile işbirliği ise AB Yeşil Mutabakatı ve düşük karbonlu üretim politikaları çerçevesinde Avrupa işverenleriyle ortak politika ve yol haritaları geliştirmeye odaklanmaktadır. **WBCSD (Dünya Sürdürülebilir Kalkınma İş Konseyi)** çalışmaları, kurumsal sürdürülebilirlik ve karbon raporlamasını teşvik etmekte, döngüsel ekonomi ve çevre yönetimi uygulamalarını yaygınlaştırmaktadır. Ayrıca, **Avrupa Birliği ve IPA projeleri** aracılığıyla genç ve kadın istihdamı, dijital ve yeşil becerilerin geliştirilmesi, sosyal diyalogun güçlendirilmesi ve mesleki yeterlilik sistemleri ile sektör yol haritalarının hazırlanması desteklenmektedir (TİSK 28. Olağan Genel Kurul Raporu, 2023: 319-320). TİSK, politika geliştirme ve kurumsal katkılar kapsamında çalışma hayatının çeşitli alanlarında aktif rol almaktadır. **Asgari ücret, sosyal güvenlik ve kayıtlı istihdam** konularında yeni nesil politika önerileri sunmakta, veri temelli raporlama ve işgücü piyasası analizleri yapmaktadır. Ye**şil ve Dijital Dönüşüm Çalışma Grupları** ile sendikacılıkta klasik yapıdan sendikacılık 4.0'a geçişi hedeflemektedir.

SONUÇ

Sosyal gelişmeler kaçınılmaz olarak insan hayatı etkilemektedir; üretim biçimleri zamanlara göre farklılık gösterirken dolayısıyla insanın mevcut düzene ayak uydurması son derece olağan bir durum olarak görülmektedir. Dönüşümlerin üretim biçimlerinden, istihdam şekillerine, dolayısıyla örgütlenme modellerine kadar geniş bir yelpazeyi etkilediği görülmektedir. Örgütlenme bakımından değerlendirildiğinde ise anayasal güvence altına alınmış bir hak olarak hem işçi tarafının hem işveren tarafının bu süreçten etkileneceği bir gerçektedir. Genel anlamda değerlendirildiğinde süreç bağımsız çalışanların yüksek olduğu tarım toplumundan, bağımlı çalışanların yoğun olduğu sanayi toplumuna ve devam eden süreçte dijitalleşme çağında belki de "üçüncü" bir statü olarak değerlendirilebilecek olan platform çalışanlarının durumunu sebep olan bir dinamik olarak dijitalleşme toplumsal hayata tesir etmektedir. Bu bakımdan yeni nesil sendikacılık anlayışıyla özellikle "dijital kanalların" kullanımına

hitap eden bir dönüşüm yaşanılmaktadır. Emek avcı-toplayıcı toplumdan itibaren yaşanan dönüşümlerden her zaman etkilenen bir olgu olarak toplumların yaşayış biçimleri etkilenmektedir. Bu bakımdan yeni nesil sendikacılık anlayışıyla özellikle "dijital kanalların" kullanımına hitap eden bir dönüşüm yaşanılmaktadır.

Yeni nesil sendikacılık, Türkiye'de hem çalışan hem de işveren örgütleri için stratejik bir dönüşüm alanı olmaktadır. Bu bağlamda çalışmanın konusu olan ve işveren sendikası olarak TİSK'in faaliyetleri ilgili raporlar analiz edilerek incelenmiştir. TİSK'in sürdürülebilirlik, yeşil ve dijital dönüşüm kapsamında işveren sendikacılığının çağın gereklerine uyum sağlama potansiyelini göstermektedir. Sendikaların aynı zamanda birer "sosyal politika" aracı olması işlevlerinin daha geniş alana hitap etmesine ve sosyal gelişmeye katkı sağlamasına olanak sağlamaktadır.

TİSK'in dijital okuryazarlığın sağlanmasıyla sağlamak, dijital dönüşüm, yeşil dönüşüm, sosyal diyalog gibi geniş alanlara hitap eden ve kurumsal sosyal sorumluluk anlayışında barındıran yeni nesil sendikacılığı uygulama gayretleri bulunmaktadır. Ayrıca sosyal politikanın dezavantajlı grupları içinde yer alan kadınlar, gençler gibi kişilere yönelik bireylerin çalışma hayatına kayıtlı istihdam ekseninde sağlayarak hem genç iş gücü hem de kadın iş gücüne yönelik politikalar ve projeler üretmektedir. Esasen TİSK'in bu faaliyetleri klasik sendikacılığın ücret ve pazarlık odaklı hedeflerinin çok ötesine geçtiğini göstermektedir. Aynı zamanda **Dünya Sürdürülebilir Kalkınma İş Konseyi**, Avrupa Birliği gibi uluslararası düzeyde işbirliğinde bulunan TİSK'in farklı örgütlenmelere de örnek teşkil etmesi sosyal refahı artırma konusunda ve aynı zamanda "sosyal diyalog" mekanizmasının güçlenmesi bakımından bir öncü olarak geniş etki uyandırması olağandır.

Ancak bu dönüşümün sürdürülebilir olması için dijital iş modellerine uygun **yasal çerçevelerin** geliştirilmesi, v**eri odaklı sosyal diyalog platformlarının** kurulması, a**kademi iş dünyası ve sivil toplum iş birliğinin** güçlendirilmesi, gerekmektedir. Bu bağlamda, yeni nesil sendikacılık yalnızca kurumsal yapıları ve iş süreçlerini dönüştürmekle kalmayacak, aynı zamanda işgücünün beceri gelişimini destekleyerek ekonomik rekabetçiliği artıracak ve toplumsal refahı güçlendirecek bir mekanizma olarak ön plana çıkacaktır. Gelecek perspektifinde, çevresel sürdürülebilirlik, dijital yetkinlikler ve sosyal kapsayıcılık odaklı politikalar, sendikaların hem ulusal hem de uluslararası düzeyde etkinliğini artıracak temel unsurlar olacaktır.

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THRIVING IN ACADEMIA: PSYCHOLOGICAL CAPITAL AND PSYCHOLOGICAL DISTRESS IN MALAYSIAN UNIVERSITIES

Nur Amalyna Radzali[1]
E-mail: amalynaradzali@unisza.edu.my
ORCID ID: 0009-0001-0182-6862

R Zirwatul Aida R Ibrahim[1]
Email: zirwatul@umt.edu.my
ORCID ID: 0000-0003-1925-4986

Abstract

This study explores the impact of psychological capital on the psychological distress of academic staff at public universities in Malaysia. Psychological capital, which includes self-efficacy, optimism, hope, and resilience, plays a critical role in managing job stress, work demands, and work-family conflict. Academic staff face increasing pressures that can negatively affect their mental health and job performance. Using survey data from 350 respondents, this study examines how psychological capital moderates these stressors and contributes to overall well-being. Findings reveal that individuals with higher psychological capital experience lower stress levels and greater resilience in coping with professional and personal challenges. The results emphasize the importance of integrating psychological capital development into institutional policies to enhance academic staff's mental health, job satisfaction, and productivity. Universities should implement targeted interventions such as resilience training, mental health support programs, and work-life balance initiatives to foster a more supportive work environment. Strengthening psychological capital among academic staff can lead to better stress management, improved job performance, and a healthier academic workforce. This study provides valuable insights for university administrators and policymakers in creating sustainable well-being strategies within higher education institutions.

Keywords: Psychological Capital, Psychological Distress, Academic Staff

INTRODUCTION

Psychological distress is a subjective measure of mental health, encompassing satisfaction, happiness, and self-fulfillment. It is essential for reducing stress, enhancing life quality, and improving mental health outcomes [1]. In higher education institutions, the psychological distress of academic staff has gained significant attention, particularly due to the increasing pressures of the evolving education system and heightened job demands. These pressures contribute to job stress and work-family conflicts, which adversely affect mental health and overall well-being [2].

The concept of psychological capital, which includes self-efficacy, optimism, hope, and resilience, has been identified as a critical personal resource for mitigating job-related stressors. High psychological capital levels are associated with a greater capacity to handle work demands, manage stress effectively, and reduce the negative impacts of job stress on mental health [3]. Academic staff with strong psychological capital are better equipped to navigate job-related challenges and maintain a positive mental state despite high job demands and conflicts [4].

Building on this understanding, this study explores how psychological capital moderates the relationship between job stress, job demands, and work-family conflict with psychological distress. This moderating role is significant as it highlights psychological capital's potential to buffer the negative effects of

workplace stressors, thereby fostering resilience and promoting mental health among academic staff. Despite existing research on the impacts of job stress and work-family conflict, there remains a lack of clarity on the moderating role of psychological capital in these contexts, particularly in Malaysian public universities. Therefore, this study aims to address these gaps by investigating: This study seeks to clarify two aims: (1) the relationships among job stress, job demands, and work-family conflict with psychological distress, (2) determine the moderating effects of psychological capital on the relationships between job stress, job demands, and work-family conflict with psychological distress.

LITEARTURE REVIEWS

Job Stress, Job Demands, and Psychological Distress in Higher Education

Job stress and high job demands have been consistently identified as prominent occupational stressors affecting academic staff's psychological well-being. In higher education, these stressors manifest through role overload, ambiguity, conflicting demands, and pressures for research productivity, teaching, and administrative duties [5]. Such stressors contribute substantially to psychological distress, including symptoms of anxiety, depression, and burnout. Moreover, academic staff often experience intense work demands that exceed available job resources, intensifying stress and leading to diminished mental health [6]. These occupational challenges are central to understanding psychological distress in the academic workforce and align with the first research aim concerning the relationship among job stress, job demands, and psychological distress.

Work-Family Conflict and Psychological Distress Among Academics

Work-family conflict (WFC) arises when pressures from academic work roles interfere with family responsibilities, resulting in strained personal relationships and increased psychological strain. Empirical studies reveal that WFC significantly predicts psychological distress among academic staff, exacerbating feelings of burnout and emotional exhaustion [7]. The spillover of work demands into family life is particularly pronounced in academia due to irregular hours and the emotional labor associated with teaching and mentoring [8]. These findings corroborate the role of WFC as both a direct contributor and mediator in the relationship between job stressors and psychological distress, reinforcing the rationale for examining WFC in the current study.

Psychological Capital as a Protective Resource

Psychological capital comprising self-efficacy, optimism, hope, and resilience has gained substantial attention as a personal psychological resource that enhances individuals' capacity to cope with work-related stress [9]. Emerging evidence affirms the direct beneficial effects of high Psychological capital on reducing psychological distress and increasing adaptive responses among Malaysian academic professionals, thus promoting occupational well-being [16]. Importantly, Psychological capital’s multi-dimensionality provides diverse coping mechanisms that buffer against various strains associated with academic roles.

Relationships Among Job Stress, Job Demands, Work–Family Conflict, and Psychological Distress

Job stress, job demands, and work–family conflict (WFC) continue to be critical occupational stressors that significantly influence employees' psychological well-being independent of pandemic-related factors. Current literature confirms these factors as robust predictors of psychological distress, which encompasses symptoms of anxiety, depression, and burnout [10]. Job stress commonly arises from role overload, role ambiguity, and conflicting job demands. These stressors frequently spill over into family life, intensifying work–family conflict and compounding psychological distress. This spillover effect contributes to emotional exhaustion and deteriorates overall mental health.

The quantitative and qualitative aspects of job demands, including workload intensity and emotional labor, exacerbate this strain. High job demands increase the likelihood of WFC, which serves as an additional source of psychological distress. Organizational factors such as a poor psychosocial safety climate and insufficient support systems further amplify these negative effects [11]. The Job Demands-Resources (JD-R) model remains a widely endorsed theoretical framework for understanding these dynamics, emphasizing that excessive job demands, in the absence of sufficient resources, create a conducive environment for mental health problems [12].

Further empirical evidence supports that job stressors related to role overload and role conflict extend beyond the workplace, contributing to tension and conflict in family roles. Work–family conflict has been identified as a partial mediator between job stress and psychological distress, with its presence exacerbating feelings of burnout, including emotional exhaustion, cognitive weariness, and depersonalization [13-14]. These findings highlight the chronic stress employees endure due to conflicting work and family demands, which can have lasting implications on their psychological health.

An extensive body of research consolidates Psychological capital's inverse relationship with psychological distress across diverse occupational and academic populations, confirming its role as a vital adaptive psychological resource [15]. Psychological capital operates through its four interrelated dimensions—self-efficacy, optimism, hope, and resilience that collectively enhance individuals' capacity to cope with and rebound from workplace stress.

Theoretically, Conservation of Resources (COR) theory provides an explanatory framework for Psychological capital's function in academic settings [16-17]. COR posits that individuals strive to obtain, retain, and protect valuable resources, including psychological ones. Academics possessing high Psychological capital are better equipped to maintain resource reservoirs when facing job demands and WFC, thereby preserving psychological equilibrium and behavioral flexibility under stress [18]. This protective mechanism helps prevent resource depletion that otherwise leads to psychological distress. Furthermore, integrating Psychological capital within established occupational health models like the JD-R framework deepens theoretical understandings and practical implications [19]. Psychological capital serves as a personal resource that buffers job demands' negative effects by promoting adaptive motivation and coping, thus reducing burnout and distress.

These theoretical insights, supported by empirical studies in Malaysian higher education, underscore Psychological capital's potential as a target for evidence-based interventions aimed at fostering psychological resilience and well-being in academics navigating complex and demanding work-family environments. While much of the extant research has focused on Psychological capital as a mediator explaining how occupational stress translates to psychological outcomes through Psychological capital-related pathways its role as a moderator remains comparatively underexplored, especially in the Malaysian academic context. Mediating models interpret Psychological capital as a mechanism conveying the effect of stressors on distress, whereas moderating models conceptualize Psychological capital as a variable that changes the strength or direction of these relationships [20]. Recent moderated mediation analyses in analogous occupational groups highlight Psychological capital's buffering function, where its presence weakens the detrimental impact of stressors such as work-family conflict on mental health outcomes.

MATERIALS AND METHODS

The research process began with a thorough literature review to understand the existing body of knowledge on psychological capital and well-being. Specifically, the Perceived Stress Scale (PSS) was used to measure the general stress levels experienced by participants, while the Job Demands-Resources Scale (JDRS) captured the specific features of job demands as well as available job resources. To assess the extent and nature of role conflict between work and family domains, the Work-Family Conflict Scale (WFCS) was administered. The participants' level of psychological capital which includes hope,

resilience, optimism, and self-efficacy was measured using the Psychological Capital Questionnaire (PCQ). Lastly, overall psychological distress was evaluated using the General Health Questionnaire (GHQ), a widely recognized tool for screening mental health and psychological well-being in organizational research. Ethical approval for the research was obtained from the university's research ethics board to ensure adherence to ethical guidelines throughout the study. The survey was developed using Google Forms to create an online questionnaire. The survey included informed consent at the beginning, explaining the purpose of the study and ensuring voluntary participation. The survey link was then distributed via official university channels, emails, and social media platforms to reach a broad group of academic staff. This distribution method ensured accessibility and convenience for the participants. Data were collected from a total of 350 academic staff members across all public universities in Malaysia. To ensure data quality, responses were screened for completeness and consistency before analysis. The reliability of the instruments was assessed using Cronbach's Alpha, which confirmed the internal consistency of all the instrument. The collected data were analyzed using SPSS software. Descriptive statistics were first calculated to analyze the demographic profile of the respondents, including age, gender, and years of experience. Next, Pearson's correlation analysis was conducted to explore the relationships between psychological capital and psychological distress. Finally, multiple regression analysis was performed to assess the predictive power of psychological capital components on psychological distress. A significance level of $p < 0.05$ was set for all statistical tests. Data acquisition was carried out using an online survey, ensuring voluntary participation and obtaining informed consent from all participants before they completed the survey. Anonymity and confidentiality were maintained throughout the data collection process. All responses were securely stored and handled in compliance with ethical standards.

FINDINGS

Table 1. Socio-Demographic Characteristics of Respondents

Characteristics	Frequency	Percentage {%}
Types of University		
UA	8	2.30
UB	9	2.60
UC	21	6.00
UD	9	2.60
UE	7	2.00
UF	20	5.70
UG	8	2.30
UH	15	4.30
UI	46	13.10
UJ	11	3.10
UK	32	9.10
UL	26	7.40
UM	28	8.00

UN	15	4.30
UO	16	4.60
UP	43	12.3
UQ	7	2.00
UR	11	3.10
US	9	2.60
Gender		
Male	137	39.10
Female	213	60.90
Age Range		
20-30 years old	6	1.70
31-40 years old	137	39.10
41-50 years old	146	41.70
51-60 years old	58	16.60
61 years old and above	3	0.90
Marital Status		
Single	60	17.10
Married	290	82.90
Education Level		
Degree	9	2.60
Masters	82	23.40
Ph.D	259	74.00
Position Level		
Partime	2	0.60
Contract	40	11.40
Permanent	308	88.00
Working Years Range		
0 - 5 years	81	23.10
5 - 10 years	67	19.10
11 - 15 years	76	21.70
15 - 20 years	70	20.00

21 - 25 years	35	10.00
25 - 30 years	16	4.60
31 - 35 years	6	1.70
Current Position Grade		
Grade 41	13	3.70
Grade 42	12	3.40
Grade 44	28	8.00
Grade 45	8	2.30
Grade 51	113	32.30
Grade 52	100	28.60
Grade 54	58	16.60
Special Grade C	17	4.90
Special Grade B	1	0.30
Position		
Lecturer	72	20.6
Senior Lecturer	185	52.9
Associate Professor	53	15.1
Professor	14	4.0
Language Teacher	22	6.3
Instructor	4	1.1
Total	350	

This study examined the socio-demographic characteristics of academic staff from various public universities in Malaysia. A total of 350 respondents participated in the study, providing valuable insights into the composition of the academic workforce in terms of university affiliation, gender, age, marital status, education level, employment status, years of experience, and current position grade. In terms of university affiliation, respondents were drawn from a diverse range of public universities. The largest group of participants came from University I (UI; 13.1%), followed by University P (UP; 12.3%) and University K (UK; 9.1%). Other universities such as University E (UE; 2.0%) and University Q (UQ; 2.0%) contributed smaller proportions of respondents, reflecting the broad representation of academic staff from various Malaysian higher education institutions. Regarding gender, the majority of respondents were female (60.9%), while male respondents accounted for 39.1%. This gender distribution indicates that female academics constitute a substantial portion of the workforce in Malaysian public universities. The age distribution of respondents revealed that most participants were within the 31–40 years (39.1%) and 41–50 years (41.7%) age brackets. Smaller proportions were observed in the 51–60 years (16.6%), 20–30 years (1.7%), and 61 years and above (0.9%) categories. These findings indicate that the academic staff surveyed were predominantly in their middle career

stages. In terms of marital status, the majority of respondents were married (82.9%), whereas 17.1% were single. This reflects the common demographic pattern among academic professionals in Malaysia. The educational attainment of respondents showed a highly qualified academic workforce. A substantial majority held a Doctoral degree (Ph.D.; 74.0%), followed by those with a Master's degree (23.4%), while only 2.6% possessed a Bachelor's degree. This high level of educational achievement is consistent with the qualifications expected for academic positions in Malaysian public universities.

With regard to employment status, most respondents held permanent positions (88.0%), while 11.4% were employed on a contract basis, and 0.6% worked part-time. This indicates a relatively stable and secure workforce within the public university system. The distribution of working experience showed that 21.7% of respondents had 11–15 years of experience, 23.1% had 0–5 years, 19.1% had 5-10 years, and 20.0% had 15–20 years. Smaller groups had 21–25 years (10.0%), 25–30 years (4.6%), and 31–35 years (1.7%) of experience. These figures reflect a balanced representation of both early-career and experienced academic staff. For current position grade, the largest proportion of respondents held Grade 51 (32.3%), followed by Grade 52 (28.6%) and Grade 54 (16.6%). Other grades included Grade 41 (3.7%), Grade 42 (3.4%), Grade 44 (8.0%), Grade 45 (2.3%), Special Grade C (4.9%), and Special Grade B (0.3%). This distribution illustrates a broad representation across hierarchical academic levels.

Finally, with respect to academic position, the majority of respondents were Senior Lecturers (52.9%), followed by Lecturers (20.6%), Associate Professors (15.1%), and Professors (4.0%). Smaller proportions were Language Teachers (6.3%) and Instructors (1.1%). This suggests that the study primarily surveyed teaching and research-focused staff, with a strong representation of mid-career academics. Overall, the socio-demographic characteristics of the respondents reflect a well-rounded, diverse group of academic staff with a range of qualifications, experience, and roles [19,20]. This diversity is crucial for providing a comprehensive understanding of academic staff's psychological capital and well-being across Malaysia's public universities.

RELATIONSHIP AMONG JOB STRESS, JOB DEMANDS, WORK-FAMILY CONFLICT, PSYCHOLOGICAL CAPITAL, AND PSYCHOLOGICAL DISTRESS AMONG ACADEMIC STAFF

This section investigates the relationships between major occupational factors specifically job stress, job demands, and work-family conflict and psychological distress among academic staff at Malaysian public universities. The focus is to clarify how these work-related stressors are statistically linked with distress, as well as to consider the role of psychological capital as a potential buffer. Each respondent's capacity to manage stress, demonstrate resilience, sustain optimism, and exhibit self-efficacy, which together constitute psychological capital, was assessed as part of this analysis. To achieve this, Pearson's correlation analysis was carried out to determine the strength and direction of the linear associations among psychological distress, job stress, job demands, work-family conflict, and psychological capital [25].

Table 2. Correlation Matrix among Core Study Variables (n = 350)

Variable	1	2	3	4	5
1. Job Stress	1				
2. Job Demands	.53***	1			

Variable	1	2	3	4	5
3. Work-Family Conflict	.43***	.36***	1		
4. Psychological Capital	-.36***	-.29***	-.33***	1	
5. Psychological Distress	.47***	.39***	.41***	-.44***	1

*correlations were significant at $p < 0.001$

The results in Table 2 revealed significant positive correlations between psychological distress and key occupational stressors, including job stress ($r = .47$, $p < 0.001$), job demands ($r = .39$, $p < 0.001$), and work-family conflict ($r = .41$, $p < 0.001$). These findings indicate that higher levels of these factors are associated with increased psychological distress among academic staff, reflecting their impact on mental health within the demanding university work environment. Conversely, psychological capital showed significant negative correlations with psychological distress ($r = -.44$, $p < 0.001$), job stress ($r = -.36$, $p < 0.001$), job demands ($r = -.29$, $p < 0.001$), and work-family conflict ($r = -.33$, $p < 0.001$). This suggests that higher psychological capital, representing positive psychological resources such as resilience and optimism, is associated with lower levels of psychological distress and workplace stressors.

The pattern of associations underscored by these correlations aligns with prior work emphasizing the protective role of psychological capital in mitigating the adverse effects of occupational stress [26,27]. Specifically, the moderate to strong correlations between the stress-related variables underline the multifaceted nature of job-related pressures faced by academics, reinforcing the necessity of addressing these issues through systemic and individual-level interventions. The inverse associations with psychological capital highlight the potential benefit of fostering this resource to enhance coping mechanisms and improve overall well-being.

Altogether, these correlation results provide empirical support for advancing to more complex multivariate analyses, including regression and moderation models, to clarify the unique and interactive influences of these variables on psychological distress. They also contribute to the growing evidence base advocating for integrated psychological capital development programs within academic institutions aiming to promote mental health and resilience in the academic workforce [28,29].

MODERATING EFFECTS OF PSYCHOLOGICAL CAPITAL ON THE RELATIONSHIPS BETWEEN JOB STRESS, JOB DEMANDS, WORK-FAMILY CONFLICT, AND PSYCHOLOGICAL DISTRESS

A central focus of this study is to assess whether psychological capital moderates the impact of job stress, job demands, and work-family conflict on psychological distress among academic staff. The moderating effect hypothesized here suggests that higher psychological capital characterized by greater hope, optimism, resilience, and self-efficacy serves as a buffer, reducing the negative influence of these occupational stressors on staff mental health outcomes.

To rigorously evaluate the moderating effect of psychological capital, hierarchical regression analyses were conducted. In the initial step, job stress, job demands, and work-family conflict were specified as independent variables influencing psychological distress. In the subsequent step, interaction terms created by multiplying each stressor with psychological capital were added to the model to formally test for moderation. This analytic strategy is widely recommended for moderation analysis, as it clarifies whether the relationship between occupational stressors and psychological distress varies across different levels of psychological capital. In the following step, interaction terms representing the product of these stressors and psychological capital were included to test moderation [30-32].

Table 3 presents the results of the moderation analysis assessing how psychological capital influences the relationships between job stress, job demands, work-family conflict, and psychological distress among Malaysian academic staff. Each row in the table reports the unstandardized regression coefficient (B), standard error (SE), t-value (t), and significance level (p) for the main effects and interaction terms. The hierarchical regression analysis results detailed in Table 3 reveal important insights into the moderating role of psychological capital.

Step 1 controlled for demographic variables age, gender, and marital status accounting for 7.0% of the variance in psychological distress ($R2=0.070$, $F(4,330)=5.200$, $p<.001$ $R2=0.070$, $F(4,330)=5.200$, $p<.001$). Marital status emerged as a significant positive predictor at this stage ($\beta=0.167$, $p<.01$ $\beta=0.167$, $p<.01$). In Step 2, job stress, job demands, work-family conflict, and psychological capital were added, significantly improving the model's explanatory power to 23.0% of variance explained ($\Delta R2=0.160$, $F\Delta R2=0.160$, F change = 17.500, $p<.001$ $p<.001$). Job stress ($\beta=0.152$, $p<.001$ $\beta=0.152$, $p<.001$), job demands ($\beta=0.940$, $p<.01$ $\beta=0.940$, $p<.01$), and psychological capital ($\beta=-0.122$, $p<.01$ $\beta=-0.122$, $p<.01$) were significant predictors, suggesting that job stressors increase psychological distress while psychological capital reduces it. Step 3 incorporated interaction terms between psychological capital and each job stressor to test moderation effects.

This further increased explained variance to 30.0% ($\Delta R2=0.070$, $F\Delta R2=0.070$, F change = 14.000, $p<.001$ $p<.001$). All moderating interaction terms were significant: job stress × psychological capital ($\beta=-0.670$, $p<.001$ $\beta=-0.670$, $p<.001$), job demands × psychological capital ($\beta=-0.290$, $p<.05$ $\beta=-0.290$, $p<.05$), and work-family conflict × psychological capital ($\beta=-0.480$, $p<.01$ $\beta=-0.480$, $p<.01$). These negative interaction coefficients indicate that higher psychological capital buffers the adverse impact of job stressors on psychological distress.

Overall, these findings demonstrate that psychological capital not only directly reduces psychological distress but also moderates the impact of key occupational stressors, specifically job demands and work-family conflict, underscoring its vital role in fostering employee resilience and mental well-being.

Table 3. Hierarchical Regression Analysis Predicting Psychological Distress: Moderating Effects of Psychological Capital

	Step 1 (Control)	Step 2 (Additive Model)	Step 3 (Interactive/2-way Interaction)
Control Variables			
Age	0.007	-0.028	-0.046
Gender	0.088	-0.014	-0.025
Marital Status	0.167 **	0.142 ***	0.137 ***
Predictor Variables			

	Step 1 (Control)	Step 2 (Additive Model)	Step 3 (Interactive/2-way Interaction)
Job Stress	—	0.152 ***	0.152**
Job Demands	—	0.94**	-1.00**
Work-Family Conflict	—	-0.116 ***	2.040 ***
Psychological Capital	—	-0.122**	0.143
2-Way Interactions	—	—	-
Job Stress × Psychological Capital	—	—	-0.670 ***
Job Demands × Psychological Capital	—	—	-0.290 *
Work-Family Conflict × Psychological Capital	—	—	-0.480 **
R^2	0.070	0.230	0.300
ΔR^2	0.070	0.160	0.070
F change	5.200 ***	17.500 ***	14.000 ***
df	4, 330	7, 345	10, 342

Note: B = unstandardized coefficient; t = t statistic; p = significance value.
*p < .05; **p < .01; ***p < .001.

To further interpret these effects, simple slopes analyses were conducted [33]. The results demonstrated that for academic staff with high psychological capital (one standard deviation above the mean), the positive association between job stress, work-family conflict, job demands and psychological distress was substantially weaker than for staff with low psychological capital. For visual clarity, Figure 1 illustrates the moderating effect using the job stress–distress association as an example. The slope rise

in distress with increasing job stress is much flatter for those with high psychological capital, confirming its buffering role. These findings align with previous international evidence, showing that psychological capital encompassing hope, optimism, resilience, and self-efficacy, strengthens an individual's ability to handle workplace stressors and reduces their impact on mental health [33-35]. Recent experimental interventions have also demonstrated that psychological capital can be enhanced through structured training programs, further emphasizing its importance as a practical and modifiable resource for academic well-being.

Figure 1. Moderating Effect of Psychological Capital on the Relationship Between Job Stress and Psychological Distress

In this figure, two lines represent two lines represent the predicted psychological distress for individuals with low psychological capital; –1 standard deviation from the mean) and high psychological capital (+1 standard deviation from the mean) across varying levels of job stress. The blue line illustrates the simple slope for participants with low Psychological capital, while the gray line displays the corresponding slope for those with high Psychological capital. As job stress increases from low (1) to high (5), the predicted psychological distress rises markedly for individuals with low psychological capital, as reflected in the steep angle of the blue line. In contrast, the slope for high psychological capital remains much flatter, indicating a substantially weaker relationship between job stress and psychological distress for these individuals. This means that those with higher levels of psychological capital experience far less psychological distress as job stress intensifies compared to those with lower psychological capital.

The separation and relative steepness of the two lines clearly demonstrate the moderating effect: psychological capital serves as a protective buffer, diminishing the adverse impact of job stress on mental health among academic staff. These results confirm that fostering psychological capital can effectively reduce the risk of psychological distress even under increasing workplace pressures. This finding is consistent with current literature on occupational stress and resilience in academic settings [36-38].

Figure 2. Moderating Effect of Psychological Capital on the Relationship Between Job Demands and Psychological Distress

The simple slope plot in Figure 2 illustrates the moderating effect of psychological capital on the relationship between job demands and psychological distress. In the graph, psychological distress is plotted on the y-axis, while job demands appear on the x-axis. Two distinct lines are depicted: the blue line represents individuals with low psychological capital (–1 SD), and the red line corresponds to those with high psychological capital (+1 SD). For individuals with low psychological capital, the blue line shows a markedly steep increase in psychological distress as job demands rise.

This indicates that when psychological capital is low, increases in job demands are closely followed by large increases in psychological distress, reflecting greater vulnerability and poor coping resources. Conversely, the red line for those with high psychological capital reveals a much flatter slope. Even as job demands increase, psychological distress for these individuals only rises modestly. This flatter trajectory demonstrates that high psychological capital acts as a buffer, significantly weakening the negative psychological impact of increased job demands [39].

Overall, Figure 2 provides clear visual and quantitative evidence that psychological capital serves as a protective moderator in the job demands–distress relationship. Staff with higher

psychological capital are substantially less affected by rising job demands than their lower-capital counterparts, highlighting the importance of developing and maintaining psychological capital to foster resilience and well-being in demanding work environments [40-42].

Figure 3. Moderating Effect of Psychological Capital on the Relationship Between Work-Family Conflicts and Psychological Distress

Figure 3 illustrates the simple slopes for the moderating effect of psychological capital on the relationship between work-family conflict and psychological distress. The graph displays predicted psychological distress on the vertical axis and levels of work-family conflict on the horizontal axis, with separate lines for high psychological capital (+1 SD, grey line) and low psychological capital (−1 SD, yellow line). The findings reveal a clear interaction effect. For individuals with high psychological capital, psychological distress increases steeply as work-family conflict rises this is evidenced by the sharp upward trajectory of the grey line.

In contrast, those with low psychological capital show only a modest increase in psychological distress across the same range of work-family conflict, as represented by the much flatter yellow line. This pattern indicates that psychological capital significantly moderates the impact of work-family conflict on psychological distress. Contrary to the typical buffering hypothesis, the slope is steeper for those high in psychological capital, suggesting that the positive association between work-family conflict and psychological distress is stronger for these individuals within this sample and model specification. This unexpected direction warrants further investigation but highlights that the influence of psychological capital may be complex, possibly shaped by contextual or methodological factors.

Overall, Figure 3 demonstrates that the effect of work-family conflict on psychological distress is not uniform and depends significantly on employees' levels of psychological capital. This interaction underscores the importance of considering personal psychological resources in understanding and managing the consequences of work-family conflict in organizational settings.

DISCUSSION AND CONCLUSION

The findings from the analysis of work stress, job demands, and work-family conflict indicate that these factors significantly affect the psychological distress of academic staff, albeit with variations across different respondents. The overall level of work stress and job demands is moderate, with academic staff reporting a range of experiences from manageable to overwhelming. The mean scores suggest that while a majority of respondents experience some degree of stress and pressure, there is still a significant portion who report being able to manage their workload effectively. Job demands, particularly multitasking and the need for constant attention to work are commonly cited as sources of stress, contributing to the overall psychological burden of academic staff.

The work-family conflict emerged as a significant issue, with many respondents indicating that the demands of their professional responsibilities negatively impacted their personal and family lives. Items related to the difficulty of balancing work and family responsibilities, such as the inability to fulfill family duties due to work commitments and the pressure of time constraints, received relatively low scores, pointing to the substantial strain caused by work-family conflict. This suggests that work-family conflict is a prominent concern that can detract from the psychological distress of academic staff, especially in environments where work demands are high and flexibility is limited.

Psychological capital (psychological resources such as resilience, optimism, and self-efficacy) was found to play a crucial role in moderating the effects of work stress, job demands, and work-family conflict on the psychological distress of academic staff. Those with higher levels of psychological

capital tended to report better management of work-related pressures and were more likely to demonstrate resilience in balancing professional and personal obligations. This indicates that psychological capital is a potential protective factor, helping individuals cope more effectively with stressors in both work and family domains.

To address these challenges, universities and academic institutions need to focus on fostering psychological capital through training, development programs, and support systems aimed at improving resilience, optimism, and self-efficacy. Furthermore, policies and practices that promote work-life balance, such as flexible working hours, telecommuting options, and support for family-related responsibilities, can help reduce the negative impact of work stress and work-family conflict. By implementing such measures, institutions can enhance the psychological distress of their academic staff, ultimately leading to improved job satisfaction, productivity, and overall mental health.

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THE DEVELOPMENT OF THE ACCOUNTING PROFESSION IN THE REPUBLIC OF MOLDOVA THROUGH THE PRISM OF DIGITALIZATION, SUSTAINABILITY, AND EUROPEAN INTEGRATION

INGA COTOROS

Lecturer, doctor of economic sciences, Academy of Economic Studies of Moldova

Republic of Moldova

e-mail: cotoros.inga@ase.md

ORCID ID: 0000-0003-2704-2107

Abstract

Sustainability becomes an integral part of professional accounting education! In connection with the update of the International Education Standards, the Republic of Moldova is to take the necessary measures to integrate sustainability competencies into the initial training of professional accountants. The revisions to the International Education Standards provide accountants and auditors with the necessary skills, at a global level, to effectively apply sustainability reporting and assurance standards.

In a world where sustainability reporting is becoming increasingly important for companies, investors and society, this initiative represents a step forward towards a more transparent and responsible business environment.

Keywords: Digitalization, accounting professionals, sustainability

Introduction

The wave of digitalization that is transforming entire industries requires a reconfiguration of the way accounting professionals perform their work and interact with financial data. The rapid advancement of technology is causing the accounting profession to face significant changes, which require a reassessment of the skills and abilities needed to remain competitive and relevant. Furthermore, digitalization is transforming the way accounting operations are managed and redefining the education and training requirements for professionals in this field, questioning the traditional role of the accounting professional.

We believe that the digitalization of the accounting profession is not a simple option, but an inevitability dictated by the evolution of markets and client expectations. Current requirements revolve around increased transparency, instant access to financial information and rapid responses to business challenges, desired outcomes that can only be achieved by adopting appropriate technologies. Taking these aspects into account, this chapter investigates how accounting professionals perceive these paradigm shifts and how prepared they are to face the new demands of the digital market. In general, the impact of digitalization on the accounting profession is vast and multidimensional. On the one hand, emerging technologies such as artificial intelligence, automation and blockchain promise significant streamlining of accounting processes, improving accuracy and reducing errors at the same time. On the

other hand, these innovations introduce challenges related to data security, professional ethics and the need to develop new digital skills.

Research Methodology

In other words, these new technologies promise substantial streamlining of accounting processes, increasing accuracy and reducing human error. For example, artificial intelligence (AI) enables the automation of repetitive and complex tasks, such as account reconciliation and financial data analysis, which saves time and minimizes human error. Machine learning algorithms can also detect anomalies and fraud faster and more accurately than traditional methods, thus providing additional protection against financial risks. Advanced automation, through the use of software robots and other technologies, can take over routine tasks, such as data entry and report generation, freeing up valuable human resources for strategic and analytical activities. This improves operational efficiency and allows greater focus on value-added activities, such as financial consulting and strategic planning. At the same time, blockchain, with its ability to provide an immutable and transparent ledger of transactions, is revolutionizing the way accounting data is managed and verified. By eliminating the need for intermediaries and ensuring data integrity, it can significantly reduce the costs and risks associated with fraud and errors. It also facilitates real-time auditing and full transparency, essential for compliance with strict financial regulations.

However, these revolutionary changes bring to the fore complex challenges related to data security, professional ethics and the need to develop sophisticated digital skills. For this reason, the adaptability and continuous learning capacity of professionals become imperative for the survival and prosperity of the accounting profession.

Thus, accountants must embrace a new professional identity, in which their traditional role of recording and reporting financial transactions is augmented and enriched by the opportunities offered by the digital revolution.

Thus, assessing accounting professionals regarding the need for digitalization of the profession and the formation of new competencies and skills is a particularly important step in understanding how prepared they are to adapt to new technological realities. Moreover, their testing provides insight into how professionals in this field perceive the impact of digitalization on their daily activities, professional ethics, as well as the effectiveness of the curriculum in preparing them for the new digital economy.

At the same time, through this testing, information can be collected that will contribute to the development of appropriate policies and procedures to respond to the challenges and opportunities brought by digitalization, thus ensuring the continued success and relevance of the accounting profession in this new digital era.

Research Purpose and Objectives

In the current context of continuous change, dominated by the continuous wave of digitalization, the main purpose of this research is to outline the professional trajectory of the future accountant in a digitalized economy, with a focus on adapting to new technologies and market demands. Therefore, this study aims to identify the factors that influence the perception of the need for digitalization in the profession and those of optimizing the effectiveness of curricula in the formation of digital skills. This purpose is justified by the need to respond to current and future challenges, to ensure adequate and continuous training of accounting professionals and to contribute to the development of skills that allow them to successfully navigate a dynamic and complex economic landscape.

The first objective of the research is to identify and analyze the determinants that influence the perception of accounting professionals on the need for digitalization in the profession. This objective is important to understand the degree of preparation and openness of accounting professionals towards the

integration of digital technologies in their daily work, while identifying the barriers, perceived challenges, as well as the catalysts for the acceptance of new technologies among accounting professionals. Thus, we will explore the specialized literature to understand what are the key determinants that influence this perception.

The second objective is to assess the effectiveness of the current educational curriculum in developing the digital skills needed by accountants. Through this objective, we will track the extent to which current study programs are adapted to prepare students for digital challenges, while exploring ways in which the curriculum can be improved to better meet the demands of the labor market. To achieve this objective, we will investigate the determinants of optimizing the effectiveness of accounting curricula, examining how new technologies are integrated into the learning process and how they influence the preparation of future professionals for the labor market.

The third objective of this research is to analyze the relationships between the determinants of accounting professionals' perception of the need for digitalization in the profession, as well as the relationships between the variables that influence the effectiveness of curricula in developing digital skills. In this sense, the research aims to provide a deep understanding of how various factors contribute to the formation of accounting professionals' perceptions of digitalization, identifying the dynamics of interactions between these variables. In parallel, the research will explore the relationships between the factors that determine the optimization of educational curricula for developing digital

skills, revealing the essential elements of an effective curriculum in the current context of digital transformation. This approach will allow the development of well-founded educational and professional strategies, adapted to the requirements of a continuously evolving digital world.

Therefore, the objectives proposed in this part of the paper are designed to reflect the complexity and dynamics of the accounting field in the digital context, but also to propose paths of action and reflection in relation to the challenges and opportunities brought by new technologies.

The research method applied in this study is quantitative in nature and involves the use of questionnaires as the main data collection tool. The first step consisted in the creation and application of two questionnaires. The questionnaires were designed to obtain detailed information about the perception of professionals regarding digitalization and its impact on their profession. We chose the questionnaire as the research method because it is an effective method for collecting data in scientific research and provides a structured way to obtain information from a representative sample of the studied population. Descriptive information regarding the results obtained following the application of the two questionnaires can be observed in the table.

The answers provided by the respondents to these questions were then aggregated and the average of these answers was calculated. Thus, the variables described in the table were obtained, each reflecting a specific dimension of the phenomenon studied.

DP profession

	Digitalization of the	It reflects the level of integration of modern technologies into daily accounting practices, highlighting the degree of adoption of digital tools in the profession.

UT	Use of advanced technologies	Measures the use of cutting-edge technologies in carrying out economic transactions, including the automation and digitalization of financial processes.
RP	Professional judgment	It refers to the ability of accountants to apply critical thinking and adaptability in evaluating and implementing digital technologies in accounting, emphasizing the importance of professional judgment in the digital environment.

Econometric model no. 2

Variable description

Dependent variable

ECCD	Curriculum effectiveness in training digital skills	This variable examines how elements of the accounting education system align and respond to the demands imposed by the digital revolution, contributing to equipping future professionals with the skills needed in a digital economy.

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Independent variables

FSED	The flexibility of the accounting education system to the changes imposed by the digital revolution,	It measures the ability of the accounting education system to quickly adapt to new technological requirements, ensuring adequate practical and theoretical training for students in the context of digitalization.

Accounting knowledge

IPM	Insertion into the labor market	

DC

		curriculum in preparing graduates for rapid and efficient integration into the professional environment, highlighting the relevance and applicability of the acquired digital skills.
		It measures the effectiveness of the educational curriculum in preparing graduates for rapid and efficient integration into the professional environment, highlighting the relevance and applicability of the acquired digital skills.
		It reflects the fundamental basis required for the effective use of digital technologies in accounting. It includes both traditional and modern knowledge required for the correct application of digital tools.
PRCEF	Concern for reducing economic crime and fraud	This variable reflects the extent to which accounting curricula include the necessary training for the use of digital technologies in fraud detection and prevention, contributing to financial integrity.
PC training	Continuous	It reflects the importance of continuous learning in maintaining and updating professional skills, especially in the context of rapid technological evolution.
ST *Technology*	*Smart*	It measures the level of integration of emerging technologies, such as artificial intelligence and blockchain, into the accounting education curriculum, preparing students for future technological challenges.
SC rity	Cybersecu	It reflects the attention paid to cybersecurity topics in accounting curricula, ensuring that future professionals are prepared to manage cyber risks and protect financial data.

Source: Author's own processing

The table describes the variables used in the study, highlighting each variable and its description. As mentioned above, each variable was created by aggregating the responses to the relevant questions in the questionnaire, followed by calculating the average of these responses.

The table presents the equations of the econometric models resulting from our analysis. These models were developed to test the formulated hypotheses and evaluate the relationships between the variables mentioned above. Each model was carried out by applying specific regression techniques using the SPSS program.

Discussion and conclusion

In conclusion, the digitalization of accounting requires a reassessment of how professional accountants relate to their traditional role and the skills needed in the new digital era. Therefore, this study contributes to the specialized literature by highlighting the need for continuous adaptation to new technologies, proposing a series of recommendations for professional accountants, as well as for professional training institutions, which are found in the analysis of the results and the final conclusions.

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CLUSTER-BASED DEVELOPMENT AND COOPERATION MECHANISMS IN THE CANNED FOOD INDUSTRY OF AZERBAIJAN: INTERNATIONAL EXPERIENCE AND NATIONAL ADAPTATION

Emilya Shukurova, Baku State University

ABSTRACT

This paper examines the institutional and economic mechanisms of clustering and cooperation in the canned food industry of Azerbaijan and evaluates the applicability of international models to national conditions. Although the country possesses a strong agricultural raw-material base, fragmentation within the value chain limits industrial efficiency and export competitiveness. A comparative assessment of the Turkish and Polish agro-industrial clusters demonstrates that a hybrid model—combining Turkey's logistics- and export-oriented structure with Poland's innovation- and certification-driven approach—represents the most effective option for Azerbaijan. The paper proposes an integrated cluster architecture that links producers, processors, logistics operators, innovation centers and export agencies into a single coordinated system. The findings indicate that the adoption of a cluster-based governance model can reduce production costs, improve coordination and increase resilience within the national food-processing sector.

Keywords: cluster development, value-chain integration, cooperation mechanisms, food processing industry, institutional modernization, export competitiveness

INTRODUCTION

The canned food industry represents a strategic segment of the agro-processing sector in Azerbaijan, functioning as a critical link between primary agricultural production and value-added food manufacturing. Owing to favorable climatic conditions and a rich raw-material base, the country possesses a natural comparative advantage in fruit and vegetable cultivation. However, despite this structural potential, the institutional configuration of the industry remains weak and highly fragmented. The absence of coordination among producers, processors, logistics providers and export intermediaries results in unstable supply relations, capacity underutilization and limited competitiveness in foreign markets. Cluster-based development has gained global recognition as a structural modernization tool for agro-industrial systems. Unlike traditional enterprise-level support mechanisms, clustering enables the integration of producers into a coordinated institutional ecosystem. In this framework, value-chain actors operate not as isolated firms but as mutually reinforcing participants in a shared economic space. International empirical evidence demonstrates that cluster models generate economies of scale, improve logistics efficiency, facilitate certification, reduce transaction costs, and enhance market access opportunities.

For Azerbaijan, the relevance of cluster-based governance stems from three key systemic constraints: (1) weak contractual relations between farmers and processing enterprises, (2) fragmented storage and logistics infrastructure, and (3) the lack of a unified export platform. Accordingly, the strategic objective of this research is to design a hybrid cluster governance model for the canned food industry of Azerbaijan by adapting the most effective institutional elements from leading international examples — specifically the Turkish and Polish agro-industrial cluster systems. The study contributes to the literature by demonstrating that clustering is not merely a development option, but a structural necessity for transforming Azerbaijan's agricultural productivity advantage into sustainable global competitiveness.

THEORETICAL FRAMEWORK

The intellectual foundations of clustering date back to the works of Alfred Marshall, who conceptualized "industrial districts" as geographically concentrated groups of firms deriving mutual benefit from

external economies of scale. However, it was Michael Porter who reframed this understanding in the contemporary institutional context by defining clusters as competitive ecosystems in which firms gain advantage not merely from co-location, but from inter-firm cooperation, knowledge transfer, innovation diffusion and value-chain specialization.

In agro-industrial systems, clusters serve four core economic functions:

1. Coordination of production relations – linking raw-material suppliers, processors, logistics providers and export agents within a unified governance structure;

2. Reduction of transaction costs associated with fragmented supply chains and seasonal uncertainty;

3. Creation of scale economies through shared infrastructure, storage and logistics services;

4. Institutional strengthening via standardization, certification and innovation mechanisms.

Cooperation forms the operational backbone of clustering. Whereas clustering provides a structural framework, cooperation provides behavioral alignment — enabling long-term contracts, shared logistics, joint marketing and collective risk management. From a policy perspective, clusters allow the state to channel subsidies, tax incentives and innovation support through coordinated institutional networks rather than individual firms. This increases the developmental multiplier effect and ensures governance accountability.

INTERNATIONAL COMPARISON: LESSONS FROM TURKEY AND POLAND

A comparative analysis of international agro-industrial development models demonstrates that Turkey and Poland represent two distinct but highly successful approaches to structuring competitive food-processing clusters. Both countries transformed their previously fragmented agricultural sectors into export-oriented and innovation-driven value-chain systems. However, the institutional instruments, coordination mechanisms and policy priorities they adopted differ considerably. These differences provide valuable insights for understanding which components may be applicable to Azerbaijan's canned food industry and how they may be adapted to local conditions.

The Turkish model is built primarily on strong logistics coordination and horizontal cooperation between producers and processing enterprises. Turkey's clusters—especially those in regions such as Izmir, Bursa and Manisa—operate through cooperatives that aggregate raw materials, negotiate prices, and ensure stable supplies for processors. Cooperative-based supply relations reduce dependence on volatile spot markets and help maintain consistent quality and volume throughout the production season. In addition, Turkey's emphasis on logistics integration has created cost-efficient cold-chain systems, shared packaging facilities, regional distribution hubs and unified export platforms. These structural features allow small and medium-sized enterprises (SMEs) to participate in international markets without individually bearing high transaction costs. The Turkish approach shows that coordination, branding and export-oriented logistics can significantly amplify the competitiveness of traditional agricultural industries.

In contrast, the Polish model emphasizes vertical integration and institutional modernization. Following its accession to the European Union, Poland invested heavily in certification systems, laboratory infrastructure, product standardization, and traceability mechanisms. Polish food clusters are strongly linked to universities, research institutes and innovation centers, creating a high-capacity ecosystem for technology transfer. Through EU-backed quality assurance systems, Polish producers have built a reputation for reliability and safety in global markets. The system's strength lies not in logistics integration but in innovation diffusion, certification discipline and institutional credibility. Poland

demonstrates that high-quality standards and innovation governance can elevate a traditional sector into a globally competitive industry.

A comparative synthesis reveals that while both systems are effective, neither fully corresponds to Azerbaijan's current institutional structure. The Turkish model provides solutions to Azerbaijan's most acute problems—supply instability, logistics fragmentation and weak export coordination. Meanwhile, the Polish model offers mechanisms that Azerbaijan currently lacks but urgently needs, such as modern certification infrastructure, innovation support and strong institutional oversight. Therefore, the international benchmarking suggests that Azerbaijan should pursue a hybrid model that draws on both experiences: adopting Turkey's coordination and logistics mechanisms while integrating Poland's innovation- and certification-driven governance system.

This hybrid approach would allow Azerbaijan to simultaneously solve its short-term structural weaknesses—such as fragmented supply relations—while establishing a long-term foundation for innovation, quality assurance and international market credibility. In essence, Turkey offers a model for immediate coordination and efficiency improvements, while Poland provides a blueprint for sustainable institutional modernization. Taken together, these lessons form the conceptual basis for designing an integrated cluster model tailored to Azerbaijan's development trajectory, resource potential and policy priorities.

Comparison of Turkish and Polish Agro-Food Cluster Models

Dimensions	Turkey Model	Poland Model
Supply Relations	Strong cooperative networks; long-term farmer–processor contracts	Standardized supply chains; high compliance with EU procurement rules
Logistics & Infrastructure	Integrated cold-chain, shared storage, packaging hubs	Modernized logistics but less cooperative-based; focused on traceability
Governance Structure	Regional development agencies coordinate clusters	Strong institutional governance aligned with EU regulations
Innovation & R&D	Moderate; mainly industry-driven improvements	High; university–industry partnerships, innovation centers, labs
Certification & Quality	Growing but not fully standardized	Highly developed; EU-certified, strong credibility
Export Strategy	Unified branding; strong presence in Middle East & EU markets	Reputation for high-quality, safe products; niche market penetration
Value-Chain Focus	Coordination efficiency, logistics optimization	Quality assurance, innovation-driven modernization

DISCUSSION AND FINDINGS

The overall analysis of Azerbaijan's canned food industry reveals a sector with significant natural and production potential, yet one constrained by systemic coordination failures and institutional fragmentation. Despite possessing rich agricultural resources, favorable climatic conditions and accumulated processing capacities, the industry struggles to achieve competitiveness due to the

disconnection between farmers, processors, logistics operators and export intermediaries. This fragmentation results in unstable supply chains, inconsistent product quality, duplicated infrastructure costs and weak access to international markets. Thus, the root cause of underperformance is not a shortage of raw materials or industrial capacity, but rather the absence of a coherent governance framework linking actors across the value chain.

A closer examination of international experiences provides crucial insights. Turkey and Poland, in particular, demonstrate the importance of structured coordination, institutional strengthening and innovation-driven development in agro-industrial sectors. The Turkish model shows how strong horizontal coordination**,** cooperative structures and unified export mechanisms can transform traditional agricultural industries. Turkey's development trajectory highlights the significance of stable long-term contracts between farmers and processors, integrated cold-chain logistics and regionally organized export platforms. Through these mechanisms, Turkey has created efficient, low-cost and scalable systems that enable small producers to participate in global trade. For Azerbaijan—where supply instability and logistics fragmentation are dominant issues—the Turkish model provides an immediately applicable roadmap for structural improvement.

The Polish model, on the other hand, demonstrates the transformative effect of vertical integration and institutional modernization. Poland's success is rooted in strong linkages between production enterprises and universities, innovation centers, testing laboratories and certification agencies. These institutions support technology adoption, standardize production practices and ensure compliance with international safety and quality norms. Through the development of comprehensive traceability and certification systems, Poland has built a reputation for reliability in international markets, making its agro-industrial products competitive across the EU and beyond. For Azerbaijan—where certification, innovation absorption and quality assurance remain weak—Poland's experience provides long-term strategic lessons for institutional strengthening.

Together, these two models suggest that Azerbaijan should adopt a hybrid cluster framework that incorporates the strengths of both systems. Such a model would first address immediate coordination gaps by introducing cooperative-based supply structures, integrated logistics systems and shared storage and packaging facilities, similar to the Turkish approach. Simultaneously, it would lay the foundation for long-term sustainability through the creation of certification laboratories, innovation hubs and R&D partnerships inspired by the Polish model. This dual approach enables Azerbaijan to strengthen both operational efficiency and institutional credibility—two essential pillars of modern agro-industrial competitiveness.

The hybrid cluster model proposed for Azerbaijan is built upon five interconnected structural pillars: raw-material cooperatives that stabilize supply and reduce volatility; processing enterprises that transform agricultural output into value-added products; logistics infrastructure that minimizes post-harvest losses and reduces transaction costs; innovation and certification centers that standardize production and support modernization; and a unified export platform that ensures coherent branding, market access and international representation. These pillars function as parts of a coordinated ecosystem rather than isolated institutional units.

From a governance perspective, the hybrid model relies on dual-level coordination: a cluster association composed of private-sector actors responsible for daily operational management, and a state-supported institutional platform tasked with certification oversight, policy management and export facilitation. This structure balances market flexibility with institutional stability, ensuring that coordination is both economically efficient and strategically supervised.

The feasibility assessment identifies Ganja–Gazakh, Lankaran–Astara and Guba–Gusar as priority regions for cluster implementation. These regions possess distinct comparative advantages—raw-

material abundance, export-oriented agricultural production and developed cold-chain infrastructure—that create a natural foundation for specialized cluster roles. Implementing the model in these regions allows the government to test alternative coordination mechanisms, evaluate outcomes and scale successful components across the country.

Overall, the integrated analysis confirms that a hybrid cluster model represents the most viable strategy for transforming Azerbaijan's canned food industry. It offers immediate solutions to existing coordination failures while building the institutional capabilities required for long-term competitiveness. The model shifts the industry from a resource-driven structure—relying primarily on raw material abundance—to a capability-driven structure grounded in efficiency, innovation and coordinated governance. Such a transformation is essential for ensuring that Azerbaijan's agricultural potential is fully utilized and that the industry can position itself effectively within global agro-food markets.

Hybrid Cluster Value-Chain Model for Azerbaijan

Cluster Component	Core Functions	Expected Outcomes
1. Raw-Material Cooperatives	• Organize farmers into supply groups • Ensure stable volumes & predictable quality • Coordinate seasonal harvesting	• Reduced supply volatility • Improved raw-material consistency • Lower procurement costs
2. Processing Enterprises	• Value-added transformation of crops • Packaging & product diversification • Adoption of modern technologies	• Increased industrial productivity • Higher-quality final products • Greater export-readiness
3. Logistics Infrastructure	• Cold-chain management • Storage & warehousing • Inter-regional distribution	• Lower post-harvest losses • Reduced transportation costs • Efficient supply chain flow
4. Innovation & Certification Centers	• Laboratory testing • R&D cooperation with universities • Training & standardization	• Improved product safety • Compliance with international quality norms • Accelerated technology adoption
5. Export Coordination Platform	• Branding & trade promotion • Market intelligence systems • Export documentation & facilitation	• Unified national brand • Increased foreign market penetration • Higher export revenues

RESULTS

The findings of the research reveal that the primary challenge facing Azerbaijan's canned food industry is not the shortage of natural resources or processing capacity, but rather the weakness of institutional coordination across the entire value chain. The sector currently operates through fragmented relationships between farmers, processors, logistics providers and exporters, which results in duplicated costs, unstable supply relations and inefficient use of existing infrastructure. In the absence of cooperative mechanisms, each enterprise functions in isolation, attempting to optimize its own interests instead of contributing to collective performance.

The results demonstrate that introducing a cluster-based governance model leads to a fundamental structural transformation. Once value-chain actors are integrated into a unified institutional framework, transaction costs decrease, supply stability improves, and production cycles become synchronized with market demand. Clustering also enhances access to innovation, certification and export services, enabling small and medium-sized enterprises to benefit from resources previously inaccessible on an individual basis.

The economic impacts are substantial. Shared logistics reduces expenses; improved coordination increases capacity utilization; and collective marketing strengthens the international visibility of Azerbaijani products. Equally important are the institutional effects: clustering formalizes cooperation, builds trust among stakeholders and introduces governance mechanisms that reduce uncertainty and improve transparency within the sector.

Developmentally, the hybrid cluster model shifts the industry away from a resource-based paradigm—which depends primarily on natural endowments—toward a capability-based paradigm grounded in efficiency, collaboration and institutional modernization. This transition forms the foundation for sustainable competitiveness, enabling the canned food industry to evolve from a low-value commodity supplier into an integrated, export-oriented processing system.

CONCLUSION

The study concludes that the modernization of Azerbaijan's canned food industry requires a transition from fragmented, firm-level operations to an integrated, cluster-based institutional architecture. The analysis of international best practices highlights that successful agro-industrial development relies not only on technical modernization but also on governance structures that enable cooperation, coordination and innovation.

Lessons from Turkey emphasize the importance of logistics integration, cooperative supply relations and export coordination, while Poland's experience demonstrates the critical role of certification, quality assurance and innovation systems. For Azerbaijan, neither model alone is sufficient. Instead, a hybrid cluster model, combining Turkey's coordination strengths with Poland's innovation capabilities, presents the most feasible and effective approach.

This hybrid model is not merely an economic instrument but a structural necessity for transforming the industry. Without institutional integration, resource advantages will continue to be underutilized. With clusterization, however, these advantages can be converted into stable production cycles, reduced costs and globally competitive exports. Thus, clustering emerges as the central pathway to restructuring the sector in line with contemporary international standards.

To support the practical implementation of the hybrid cluster model, several strategic policy recommendations are proposed:

A. Strengthening Institutional Governance

1. Develop a legal and regulatory framework formally recognizing agro-industrial clusters as economic entities.

2. Establish cluster associations responsible for coordinating producers, processors and exporters.

3. Create a national certification and traceability system to ensure compliance with international quality and safety standards.

B. Economic and Infrastructure Measures

1. Invest in shared logistics infrastructure—especially cold-chain, storage and packaging facilities—to reduce costs and minimize post-harvest losses.

2. Redirect government subsidies from individual enterprises toward cluster-based initiatives that strengthen collective efficiency.

3. Provide grants and innovation funds to encourage technological upgrading and research collaboration between firms and universities.

C. Regional Implementation Strategy

1. Launch pilot cluster zones in Ganja–Gazakh, Lankaran–Astara and Guba–Gusar based on their raw-material potential and logistical advantages.

2. Integrate regional development agencies as institutional intermediaries supporting coordination and monitoring.

3. Scale successful pilot clusters to other regions using evidence-based evaluation and performance indicators.

D. Export and Market Competitiveness

1. Develop a unified national export brand for Azerbaijani canned products.

2. Support participation in international fairs, trade missions and global certification programs.

3. Strengthen digital marketing, e-trade channels and international distribution partnerships.

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6183 SAYILI KANUN'UN VERGİ KARMAŞIKLIĞI PERSPEKTİFİNDEN OKUNABİLİRLİK DÜZEYİ

Cem Barlas ARSLAN

Doç. Dr., Anadolu Üniversitesi, İİBF Maliye Bölümü
E-mail: barlasarslan@gmail.com
ORCID ID: 0000-0002-0635-602X

Özet

Günümüzde, vergi sistemlerinin sorunları arasında vergi karmaşıklığı yer almaktadır. Literatürde net bir tanımı olmamakla birlikte, vergi karmaşıklığı, çeşitli bileşenlerin meydana getirdiği bir kavramdır. Yapılan analizlerde, karmaşıklığa neden olan unsurların başında ise vergi mevzuatı gelmektedir.

Türk vergi mevzuatı; kanunların madde sayısı, kanun metinlerinin uzunluğu ve dil yapısı dikkate alındığında, karmaşık ve zor bir mevzuattır. Bu durum da sistemi basitlik ve sadelikten uzaklaştırmakta, vergi uyum maliyetlerini artırmaktadır. Ayrıca vergi karmaşıklığı vergi bilinci ve vergi ahlakını da olumsuz yönde etkilemektedir.

Yürürlükte olan vergi mevzuatı arasında eski tarihli (1954) olanlardan birisi de 6183 sayılı Amme Alacaklarının Tahsil Usulü Hakkında Kanun'dur. Günümüze kadar çok defa değişiklik yapılmış olsa da dil yapısı itibariyle ağır bir kanun metni olarak dikkat çekmektedir. Bu doğrultuda, 6183 sayılı Kanun, Türkçe metinler için genel kabul gören Ateşman Okunabilirlik Ölçütü kapsamında analiz edilmiştir. Sonuç olarak ise 6183 sayılı Kanun, okunabilirlik ölçütü açısından orta güçlükte bir metin olarak ölçümlenmiştir.

Anahtar Kelimeler: Vergi Karmaşıklığı, Okunabilirlik, 6183 Sayılı Kanun

READABILITY LEVEL OF LAW NO. 6183 FROM THE PERSPECTIVE OF TAX COMPLEXITY

Abstract

Today, tax complexity is among the problems of tax systems. Although there is no clear definition in the literature, tax complexity is a concept created by various components. In the analyses conducted, tax legislation is at the forefront of the factors causing complexity.

Turkish tax legislation is complex and difficult, considering the number of articles in the laws, the length of the legal texts, and the language structure. This situation distances the system from simplicity and clarity, increasing tax compliance costs. Furthermore, tax complexity negatively affects tax awareness and tax ethics.

One of the oldest pieces of tax legislation in force (1954) is Law No. 6183 on the Collection Procedures for Public Receivables. Although it has undergone numerous amendments to date, it stands out as a heavy law text in terms of its language structure. Accordingly, Law No. 6183 was analyzed within the scope of the Ateşman Readability Index, which is generally accepted for Turkish texts. As a result, Law No. 6183 was measured as medium difficulty text in terms of readability.

Keywords: Tax Complexity, Readability, Law No. 6183.

GİRİŞ

Tarih boyunca vergiler, devletler için hem iyi bir finansman kaynağı hem de güçlü bir politika aracı olmuştur. Bu açıdan vergilerin etkin ve verimli olması kaçınılmaz bir zorunluluk olarak karşımıza çıkar. Özellikle, Sanayi Devrimi ile vergilemenin teorik altyapısı güçlenmeye başlamış, vergilerin ekonomik sistem içindeki yerine farklı bakış açıları gelişse de ortak bir anlayış içinde vergi ilkeleri benimsenmeye başlamıştır. Vergi ilkeleri; vergi politika ve hedeflerine uyumlu, verimli ve etkili bir vergi uygulaması için gerekli olan kurallar bütünü olarak ifade edilmektedir. Bir anlamda vergilemenin ve vergi sisteminin yol haritası olan söz konusu ilkeler; etkin ve adil vergi sisteminin altyapısını oluşturmaktadır.

Çağdaş vergi sistemlerinin en önemli hedefleri arasında mükellef uyumu ile vergi bilinç ve ahlakının tesis edilmesi gelmektedir. Bununla birlikte sistemde var olan bazı anomaliler, hedeflere ulaşmada güçlüğe sebebiyet vermektedir. Özellikle modern vergi sistemlerinin sorunları arasında yer alan vergi karmaşıklığı, söz konusu güçlüğe etken olan hususlardan birisidir.

Kesin sınırları ve net bir tanımı olmamakla birlikte, vergi karmaşıklığı, vergi uygulamalarını gerek idare gerekse mükelelef açısından zorlaştırmaktadır. Bu soruna yönelik olarak da literatürde vergi karmaşıklığını ölçümleyerek ortaya koymayı amaçlayan çeşitli yöntemler geliştirilmiştir. Bu yöntemler içinde, mutlaka mevzuatın analiz edildiği ve mevzuatın karmaşıklığa neden olan başlıca faktörler arasında olduğu genel olarak kabul görmektedir.

Bir metnin okunabilirlik düzeyine ilişkin çalışmalar 20. yüzyıl başlarında popüler olmaya başlamış, ilk olarak İngilizce metinler için bazı okunabilirlik ölçüm yöntemleri geliştirilmiştir. Sonraki süreçte ise farklı dillerin analizine yönelik çalışmalar yapılmıştır. Bu konu Türkiye'de daha geç dönemde dikkat çekmekle birlikte, Türkçe metinlerin okunabilirlik düzeyine ilişkin ilk ve kabul gören çalışma, Ender Ateşman tarafından 1997 yılında geliştirilen Türkçe metinler için okunabilirlik formülü olmuştur. Sonrasında farklı çalışmalar ortaya çıksa da Ateşman formülü günümüzde de geçerliliğini korumaktadır.

Mevzuat dilinin yapısı ve anlaşılabilirliği, hukukun uygulanması bakımından oldukça önemlidir. Özellikle teknik nitelikte olan vergi mevzuatı gibi alanlarda, mevzuatın gerek hacim gerekse dil ve anlatım açısından karmaşık ve zor olması, verginin tarafları ve de sistem açısından olumsuz sonuçlar ortaya çıkarmaktadır. Keza mevzuat metinleri zorlaştıkça, temel vergi ilkelerinden sapmalar ortaya çıkmakta ve vergi uyumu zorlaşmaktadır. Bu maksatla, Ateşman okunabilirlik ölçütü kullanılmak suretiyle, eski tarihli ve ağır bir kanun metni olan Amme Alacaklarının Tahsil Usulü Hakkında Kanun analiz edilmiş ve söz konusu mevzuat metninin zorluk derecesi ölüçümlenmiştir.

KAMU ALACAKLARI

Her devlet, ekonomik, siyasi ve idari yapısına göre farklı düzeylerde kamusal mal ve hizmet üretmektedir. Söz konusu olan kamusal mal ve hizmet üretimi için de bir finansman gerekir. Bu doğrultuda, farklı kaynaklardan, ihtiyaç duyulan kamusal finansmanın sağlanması yoluna gidilmektedir. Bu kaynaklar arasında vergi ve vergi benzeri gelirler önemli yer tutmaktadır.

Devletin kamu hukukunun alanına giren faaliyetleri dolayısıyla ortaya bir borç ve alacak ilişkisi çıkar. Devletin bu ilişkiden doğan alacakları ise kamu alacaklarını oluşturmaktadır. Vergilerin de içinde yer aldığı kamu alacakları, özel alacaklardan farklı ve önemli bir statüye sahiptir. Kamu alacağı kavramı için kısa ve öz bir tanımla; "kamu hizmetlerinin finansmanı amacıyla devletin kamu gücüne dayanarak koyduğu mali yükümlülüklerden doğan alacaklar" (Karakoç, 2000: 25) olarak ifade edilebilecektir.

Kamu alacağı kavramının ilgili mevzuatta net bir tanımlaması yapılmamıştır. Bununla birlikte, 6183 sayılı Amme Alacaklarının Tahsil Usulü Hakkında Kanun kamu alacağı kavramının kapsamını ortaya koymuştur. Kanun'un 1. maddesi ile; *"Devlete, vilayet hususi idarelerine ve belediyelere ait vergi, resim, harç, ceza tahkik ve takiplerine ait muhakeme masrafı, vergi cezası, para cezası gibi asli, gecikme zammı, faiz gibi fer'i amme alacakları ve aynı idarelerin akitten, haksız fiil ve haksız iktisaptan doğanlar dışında kalan ve amme hizmeti tatbikatından mütevellit olan diğer alacakları ile; bunların takip masrafları hakkında bu kanun hükümleri tatbik olunur"* biçiminde ifade edilmiştir.

Gerek kamu gerek özel alacak ve borç ilişkisinde, borçlunun borç ifasını zamanında ve eksiksiz yerine getirmesi esastır. Ancak her zaman bu durum ortaya çıkmakmaktadır. Kamu alacaklarının önemine binaen zamanında ve eksiksiz tahsilatı zorunlu olduğundan, devlet kendi alacaklarının korunması ve tahsiline yönelik düzenleme yapmıştır. Bu amaçla, Osmanlı hukuk sisteminden Türkiye Cumhuriyeti hukuk sistemine intisap eden Tahsil-i Emval Kanunu yerine 6183 sayılı Amme Alacaklarının Tahsil Usulü Hakkında Kanun yürürlüğe konulmuştur. 6183 sayılı Kanun, 21.07.1953 tarihinde TBMM'de kabul edilmiş ve 28.07.1953 tarih ve 8469 sayılı Resmi Gazete'de yayımlanmış, 01.01.1954 tarihi itibariyle de yürürlüğe girmiştir. İlk haliyle 118 maddeden oluşan Kanun, günümüze kadar çok sayıda değişikliğe uğramış, geçici maddeler eklenmiş ve mevcut maddelerde değişiklik yapılarak nihai halini almıştır.

Kamu alacakları statüleri ve önemleri itibariyle özel alacaklardan farklılık göstermektedir. Özel alacaklara yönelik olarak hukuk, karşılıklı eşitliğe dayanırken kamu alacakları açısından toplumun ve devletin genel çıkarları ve kamu yararı ön plandadır. Nitekim, kamu hizmetlerinin yürütülmesi ve devamlılığının sağlanması bakımından kamu alacaklarının etkin ve hızlı bir şekilde tahsil edilmesi de bir zorunluluk olduğundan (Çelik, 2000: 30) kamu alacakları özel alacaklardan farklı tutulmuş ve pozitif bir ayrıma tabi olmuştur. Teminat, ihtiyati haciz ve ihtiyati tahakkuk, rüçhan hakkı, sorumluluk müessesesi vb. koruma yöntemleri ve kamu alacaklarının haczedilemezliği, cebren tahsil vb. pek çok kaide ile kamu alacaklarının ayrıcalığı açık bir biçimde ortaya konulmuştur.

VERGİ KARMAŞIKLIĞI

Gelişen ve değişen ekonomik sistem, vergi sistemlerini de daha büyük ve kompleks bir yapı haline getirmiştir. Bu durum da ister istemez yeni bir sorunun ve dahi yeni bir kavramın ortaya çıkmasına neden olmuştur.

Vergi karmaşıklığının, net ve kapsamlı bir tanımı olmasa da kısaca, "vergi kurallarını anlama ve vergi yükümlülüklerine uyma güçlüğü" olarak ifade edilmektedir (Öner ve Cural, 2025: 104). Kesin tanımı ve sınırları belirlenemeyen vergi karmaşıklığına dair son dönemde, literatürde yapılan çalışmalarda genel itibariyle iki yaklaşıma odaklanıldığı görülmektedir. Buna göre; ilk yaklaşım, vergi idaresinin ve mükelleflerin vergi karmaşıklığından dolayı karşılaştıkları uygulama ve uyum maliyetleri; ikinci yaklaşım ise vergi sistemi veya düzenlemelerin kalitesiyle ilgili yapılan tanım ve anlamlandırmalar

biçimindedir (Karabacak, 2013: 17). Nitekim, kavramsal tanımlamanın zorluğu neticesinde de yapılan çalışmaların ana eksenini, karmaşıklığın analiz edilmesi ve karmaşıklık düzeyinin tespit edilmesi oluşturmakta ve bu doğrultuda farklı analizler karşımıza çıkmaktadır (Arslan, 2016: 101). Belirtmek gerekir ki gerek yabancı gerekse yerli literatürde yapılan analizlerde, karmaşıklık ölçümlerinin ortak noktasını, mevzuat yapısının analizi oluşturmaktadır.

Dünya genelinde politika yapıcılar bir taraftan ekonomik faaliyetleri teşvik eden diğer taraftan da adil ve uyum düzey ve kalitesi yüksek bir vergi sistemi oluşturmak zorundadırlar (İnneci, 2025: 647). Bu zorunluluğun önündeki en büyük engellerden birisi ise vergi sistemlerinin karmaşıklığıdır. Mevzuat yapısı, vergi idarelerinin durumu, dijitalleşme, ödeme süreleri, beyanname ve formlar gibi çok fazla değişken, vergi karmaşıklığını etkileyen unsurlar olarak karşımıza çıkmaktadır.

Bir vergi sisteminin basitleştirilmesi zor bir reform sürecini gerekli kılar. Kalıcı iyileştirme ve kapsamlı reform süreci bünyesinde, vergilemenin amaç ve hedeflerini doğru ele almak, sisteminin gerçeklerini doğru tespit etmek ve olması gereken için hangi işlev ve araçların kullanılacağının belirlenmesi oldukça önemlidir (James, 2018: 17). Reform için ise doğrudan siyasal uzlaşı önemli ve zorunlu olup, uygulanabilir basit bir politika süreci, anlaşılabilir ve basit bir mevzuat için ön koşul ve altın Kural olarak karşımıza çıkmaktadır (Mckerchar, 2007: 201). Basit, akıcı ve anlaşılabilir mevzuat ise ancak teknik ve bilimsel bir bakış ile mümkün hale gelecektir. Mevzuatın basit, sade ve anlaşılır olması illegal eğilimleri baskılarken, vergi kaybının azalmasına da katkı sağlayacaktır (Richardson, 2006: 332).

6183 SAYILI KANUN'UN OKUNABİLİRLİK ÖLÇÜTÜ

Yöntem

Dünyada okunabilirlik konusuna ilginin artışıyla birlikte, bu alanda çok sayıda çalışma yapılmıştır. İlk olarak İngilizce metinler için çalışmalar yapılmış, daha sonra ise farklı diller için okunabilirlik ölçekleri geliştirilmiştir. Günümüzde bu alanda genel kabul gören başlıca okunabilirlik ölçüm yöntemleri; Dale Cale formülü, Gunning Fog Index, Flesch-Kincaid okunabilirlik formülü ve Fry okunabilirlik grafiğidir (Temur, 2003: 174-177).

Okunabilirlik çalışmaları 19. yüzyılın başlarından itibaren yoğunlaşmış olsa da Türkiye'de bu konudaki ilk çalışma 1997 yılında Ender Ateşman tarafından gerçekleştirilen "Türkçe'de Okunabilirliğin Ölçülmesi" isimli eser olmuştur. Sonraki süreçte ise okunabilirlik ile ilgili çalışmalar artmış, çeşitli formüller ortaya konulmuş olup Türkçe için oluşturulmuş, genel kabul gören dört adet okunabilirlik formülü kullanılmaktadır. Bunlar 1997 tarihli Ateşman formülü, 2003 tarihli Sönmez formülü, 2010 tarihli Çetinkaya-Uzun ve yine 2010 tarihli Bezirci-Yılmaz formülleridir. Bu formüller arasında nüanslar olmuş olsa da Sönmez formülü haricindeki diğer üç formül, ortalama kelime ve hece uzunluğu temel değişken olarak ele almaktadır (Kalyoncu ve Memiş, 2024: 421).

6183 sayılı Kanun'un okunabilirlik ölçütü için yöntem olarak Atesman formülü tercih edilmiştir. Tercih nedeni ise, formülün bu alanda Türkçe metinler açısından ilk olması ve Türkçe için yerli ve yabancı formüller içinde genel kabul gören formül olmasıdır. Keza yabancı menşeili formüllere göre Türkçe için daha doğru sonuçlar vermesi de olasıdır (Öte yandan belirtmek gerekir ki Sönmez formülü, anlam bilgisine dayalı olan bir değişkene sahip olduğu için bu çalışmanın analiz yöntemine imkan vermeyeceği için tercih edilmemiştir).

Tablo 1: Ateşman Okunabilirlik Ölçütü

	Sözcük Uzunluğu (hece)	Cümle Uzunluğu (sözcük)

En Kolay Metin	2,2	4
En Zor Metin	3	30

Kaynak: (Ateşman, 1997: 74).

Ateşman tarafından yapılan hesaplamalar sonucu geliştirilen okunabilirlik formülü;

$(198{,}825 - 40{,}175\chi_1 - 2{,}610\chi_2)$

biçiminde oluşturulmuştur. Formülde χ_1 hece olarak sözcük uzunluğunu, χ_2 ise sözcük olarak cümle uzunluğu ifade etmektedir. Keza formül, Türkçe metinlere uygulandığında, okunabilirlik düzeyi açısından fikir vermektedir.

Bulgular

Ateşman okunabilirlik formülü tarafımızca 6183 sayılı Amme Alacaklarının Tahsil Usulü Hakkında Kanun için uygulanmıştır. Bu kanunun tercih edilmesindeki etken, diğer temel mali mevzuata göre daha eski tarihte yürürlüğe girmiş olması ve kanımızca ağdalı bir dile sahip olmasıdır.

Analiz yapılırken, kanunun bütünü ele alınmıştır. Buna göre kanun metninde;

- ✓ Toplam sözcük sayısı 15.619
- ✓ Toplam cümle sayısı 1.370
- ✓ Toplam paragraf sayısı 843
- ✓ Ortalama sözcük uzunluğu 2,68 (boşluksuz karakter sayısının toplam sözcük sayısına oranı)
- ✓ Ortalama cümle uzunluğu 11,4 (sözcük sayısının cümle sayısına oranı)

olarak tespit edilmiş, söz konusu veriler formüle aşağıdaki biçimde uygulanmıştır.

198,825 – [40,175 (sözcük uzunluğu ort.) – 2,610 (cümle uzunluğu ort.)]

Uygulama neticesinde ise endeks değeri Amme Alacaklarının Tahsil Usulü Hakkında Kanun için 61,4 olarak bulunmuştur. Ateşman tarafından tespit edilen okunabilirlik sayı ve derecelerine göre, 6183 sayılı Kanun *orta güçlükte* katagorisinde yer almaktadır.

Tablo 2: Okunabilirlik Derece ve Sayısı

Derece	Okunabilirlik Sayısı
Çok Kolay	90-100
Kolay	70-89
Orta Güçlükte	50-69
Zor	30-49
Çok Zor	1-29

Kaynak: (Ateşman, 1997: 74).

Kanun metninde özellikle cümlelerin uzunluğu dikkat çekmektedir. Öyle ki bir paragraf olan cümleler dahi bulunmaktadır. Keza Ateşman'ın Anayasa metnini inceleyerek bulduğu değer 41,77 olurken, en zor olarak gördüğü felsefe metinleri için tespit ettiği değer de 15,81 olarak belirtilmiştir (Ateşman, 1997: 74).

Konuya yönelik olarak fikir vermesi ve bir karşılaştırma yapılabilmesi açısından; 2002 tarihli Özel Tüketim Vergisi Kanunu'nun aynı formüşşe okunabilirlik derecesi 53,3 çıkmış; kısa bir Kanun metni olmakla birlikte 2007 tarihli Mali Tatil İhdas Edilmesi Hakkında Kanun'un okunabilirlik derecesi ise 40,3 olarak tespit edilmiştir. Çok daha yakın zamanda yürürlüğe giren kanunların okunabilirlik dercelerinin 6183 sayılı Kanuna göre daha zor metinler olarak çıkması, kanun dili ve yazımı açısından manidar bir durumdur.

DEĞERLENDİRME

Kanun hazırlama tekniği; öncelikle yasama dili ve terimleri olmak üzere, hukukun temel kavramları ile sosyoloji, ekonomi, felsefe, siyaset bilimi, Türk dili, araştırma ve rapor yazma teknikleri gibi alanlara ilişkin disiplinler arası bilgilerle ve de teknik ilke ve kuralları kapsar (Araç ve İba, 2003: 57). Bu anlamda kanun hazırlamak, interdisipliner bir alandır. Özellikle tüm toplum kesimlerini ilgilendiren, toplumsal hayatı düzenleyen kanun metinlerinin dil ve ifade kalitesi iyi olmalı, kendine özgü amaç ve kullanımıyla, anlaşılabilirliği düşük ve günlük dilden uzak yapısıyla özel ve değişik bir dil kesiti oluşturmamalıdır (Özyıldırım, 1999: 112). Kanun metinleri, hukukun adeta topplumsal sahaya yansımaları ve hukukun somutlaşmasıdır. Keza, hukuk devletinin vazgeçilmez parçası olan yazılı hukukun ve dolayısıyla mevzuatın açık ve anlaşılır olması gerekmektedir (Merdanoğlu, 1994: 113).

Vergi gibi hayatın her alanına dokunan ve hemen hemen toplumun tüm kesimlerini etkileyen bir mevzuatın, açık ve anlaşılabilir olması, vergi sisteminin işleyişine katkı sağlayacağı gibi, vergi kayıplarını azaltacak, vergi uyumunu artıracak ve temel vergi ilkelerinin sisteme yansımasını sağlayacaktır. Ne var ki mevzuatın gerektiği ölçüde anlaşılamaması, özellikle bu alanda ihtisas sahibi olmayan vatandaşlar tarafından idrak edilememesi, hukuk metinlerin öngördüğü düşüncenin anlaşılamaması ve dolayısla hedeflenen adalet seviyesine ulaşılamamasına neden olmaktadır (Merdanoğlu, 1994: 113).

Son yıllarda vergi sisteminin sadeleştirilmesi çabalarında vergi mevzuatı önemli yer tutmaktadır. Keza, kalkınma planları, bütçe gerekçeleri, mali plan ve programlar gibi politika metinlerinde de sıklıkla vergi uyumu ve vergi sisteminin sadeleştirilmesine vurgu yapılmaktadır. Bu anlamda bir vergi reformu kapsamı dahilinde vergiye dair ana mevzuat ile yardımcı mevzuat metinlerinin sadeleştirilmesi ve dil ve anlam yapısının gözden geçirilmesi gerekmektedir.

Son söz olarak ifade etmek gerekir ki; kanunları bilmememin mazeret sayılmayacağı dikkate alındığında, kanunlar başta olmak üzere tüm mevzuatın açık ve anlaşılır olmasına dair beklenti, doğal ve zorunlu bir beklentidir (Merdanoğlu, 1994: 113).

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THE INFLUENCE OF DIGITAL LEADERSHIP ON INNOVATIVE WORK BEHAVIOR: THE MODERATING EFFECT OF CREATIVE WORK CLIMATE AND MEDIATING EFFECT OF DIGITAL LITERACY

Tarik Raihan[a*], Saiful Islam[b], Md. Tarek[c]

[a] *Assistant Professor, Department of Management, University of Chittagong, 4330, Chittagong, Bangladesh*

[b] *Undergraduate Student, Department of Management, University of Chittagong, 4330, Chittagong, Bangladesh*

[c]*Undergraduate Student, Department of Banking and Insurance, University of Chittagong, 4330, Chittagong, Bangladesh*

Abstract

This research paper sought to investigate the effect of digital leadership on employees in terms of innovative work behavior mediated by digital literacy and moderated by creative work climate. This research employed the transformational leadership theory as its theoretical framework. The method used in this study is quantitative. A multi-item survey questionnaire was employed, and 200 questionnaires were distributed to the corporate employees of some of the industries in Bangladesh. The collected data were analyzed with the help of structural equation models and factor and path analysis in order to test the hypotheses and evaluate the moderating and mediating effects of the variables. The results show that online leadership affects the innovative work behavior considerably. The paper also examines useful information when trying to understand how the moderation of creative work climate and the mediation of digital literacy can be used to propel innovative work behavior. This research is limited to organizations that have already implemented digital leadership practices which may constrain the generalizability of the findings. Future research should consider exploring additional contextual factors that influence digital leadership and employees' innovative work behavior.

Keywords – Digital Leadership, Digital Literacy, Innovative Work Behavior, Creative Work Climate, Employee Creativity, Transformational Leadership

JEL Code: M12, M15, O32, D23, J24

For specifying the JEL code, please search: http://www.aeaweb.org/econlit/jelCodes.php ; For instance, M12, M15, O32, D23, J24

EconLit Subject Descriptors: Personnel Management and Leadership; Information Technology Management; Management of Technological Innovation; Organizational Behavior and Creative Climate; Human Capital and Employee Skills Development

Introduction

Digital leadership means the capacity to effectively manage and impart technology expertise to employees, encouraging motivation and control to accomplish organizational goals in a digital environment. It can be defined as the transformational leadership strategy that promotes creative work

practices and encourages innovative work behavior. In a dynamic landscape, digital leadership is crucial for the changing business world, and digital leaders are equipped with the expertise to optimize digital assets strategically and enable their employees to adapt digital technologies (Dimitrios et al., 2013; Thomson et al., 2016). Innovative work behavior is the degree to which workers participate in tasks including idea generation, process development, and organizational change adaptation. It is a multipurpose process that includes idea generation, idea promotion, and idea realization. Innovative workers try to contribute beyond their responsibilities and come up with fresh ideas to increase organizational creativity. Another key element of digital leadership is digital literacy which includes technical proficiency, standard knowledge of technology, and digital abilities that allow employees to implement digital tools and technologies into their workplaces. Digital literacy enhances organizational effectiveness and helps employees feel more comfortable using digital tools. As digital skills help to promote an employee's ability to participate in creative operations, employees with high levels of digital literacy are more successful in innovative activities. The ultimate relationship between innovative work behavior and digital literacy creates an environment in which employees can incorporate their ideas into organizational reality. In order to adjust to new technologies and grow the company, digital leadership promotes digital literacy to create an environment of ongoing learning and innovation. Digitally literate employees are better able to use technology for creative problem solving, and the synergy between digital leadership and digital literacy improves innovative work behavior. The leaders who prioritize digital proficiency encourage digital innovation. Thus, in the digital era, the interdependence of digital leadership, digital literacy, and creative work practices creates a fundamental framework that propels organizational progress. Organizations that create an innovative culture have a clear advantage in generating innovative ideas and procedures that help them advance. However, digital literacy is required to transform this leadership into creative work behavior (Vial, 2019). The research shows the relationship between digital leadership, digital literacy, and employees' innovative work behavior. Based on our hypothesis, digital literacy acts as a mediator that directs the influence of digital leadership to encourage innovative work behavior of the employees in the organization (Pilav-Velić et al., 2021). In addition, we examine the moderating effect of creative work climate and explore how it strengthens the correlation between these variables (Chandrika & Setyawati, 2023). This study aims to clarify the key mechanisms that force innovative work behavior in the digital era. It empirically investigates a positive direct relationship between innovative work behavior and digital leadership, trying to analyze the mediating effects of digital literacy in this relationship and the moderating effects of the creative work climate on digital leadership, digital literacy, and innovative work behavior. The essence of the study is to establish whether digital leadership reinforces and encourages a creative work climate or weakens the effect of the mentioned variables on innovative work behavior. The implications of the research findings are enormous both academically and in real life. By examining the core drivers of innovative work behavior, we contribute to an in-depth understanding of digital leadership, technological literacy, and creative work climate. From a practical point of view, it enables the organizational leaders to promote innovation in the workplace. Through these actions, organizations can unleash the creative stream and achieve long-term goals. Implementing targeted interventions can improve digital leadership abilities, digital literacy, and create an innovative work environment.

Despite the pace at which digital transformation is sweeping through Bangladesh, there is still scarce scholarly insights on how digital leadership influences the process of innovation in work behavior and how the concept is conceptually fragmented. The current literature has largely focused on leadership, digital capability, or innovation as distinct constructs, providing minimal knowledge on how it operates that digital leadership affects employee innovation in an emerging-economy setting. Specifically, the ability-forming process through which leadership impact is transformed into novel behavior has not been explored sufficiently in the previous studies, even though the issue of digital incompetency is still evident in Bangladeshi-based companies. Similarly, the creative work climate which can add or remove these effects has not been given much attention in the local and regional research and this places an

oversight gap in comprehending contextual conditions of boundaries. To resolve these limitations, it is important to not only analyze the way in which digital leadership induces innovation, but also when this influence is more or less efficient. Digital literacy is the crucial mediating factor that helps employees to convert leadership guidance into creative action and a friendly creative workplace climate defines how much these digital potentials are harnessed and realized in the work place. Thus, a mediator and moderator can be used as a theoretically holistic method of analyzing the internal pathway of capability and the external contextual influence that shape innovative work behavior in combination. To address such gaps, this study presents a unique contribution by integrating digital leadership, digital literacy, and innovative work behavior empirically and in one single frame related to the corporate world in Bangladesh. Although previous research has looked at these constructs separately, no other research has empirically studied digital literacy as a mediator and creative work climate as a moderator in elucidating the digital leadership-innovation relationship. The study contributes to the theoretical field of research by proposing such a dual mechanism in an environment of an emerging economy, which allows to better explain the channels through which digital transformation can lead to innovative work behavior.

Theoretical Background

This study investigates how digital leadership affects employees' innovative work behaviors through the mediation of digital literacy and the moderating influence of a creative work climate. A strong theoretical framework for understanding these dynamics is provided by the combination of multiple well-established theories. As an extension of digital leadership, Transformational leadership theory determines how important leaders are in inspiring and pushing employees to achieve their higher level of creativity and performance. In accordance with the transformational leadership theory, by providing individual support, intellectual stimulation, and a clear goal, leaders can encourage them to perform creatively. The idea that innovative creative work behavior is positively influenced by digital leadership is supported by the fact that digital leaders can create an atmosphere that encourages creativity, risk-taking, and technical inquiry. In the era of digitalization, leaders must both facilitate and inspire their employees to adopt digital tools and technology. Leaders can motivate innovation in their employees by utilizing digital tools and technologies, which support their capacity for innovative and effective problem-solving. Transformational leadership theory, which encourages and inspires people to gain a better level of performance while encouraging personal and professional growth was described by Burns in 1978 and then further developed by Bass in 1985. Transformational leaders can create an atmosphere that is favorable to innovation and change. According to Bass (1985), Transformational leadership is consisting of four essential elements: idealized influence, in which leaders act as a role model and gain respect and trust; inspirational motivation, in which leaders presents an engaging vision to inspire employees; intellectual simulation that is promote innovation and creativity through established procedure; and individualized consideration, leaders provide tailored guidance and support to their employees. Transformational leadership in the context of digital leadership, uses digital tools to improve teamwork, creativity, and organizational performance. In the digital context, transformational leaders exhibit flexibility, support digital literacy, and create an inventive workplace environment that inspires employees to come up with and carry out creative solutions. As a result, by using digital tools efficiently employees can improve their digital literacy and stimulate creative work behavior. So, we can say that the relationship between innovative work behavior, creative work climate, and digital literacy is significantly shaped by transformational leadership. Transformational leaders enhance the digital competency of their employees and ensure that they adapt to the novel technology by emphasizing lifelong learning and the acquisition of skills. They are also the ones that make the working environment lively and supportive to get people to take risks and experiment with new ideas through promoting open communication and collaboration. Based on that, it is theorized in this study that transformational leadership positively influences digital literacy and the creative work environment which mediate its impact on innovative behavior. Organizations can boost employee engagement, stimulate innovation,

and effectively manage digital transformations in a corporate environment that is changing quickly by putting transformational leadership ideas into practice.

Literature review and hypothesis development

Relationship between Digital Leadership and Innovative Work Behaviour.

Digital Leadership is the key to driving innovative work behaviour and resilience across the workplace. Previous research highlights the critical role of digital leadership in driving innovative work behaviour within organizations, and DL enhances innovation across various domains including performance, service capacity, open and responsible innovation, and employee innovative behaviour (Benitez et al., 2022a; Borah et al., 2022; Brunner et al., 2023; Fatima & Masood, 2024; Memon & Ooi, 2023; Tian et al., 2023; Weber et al., 2022). Consistent with this, it signifies the ability to manage and proficiently transfer the technological knowledge to the employee who motivated and controlled to achieve organizational goals in a digital environment (Harto et al., 2022; Mayastinasari & Suseno, 2023). Moreover, DL has a prominent impact on making a creative and innovative workplace that influences organizational outcomes, such as the creative and innovative behaviour of the employees, as it also makes the outline for the workplace, effectively allocates resources, and influences the thoughts of employees (J. H. Coun et al., 2022). Employees of the organization must be creative and innovative; it is necessary to be skilled at digital leadership (Mayastinasari & Suseno, 2023). Additionally, to make the creative environment of the organization digital leadership has a great value through elevating and integrating the new technological changes, and several studies indicate that digital leadership is transformational leadership that actively influences employee creativity and encourages innovative work behaviour (Santoso et al., 2019). At the same time, innovative work behaviour denotes the degree of employee involvement in activities exemplified by idea generation, process implementation, and adapting to organizational changes (Hooi & Chan, 2022; Salam, 2023). In general, it illustrates the integration of the proactive efforts of the employees to generate and build new ideas to enhance the creativity of the organization, and innovative behaviour is usually understood as a process consisting of idea generation, idea promotion, and idea realization (Kleysen & Street, 2001; Organizational & 2000, 2000; Scott et al., 1994). In the initial phase, individuals identify problems and develop novel ideas and solutions, in the next phase, employees seek support and build alliances to promote the new ideas, and in the final phase, the employees accomplished the process when they obtained enough support to produce a prototype that was disseminated and integrated into organizational practices (Scott et al., 1994). Research indicates that individuals who are motivated and capable of innovation contribute beyond their core job responsibilities while consistently generating innovations (Leong & Rasli, 2014; Parker et al., 2006). However, having a deficiency of the skills and proficiency to use technology effectively may struggle to motivate and stimulate employees, which can negatively affect innovative work behaviour. Leaders have to pay attention to the individual expertise on the digital tools and technology to develop the employee work behaviour and continuous improvement of the organization. Significantly, having a deficiency of the skills and proficiency to use technology effectively may struggle to motivate and stimulate employees, which can negatively affect innovative work behavior. According to Sagbas et al. (2023), digital leadership leverages updated technologies to improve the team members' skills and to create passionate work behavior by supporting experimentation, promoting innovation, and risk-taking.

Therefore, from some of the previous research findings and the literature review above, it can be hypothesized that

H1: *Digital leadership has a positive impact on innovative work behavior.*

Relationship between digital leadership and digital literacy of employees.

Digital Leadership promotes the digital culture and plays a significant role in encouraging technical skills, advancing digital literacy, and organizational effectiveness. The influence of digital leadership on digital literacy is clearly verified in previous research studies (BELSHAW, 2012; Thi My Linh et al., 2024). In line with this, the interaction between leadership and digital literacy contributes to becoming more confident about using digital tools and makes employees more skilled to support and lead the organization more effectively (Alma Çallı et al., 2022). According to BELSHAW (2012), "Digital literacy encompasses more than just technical skills; it also entails understanding issues, norms, and habits of mind concerning technologies used for a particular purpose." Furthermore, in order to sustain and grow in today's global business, digital literacy is essential to explore ICT skills, information technology skills, and digital competencies (Hidayat et al., 2023). Researchers argued that employees' digital literacy is influenced by digital leadership, and if employees prioritize digital innovation and integrate the digital tools into regular functions, they will be able to establish a standard for digital engagement and competency within the organization (Thi My Linh et al., 2024b; Dąbrowska et al., 2022). Accordingly, digital leaders, through their intellectual abilities, visionary and strategic leadership, adaptability and agility, as well as digital and technical skills, can influence employees to develop digital literacy (Alma Çallı et al., 2022; Thi My Linh et al., 2024a). Such leaders motivate employees to see the world differently by providing digital knowledge and a supportive environment (Matsunaga, 2022). Additionally, according to Joseph (2024), digital leaders guide and utilize the employees' capacity to adapt digital technologies to drive their organizational progress, and similar guidance amplifies the intent of the employee to understand, adopt, and collaborate with technological tools to achieve organizational goals (Thi My Linh et al., 2024a; Sarfraz et al., 2022). In the same vein, Sarfraz et al. (2022) find that DL has direct and indirect positive effects on the digital literacy of employees, and DL plays a significant role by cultivating digital culture, promoting digital competencies of the employees that enhance creativity and sustainable performance (Mimmi Hirvonen, 2021). Moreover, Mimmi Hirvonen (2021) revises that leader encountered by dual digital challenges not only affect their workplaces but also organizational leaders. Consequently, digital leaders must navigate their organization through the implementation of digital technologies and provide appropriate solutions while adopting the ongoing changes. To optimize the solution, leaders must absorb the technologies into their workplaces and strategically select and utilize technical tools to achieve digital progress (op´t Roodt et al., 2024).

Finally, based on the above studies we can determine that the DL is a critical driver that influences digital literacy by facilitating employees to confidently use digital tools and grow technical skills, and enabling the understanding of norms, issues, and mindsets related to technology use for specific purposes to achieve the overall organizational success. Therefore, based on the theoretical premises and literature review above, the study proposes the following hypothesis.

H2: Digital Leadership has a positive impact on the digital literacy of employees.

Relationship between Digital Literacy of Employees and Innovative Work Behavior.

Digital literacy elevates the engagement in innovative operations and motivates employees to use digital tools effectively which leads to the adoption of innovative norms. Previous studies have examined those digital technologies facilitate innovative learning experiences and are clearly intertwined with the digital literacy of employees and innovative behaviour (Abun et al., 2023; Lutfi Astuti & Setiawan, n.d.). Consistently, Calipjo et al. (2023) state that digital literacy amplifies the employee's participation in innovative operations and empowers employees to actively utilize digital tools, and digitally skilled individuals are more likely to engage in innovative activities. Moreover, the mutual relationship between digital literacy and innovative work behaviour contributes to engaging the workforce more effectively

and being able to actively apply and transform their innovative ideas into realities (Calipjo et al., 2023; Pilav-Velić et al., 2021a). Digitally literate employees use their knowledge to adopt innovative work norms and to come up with creative ideas, and digital employees, through prioritizing digital skills and technological competency, create innovative work environments and become more creative in the workplace (Malibari & Bajaba, 2022). A similar workforce is stimulated to interact in creative and innovative behaviour by creating a supportive and sustainable work climate, and that kind of atmosphere enhances productivity, efficiency, and allows employees to accomplish the task in innovative ways across the different sectors (Soliman et al., 2022a). According to Soliman et al. (2022b), employees who are digitally competent reconcile the changing work environment and be more innovative. Additionally, it is evident that environmental changes require digital literacy to highlight innovative work behaviour that improves the performance quality (Dewanto et al., 2024). Despite having all the positive influences of digital literacy on innovative work behaviour, it also has some negative impact. Carvalho et al. (2023) argued that several factors have adverse effects on innovative work behavior including digital distractions, mental discomfort, learning difficulties, and motivational barriers. Therefore, digital leaders must create collaborative workplaces so that employees are able to adapt to the adverse changes through the implementation of digital literacy and proficiency. Digital employees should have knowledge about the technological tools and digital skills to provide necessary guidance to enhance their creativity in performance. Consequently, the digital literacy of employees has been seen as a predictor of individual performance, with performance expected to improve as digital literacy increases (Kang, Song, Lee, and Ku 2010; Kang et al. 2011; Lee, Moon, and Cho 2015). Finally, it is expected from digitally literate employees to adapt to a changing business environment which leads to greater levels of innovative work behaviour (IWB) (Pilav-Velić et al., 2021a).

Therefore, based on the studies and empirical research reviewed above, there is a positive relationship between digital literacy of employees and their innovative work behaviour.

H3: Digital literacy of employees has a positive impact on innovative work behaviour.

The mediating role of Digital Literacy of Employees on Digital Leadership and Innovative Work Behavior

Digital literacy performs as a critical facilitator that strengthens the relationship between digital leadership and innovative work behavior of employees through leveraging digital tools and executing innovative ideas. According to Dimitrios et al. (2013) and Thomson et al. (2016), digital leadership is the use of an organization's digital assets to accomplish business objectives at both the organizational and individual levels. A digital leader drives the organization’s creativity and innovation and helps the teams to move forward (Araujo et al., 2021; Gozman & Willcocks, 2019; Hassani et al., 2017). In line with this, in digital leadership, digital literacy makes an important contribution that influences the innovative work behavior of employees. Digital literacy denotes the ability to utilize technological and digital equipment to find, evaluate, use, communicate, and create digital information with cognitive and technical skills (Neumann et al., 2017; Qadir Muslim & Setyono, 2024). Research conducted by Erhan et al. (2022) shows that employees’ perceptions of digital leadership have a positive and significant effect on all dimensions of employees’ innovative work behavior. According to Farr (1990), Innovative Work Behavior (IWB) is an individual’s behavior that aims to achieve the initiation and intentional introduction (within a work role, group, or organization) of new and useful ideas, processes, products, or procedures, and innovative work behavior comprises four dimensions: idea exploration, idea generation, idea promotion, and idea implementation (Santoso et al., 2019). In addition, leaders with high digital skills are perceived positively by employees and tend to adopt innovative behavior. Furthermore, Ng (2012) developed a distinctive model demonstrating three key dimensions of digital literacy: technical, cognitive, and social-emotional. The technical aspect refers to the level of people in terms of their skill in utilizing information and communication technologies in their daily lives. The

mental aspect of digital literacy includes search, evaluation, and processing of information, which is in close relation to critical thinking skills. Finally, there is the social-emotional component that is concerned with the responsible use of social interactions as well as educational or information-seeking activities. Organizations, as Suhada et al. (2024) suggest, need to hire workers with the capacity to think globally, as the world is changing to digital destinations and the information technology revolution is taking place currently. This is what Vial (2019) argues; the combination of the two concepts (DL and DLE) establishes an innovative atmosphere in which employees are able to experiment and adapt to recent technological innovations. Thi My Linh et al. (2024b) show that digitally literate employees have higher chances of being involved in innovation (Pilav-Velić et al., 2021b; Proksch et al., 2024). Their digital expertise also allows them to be creative in applying new technologies and therefore the development of new ideas, products and services. Therefore, digital literacy is a mediator between DL and IWB. Digital leaders who focus on digital learning develop a surrounding in which the employees are able to utilize digital tools effectively, which is in tandem with the innovative focus of the organization. The combination of digital leadership and employee digital literacy results in a culture of permanent learning and innovation driving high organizational performance. Therefore, employee digital literacy is important in converting the vision of digital leadership into practical and innovative work behavior (Thi My Linh et al., n.d.).

Therefore, based on the theoretical research reviewed, the digital literacy of employees has a positive impact on digital leadership and innovative work behavior of employees.

H4: Digital literacy of Employees mediates the relationship between digital leadership and innovative work behavior of employees.

Creative Work Climate as a moderating factor of Digital Leadership, Digital Literacy of Employees, and Innovative Work Behavior

A creative work climate plays a vital role in enhancing the contributions of both digital literacy and digital leadership to innovative work behaviour. Proponents of the creative work climate model emphasize that a supportive and collaborative environment significantly moderates the relationship between digital leadership, employee digital literacy, and innovative work behaviour. According to Chandrika & Setyawati (2023), creative work climate indicates the characteristics of organizations adopted by its employees that motivate and support creativity, innovation and the cultivation of new ideas that encourages the growth of trust/openness, risk-taking, and the free exchange of ideas (Ekvall, 1996), which enlarge the effects of digital leadership and digital literacy on innovative work behaviour. Such a creative environment enables employees to harness (utilize) their digital skills effectively and engage in innovative activities, leading to greater idea generation, promotion, and realization (Amabile et al., 1996; Ekvall, 1996; Hooi & Chan, 2022; Salam, 2023). Furthermore, digital leadership plays an important role in encouraging innovation within organizations (Benitez et al., 2022b), and leaders who can effectively share their digital knowledge with employees help improve employee's innovative work behaviour (Harto et al., 2022; Mayastinasari & Suseno, 2023). A creative work environment also empowers employees and leaders to work more efficiently and creatively, but without such an environment their potential to explore and apply digital solutions may be difficult (Hidayat et al., 2023). Besides, in a weak creative work environment, leaders who lack digital skills may find it hard to motivate employees, showing how essential digital knowledge is for promoting innovation (J. H. Coun et al., 2022) and creative self-efficacy of employees. The development of creative self-efficacy has been shown to have a profound impact on individuals' creative performance (Sari et al., 2024; Tierney & Farmer, 2011), and the research results found that creative self-efficacy positively and significantly affects innovative work behavior and employee performance (Arifin et al., 2024; Tierney & Farmer, 2011).

Therefore, except for a favorable creative work climate, the potential of digital leadership and literacy to drive innovative behavior of employees may be prevented, as employees may face barriers like fear of failure or lack of resources, which can hinder their creative efforts (Tierney & Farmer, 2011; Hunter et al., 2007).

Therefore, based on theoretical grounds and previous literature reviews, this study proposes the following hypothesis:

H5: Creative work climate moderates' digital leadership

H6: Creative work climate moderates' digital literacy and

H7: Creative work climate moderates innovative work behavior of employees.

Research method

1.Survey design

To understand how digital leadership, digital literacy, creative work climate, and innovative work behavior are connected, we designed a structured questionnaire based on a clear theoretical model. The survey began with a short section on demographic details such as age, gender, education, and work experience. Specific questions were also used that were connected to the major spheres of our study. Digital leadership measured by five items, digital literacy measured by ten items, creative work climate measured by six items and innovative work behavior measured by four items. A rating of each item was made in a five-point Likert scale form, where the possible answers were strongly disagreed, disagree, neutral, agree, and strongly agree and all the questions were adjusted with previous well-established studies to make them reliable. Our model examined the direct effect of digital leadership on digital literacy of employees, their attitude towards creative work climate, and innovative behavior. We also researched on the question of whether digital literacy is a bridging variable between leadership and innovation, and how a creative climate/environment may facilitate or define these impacts. We also translated the questionnaire into Bengali to ensure that the questionnaire is as easy as possible to the participants who would feel free to answer the questions in their own language. To retain the original meaning of the questions used, we used the back-translation technique which Brislin (1970) proposed. This cautious approach served to allow us to make sure that the meaning and tone were not lost in the translation version. This helped ensure that all participants clearly understood the questions, no matter which language they responded in.

2.Data collection procedure and sample characteristics

We used a survey questionnaire to collect data from employees working under the supervision of a leader or manager in various business organizations across Bangladesh. The study collected cross-sectional data from employees working under the guidance of leaders or managers in various business organizations across Bangladesh. Research assistants helped distribute the questionnaires to the respondents. Section 1 covered demographic information, while Section 2 included items measuring the latent variables relevant to the research.

The survey questionnaire was designed in a way that respondents could keep them anonymous because previous studies endorsed those accurate responses were received in a perceptual survey when privacy and confidentiality are guaranteed (Uddin et al., 2019, 2020a; Fan et al., 2019). In total, we collected

194 questionnaires from 500 questionnaires, and eight questionnaires were dismissed because of incomplete data and unmatched cases.

3. *Survey instruments*

The questionnaire was divided by three sections. The first one includes how to respond to the survey. The second part includes the main survey question in which participants asked to mark the tick to the appropriate box. In the third part the respondents asked to provide basic personal information such as age, gender, education, experiences in the organization. The responses of the questionnaire were measured by the five-point Likert scale ranging from strongly agree to strongly disagree.

4. *Demographic profile of respondents*

Gender		Frequency	Percent	Valid Percent	Cumulative Percent
	Male	154	83.2	83.2	83.2
	Female	31	16.8	16.8	100.0
	Total	185	100.0	100.0	

Statistics		Industry	Gender
N	Valid	185	185
	Missing	0	0
Mean		2.51	1.17

Table 1. Frequency Distribution of Respondents by Gender

The demographic information of the respondents who that out of 185 responses, 154 (83.2%) were male, and 31 (16.8%) were female. It is clarified that most of the respondents were male participated in the study. The data shows that there was no missing information in terms of gender or industry which indicates that the data were complete. The central tendency of the industry (2.51) and gender (1.17) indicates that the coding of the variables has a balanced pattern of distribution as per the study designs. On the whole, the frequency findings give a proper idea about the gender distribution among the respondents such that the demographic data will be accurate and will reflect the sample on which the further analysis will be carried out.

5. *Descriptive Statistics of Study Variables*

Descriptive Statistics

	N	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
dl1	185	3.64	1.139	-.791	.179	-.036	.355
dl2	185	3.49	1.027	-.647	.179	.061	.355
dl3	185	3.47	1.048	-.522	.179	-.240	.355
dl4	185	3.46	1.058	-.561	.179	-.226	.355
dl5	185	3.36	1.100	-.374	.179	-.475	.355
dlt1	185	3.81	1.205	-.920	.179	.015	.355
dlt2	185	4.05	1.107	-1.299	.179	1.137	.355
dlt3	185	3.82	.981	-.961	.179	.921	.355
dlt4	185	3.59	1.222	-.724	.179	-.362	.355
dlt5	185	3.49	1.104	-.664	.179	-.177	.355
dlt6	185	3.67	1.139	-.951	.179	.279	.355
dlt7	185	3.72	1.131	-.886	.179	.227	.355
dlt8	185	3.67	1.125	-.965	.179	.389	.355
dlt9	185	3.94	1.064	-1.194	.179	1.042	.355
dlt10	185	3.89	1.122	-.927	.179	.029	.355
cwc1	185	3.79	.973	-.650	.179	.108	.355
cwc2	185	3.38	1.057	-.401	.179	-.357	.355
cwc3	185	3.29	1.142	-.293	.179	-.595	.355
cwc4	185	3.52	1.069	-.644	.179	-.055	.355
cwc5	185	3.68	.951	-1.070	.179	1.264	.355
cwc6	185	3.71	1.084	-.871	.179	.334	.355
iwb1	185	3.75	1.106	-.871	.179	.160	.355
iwb2	185	3.64	.996	-.770	.179	.435	.355

iwb3	185	3.68	.985	-1.000	.179	1.039	.355
iwb4	185	3.58	1.050	-1.064	.179	.906	.355
iwb5	185	3.75	1.140	-.778	.179	-.041	.355
Valid N (listwise)	185						

Table 2. Descriptive Statistics of Study Constructs

The data obtained with the sample of 185 respondents was summarized with the use of descriptive statistics and outline opinions of the respondents on the key variables of this study Digital Leadership (DL), Digital Literacy (DLT), Creative Work Climate (CWC) and Innovative Work Behavior (IWB). The means (3.29 - 4.05) reveal that there was moderate to high degree of consensus among all items by the respondents. The dlt2 had the greatest mean score (4.05), which indicated the strong positive perception of digital literacy practices. CWC3 had the lowest mean (3.29) which indicated a relatively low agreement in creative work environment. The values of standard deviation (0.95-1.22) indicate that there was a moderate variation among the responses so that the opinions of most participants were very similar. Moreover, the values of skewness (between -1.299 and – 0.293) and kurtosis (between -0.595 and 1.264) lie within the range of acceptable values of +2 and -2, which means that the data are normal approximately. Thus, the data can be used to conduct additional statistical works, including correlation, regression, and SEM. Overall, the findings reveal that the respondents have rather positive attitudes toward digital leadership and literacy that are backed by a moderately creative workplace and an adequate degree of innovative work behavior.

6. *Test of Normality*

To assess the normality of the distribution of data, the Kolmogorov-Smirnov and Shapiro-Wilk tests were used. The outcome (K-S =.246 p < =.001; S-W =.775 p < =.001) shows that the data are not normally distributed. Nonetheless, the sample size (N =185) is rather big and SEM/regression methods are resistant to small departures of normality. Therefore, the data were deemed to be appropriate for further analysis.

Tests of Normality

	Kolmogorov-Smirnova			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Industry	.246	185	.000	.775	185	.000

a. Lilliefors Significance Correction

Table 3. Tests of Normality (Kolmogorov–Smirnov and Shapiro–Wilk)

7. Measurement Model Evaluation

7.1. *Reliability and Validity*

Reliability indices

Variable	α	Ordinal α	ω_1	ω_2	ω_3	AVE
Digital leadership	0.928	0.944	0.937	0.937	0.979	0.816
Digital literacy	0.940	0.945	0.935	0.935	0.977	0.669
Innovative work behavior	0.939	0.954	0.931	0.931	0.937	0.810

Table 4. Reliability and Validity Indices

The reliability test is a confirmation that all the constructs are very consistent and valid. Cronbach's Alpha and Ordinal Alpha values are (Greater than 0.90) point to the existence of high internal consistency. The strong reliability of the measures of the data is also supported by the Omega coefficients (ω_1–ω_3 between 0.93 and 0.98). Moreover, the value of AVE (0.669 to 0.816) is higher than the advised threshold (0.50), establishing good convergent validity. On the whole, these findings indicate that the model of measurement is sound and reliable, to make sure that every construct is an accurate reflection of the desired idea.

Heterotrait-monotrait (HTMT) ratio of correlations

	Digital leadership	Digital literacy	Innovative work behavior
Digital leadership	1.000	0.575	0.559
Digital literacy	0.575	1.000	0.870
Innovative work behavior	0.559	0.870	1.000

Table 4.1 Reliability and Validity Indices

The HTMT values that represent the correlation between two different constructs are a widely used criterion for assessing discriminant validity in the Structural Equation Model (SEM). A value of the HTMT below 0.85 (others up to 0.90) is a good discriminant validity. Values of higher values (over 0.90) may indicate that two constructs are too close or that one is not as different as it should be. The validity of the constructs contained in the model is confirmed by the HTMT a

nalysis that shows that the discriminant validities of the constructs are acceptable. All the HTMTs are less than or within the suggested limit of 0.85-0.90 (digital leadership-DLT = 0.575, digital leadership-

IWB = 0.559, DLT-IWB = 0.870). This means that the constructs are all conceptually different and quantify different things within the model. Thus, the measurement model shows a sufficient level of discriminant validity i.e., the variables are clear and not closely related.

7.2. *Variance and Covariance Analysis*

Table 5 presents the variances and covariances of the measurement model. Each indicator (dl1–dl5, dlt1-dlt10, and iwb1–iwb5) shows its respective variance values, which were fixed parameters in the model; therefore, no standard errors or p-values were generated for these items. The covariance and variance were analyzed in order to determine the consistency and the relationship between the variables of the study as Digital Leadership (DL), Digital Literacy (DLT), and Innovative Work Behavior (IWB). The results of the variance indicate that all three constructs, DL (0.872), DLT (0.640), and IWB (0.179) have significant and positive values of variance ($p < .001$). This means there exists meaningful variation in the responses of the participants, which means that individual constructs identify distinct differences in perceptions. The Digital Leadership and Digital Literacy (covariance) has a positive and significant value (0.417) indicating that there is a strong positive association between the two variables. That is, the increased levels of digital leadership are associated with increased digital literacy in organizations. All the values are significant at the level of 0.001, which proves that the relations within the model are statistically correct. Summing up, the findings depict that the constructs are different yet have a positive relationship, which gives a credible foundation for the study even further. Confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM) are among these analyses.

Variances and Covariances

				95% Confidence Intervals				
Variable 1	Variable 2	Estimate	SE	Lower	Upper	β	z	p
dl1	dl1	0.128	0.0000	0.128	0.128	0.128		
dl2	dl2	0.128	0.0000	0.128	0.128	0.128		
dl3	dl3	0.150	0.0000	0.150	0.150	0.150		
dl4	dl4	0.311	0.0000	0.311	0.311	0.311		
dl5	dl5	0.202	0.0000	0.202	0.202	0.202		
dlt1	dlt1	0.360	0.0000	0.360	0.360	0.360		
dlt2	dlt2	0.168	0.0000	0.168	0.168	0.168		
dlt3	dlt3	0.231	0.0000	0.231	0.231	0.231		

Variances and Covariances

				95% Confidence Intervals				
Variable 1	Variable 2	Estimate	SE	Lower	Upper	β	z	p
dlt4	dlt4	0.357	0.0000	0.357	0.357	0.357		
dlt5	dlt5	0.415	0.0000	0.415	0.415	0.415		
dlt6	dlt6	0.192	0.0000	0.192	0.192	0.192		
dlt7	dlt7	0.301	0.0000	0.301	0.301	0.301		
dlt8	dlt8	0.428	0.0000	0.428	0.428	0.428		
dlt9	dlt9	0.344	0.0000	0.344	0.344	0.344		
dlt10	dlt10	0.518	0.0000	0.518	0.518	0.518		
iwb1	iwb1	0.244	0.0000	0.244	0.244	0.244		
iwb2	iwb2	0.163	0.0000	0.163	0.163	0.163		
iwb3	iwb3	0.211	0.0000	0.211	0.211	0.211		
iwb4	iwb4	0.170	0.0000	0.170	0.170	0.170		
iwb5	iwb5	0.161	0.0000	0.161	0.161	0.161		
Digital leadership	Digital leadership	0.872	0.0303	0.812	0.931	1.000	28.8	<.001
Digital literacy	Digital literacy	0.640	0.0232	0.595	0.686	1.000	27.6	<.001
Innovative work behavior	Innovative work behavior	0.179	0.0159	0.148	0.210	0.237	11.3	<.001
Digital leadership	Digital literacy	0.417	0.0127	0.392	0.442	0.558	32.9	<.001

Table 5. Variance and Covariance Estimates

7.3. *Model Fit Indices*

Model tests

Label	X^2	df	p
User Model	527	167	<.001
Baseline Model	41878	190	<.001
Scaled User	590	167	<.001
Scaled Baseline	10071	190	<.001

Table 6. Model Fit Indices

Fit indices

			95% Confidence Intervals		
Type	SRMR	RMSEA	Lower	Upper	RMSEA p
Classical	0.080	0.108	0.098	0.119	<.001
Robust	0.068	0.248	0.233	0.262	<.001
Scaled	0.068	0.117	0.107	0.128	<.001

Table 6.1 Model Fit Indices

In Table 6, The Chi-square test reveals that the model proposed by me fits the data significantly better than the baseline model. The p-value is below.001, though this is normal in the cases of the large sample size. My model Chi-square (527) is significantly lower compared to the baseline model (41878) and therefore, the relationship in my model fits the actual data accurately. As such, the model can be termed as a good fit. SRMR (Standardized Root Mean Square Residual) is used to measure the variation between real data and predicted data as generated in the model. A value below 0.08 means a good fit. A good fit will be depicted

By a value of SRMR in my model equal to (0.068) less than 0.08. RMSEA (Root Mean Square Error of Approximation) which is used to test the goodness of the fit of the model to the population data even taking into account the complexity of the model. A figure less than 0.08 is good. RMSEA = (0.108) in this model is small more than 0.08 hence it depicts a moderate fit. On the whole, as SRMR is in the good range and RMSEA is very close to an allowable threshold, the model fits the data quite effectively, but it is possible to improve it somehow.

Analysis and findings

Measurement Model (Factor Loadings)

Results of the measurement model indicate that all three constructs Digital Leadership, DLT, and IWB are correctly measured using their items. In the case of Digital Leadership, the items strongly measure this construct with the factor loading between 0.830 and 0.934 with significant values (p =.001). In case of DLT, the loadings are between 0.695 and 0.912, and it is significant at p =.001, though one of the items (0.695) is very slightly less than 0.70, the rest of the five items are beneficial, implying that

The construct is reliable in its entirety. In the case of IWB, all the items have high loadings of between 0.869 and 0.916 with p =.001 which is a confirmation of a strong relationship. The strong convergent validity and reliability of the model (observe that nearly all the loadings are above the recommended 0.70) confirm that the observed items are adequate at measuring their respective latent variables and can be removed to do any more structural analysis.

Measurement model

				95% Confidence Intervals				
Latent	Observed	Estimate	SE	Lower	Upper	β	z	p
Digital leadership	dl1	1.000	0.0000	1.000	1.000	0.934		
	dl2	1.000	0.0283	0.945	1.056	0.934	35.3	<.001
	dl3	0.988	0.0246	0.939	1.036	0.922	40.1	<.001
	dl4	0.889	0.0233	0.844	0.935	0.830	38.2	<.001
	dl5	0.957	0.0241	0.910	1.004	0.893	39.8	<.001
Digital literacy	dlt1	1.000	0.0000	1.000	1.000	0.800		
	dlt2	1.140	0.0277	1.086	1.194	0.912	41.2	<.001
	dlt3	1.096	0.0262	1.045	1.147	0.877	41.9	<.001
	dlt4	1.002	0.0262	0.950	1.053	0.802	38.2	<.001
	dlt5	0.956	0.0259	0.905	1.007	0.765	36.9	<.001

Measurement model

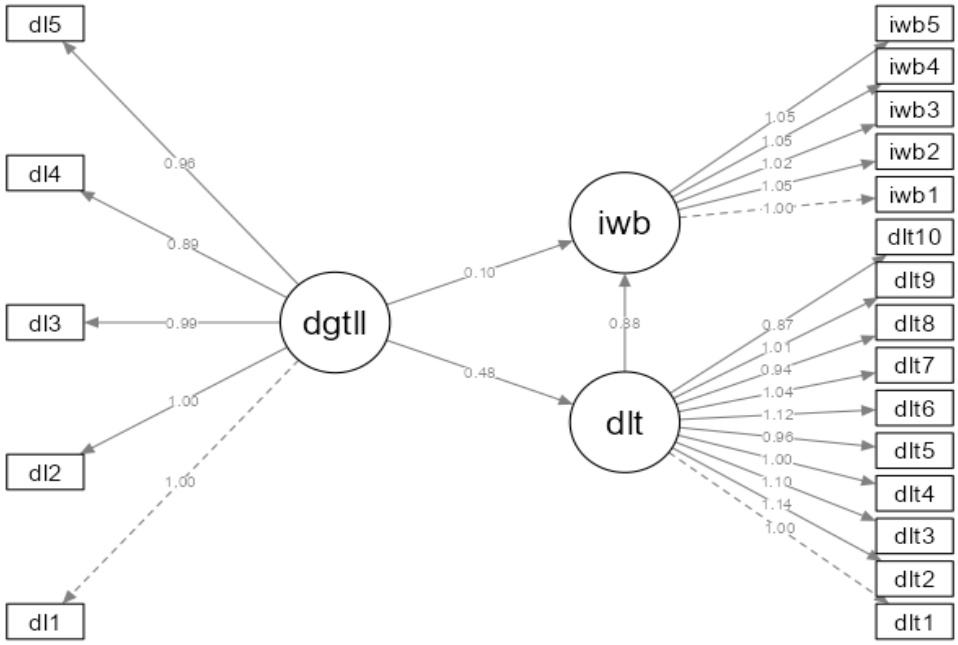
Latent	Observed	Estimate	SE	95% Confidence Intervals		β	z	p
				Lower	Upper			
	dlt6	1.123	0.0269	1.071	1.176	0.899	41.8	<.001
	dlt7	1.044	0.0263	0.993	1.096	0.836	39.8	<.001
	dlt8	0.945	0.0260	0.894	0.996	0.756	36.4	<.001
	dlt9	1.012	0.0268	0.960	1.065	0.810	37.8	<.001
	dlt10	0.868	0.0270	0.815	0.921	0.695	32.1	<.001
Innovative work behavior	iwb1	1.000	0.0000	1.000	1.000	0.869		
	iwb2	1.052	0.0220	1.009	1.095	0.915	47.7	<.001
	iwb3	1.022	0.0225	0.978	1.066	0.888	45.5	<.001
	iwb4	1.048	0.0219	1.005	1.091	0.911	47.8	<.001
	iwb5	1.054	0.0221	1.010	1.097	0.916	47.6	<.001

Table 7. Standardized Factor Loadings

Structural Model Analysis

1. Direct Effects

Structural Model Showing Direct and Indirect Effects between Study Variables



In Table 8, the parameter estimates revealed by the SEM analysis show that both Digital Leadership and DLT bring about positive impacts on Innovative Work Behavior that are significant. In particular, the effect of DLT is very strong ($\beta = 0.809$, $p < .001$) and the effect of Digital Leadership is not that great, but significant ($\beta = 0.107$, $p < .001$). These results prove that an efficient application of digital leadership instruments and qualities contributes significantly to boosting innovative working behaviors of employees, which validates the hypothesized links in the structural model. As we can demonstrate in the table of variances and covariances, Digital Leadership influences Digital Literacy significantly in a positive way ($\beta = 0.558$, $p < .001$). It implies that the greater the leaders are perceived to have higher digital leadership attributes including leading, motivating, and utilizing digital tools adequately, the higher the digital literacy is exhibited by employees in the organization. This direct route (DL → DLT) was not contained in the table of the estimated parameters however, it is evidently established in this analysis in the Variance and Covariance aspect and in the model diagram. This is why it is not indicated in the name given in that table because by default, the households listed by the Jamovi only contain those that define Innovative Work Behavior (IWB) as the ultimate dependent variable. Flows between Digital Leadership and Digital Literacy (DLT), as this is also one of the dependent variables in the model, would exist in a separate section of the output rather than being displayed in the primary parameters table. Hence, though the path remains not represented in the identical output table, the statistical result ($\beta = 0.558$, $p < .001$) is a strong indication that Digital Leadership is a direct and positive contributor to Digital Literacy in the organization.

Parameters estimates

				95% Confidence Intervals				
Dep	Pred	Estimate	SE	Lower	Upper	β	z	p
Innovative work behavior	Digital literacy	0.8791	0.0300	0.8204	0.938	0.809	29.34	<.001
Innovative work behavior	Digital leadership	0.0999	0.0230	0.0548	0.145	0.107	4.34	<.001

Table 8. Direct Path Coefficients

2. Mediation Effects

Defined parameters

					95% Confidence Intervals				
Label	Description	Parameter	Estimate	SE	Lower	Upper	β	z	p
IE1	DL ⇒ DLT ⇒ IWB	p23*p21	0.421	0.018	0.385	0.456	0.452	23.177	<.001

Table 9. Mediation Analysis Results

The mediation analysis has tested the hypothetical role of Digital Leadership which has an indirect influence on Innovative Work Behavior (IWB) mediated by Digital Literacy (DLT). The findings indicated that there was a significant indirect effect (β = 0.452, Estimate = 0.421, SE = 0.018, z = 23.177, p < .001, 95% CI [0.385, 0.456]). This means that Digital Leadership is strongly connected to IWB by way of DLT. Therefore, our hypothesis postulates that those leaders having good digital leadership abilities have a favorable effect on the innovative work behavior through augmenting the nature of digital literacy in the organization.

3. Moderation Effects

H_5: DL × CWC → IWB

The study explored the moderation of Creative Work Climate (CWC) in the connection between Digital Leadership (DL) and Innovative Work Behavior (IWB) among workers. The overall model displays a good fit and R = 0.768 and R^2 = 0.590 accordingly, indicating a good fit to about 59 percent of the variation in the IWB by DL, CWC, and the interaction between the two (DL× CWC). This shows that empirical predictors combined are significant in regard to novel behavior in the workplace. According to the results of the coefficients, the digital leadership (DL_c) by itself did not affect IWB significantly but positively (B = 0.067, t = 1.05, p = 0.294). This implies that digital leadership alone does not have a strong impact on the effect of innovation on work behavior. Creative Work Climate (CWC_c) on the other hand made a strong and positive impact (β = 0.674, t = 9.50, p <.001) demonstrating that when employees operate in a more creative and enabling environment, they are much more innovative. Above all, the interaction term (DL × CWC) was positive and significant (β = -0.124, t = -2.89, p =0.004). This finding supports the claim that CWC moderates the correlation between DL and IWB. Its negative value displays the fact that the more positive CWC is, the less influence pivotal goes to DL regarding IWB. That is, digital leadership contributes a comparatively lower value to the innovative behavior in another case when the creative work environment is already solid. The findings indicate that CWC has a huge moderating effect (β = -.124, p =.004) in the correlation between IWB and DL. Whereas the effect of DL alone was not a significant predictor (p = 0.294), CWC was significantly positive (p < .001). The interaction effect tells that where the working environment in an organization is highly creative, the further contribution of digital leadership to innovative behavior is smaller. Hence, the hypothesis H_5 is accepted, and it would mean that Creative Work Climate plays a significant moderating role as the between variable between Digital Leadership and Innovative Work Behavior.

Model Fit Measures

Model	R	R^2
1	0.768	0.590

Note. Models estimated using sample size of N=185

Model Coefficients – IWB

Predictor	Estimate	SE	t	p
Intercept	3.8154	0.0496	76.91	<.001
DL_c	0.0673	0.0639	1.05	0.294
CWC_c	0.6742	0.0709	9.50	<.001
DLxCWC	-0.1238	0.0428	-2.89	0.004

Table 10. Moderation Fit and Coefficient

H_6: DL × CWC → DLT

The equation had a high explanatory power as it explained 60.4% of the variation in DLT (R = 0.777, R 2 = 0.604). The findings indicate that the effect of Digital Leadership on DLT is positive but of a slight but insignificant magnitude (β = 0.112, p = 0.064) whereas Creative Work Climate has a strong and significant positive impact (β = 0.501, p <.001). Significantly, the interaction term (DL × CWC) is not insignificant and negative (β = -0.211, p <.001), which proves the moderating effect of CWC. This implies that as the climate of the creative work is high, the beneficial impact of digital leadership on digital literacy is ultimately less. As such, H_6 is accepted, which implies that CWC is a significant moderator of the casing of the DL and DLT.

Model Fit Measures

Model	R	R^2
1	0.777	0.604

Note. Models estimated using sample size of N=185

Model Coefficients - DLT

Predictor	Estimate	SE	t	p
Intercept	3.927	0.0464	84.59	<.001
DL_c	0.112	0.0598	1.87	0.064
CWC_c	0.501	0.0664	7.55	<.001
DLxCWC	-0.211	0.0401	-5.26	<.001

Table 10.1. Moderation Fit and Coefficient

H_7: DLT × CWC → IWB

Model Fit Measures

Model	R	R^2
1	0.864	0.747

Note. Models estimated using sample size of N=185

Model Coefficients - IWB

Predictor	Estimate	SE	t	p
Intercept	3.7246	0.0408	91.347	<.001
DLT_c	0.6274	0.0649	9.668	<.001
CWC_c	0.3303	0.0596	5.538	<.001
DLT*CWC	-0.0229	0.0358	-0.641	0.522

Table 10.2. Moderation Fit and Coefficient

There was a strong overall fit to the model with (R = 0.864) and (R^2 = 0.747) indicating that between 74.7 percent of the IWB variance is being captured by DLT, CWC, and their interaction (DLT × CWC). The findings have shown that there is a high and significantly impact of Digital Literacy (DLT_c) on Innovative Work Behavior (β = 0.627, T = 9.67, p =.001). Likewise, the reported positive effect of Creative Work Climate (CWC_c) on IWB is also high (β = 0.330, t =5.54, p <.001), indicating that employees in a more creative work climate report higher innovative behavior. Nevertheless, the interaction term (DLT x CWC) is negative, which is not significant (β = 0.023, t = –0.64, p = 0.522). This implies that CWC does not play a significant moderator role in the relationship between DLT and IWB. That is, although, the combination with the other significantly contributes to the extra effect of innovative work behavior, both DLT and CWC contributed to it on their own. So, H_7 is not verified, which means that there is no significant moderation of Creative Work Climate among Digital Literacy and Innovative Work Behavior.

Hypothesis Testing Results

Hypothesis	**Path**	**β**	**p-value**	**Supported/Not Supported**
H1	DL → IWB	0.107	< .001	Supported

H2	DLT → IWB	0.809	< .001	Supported
H3	DL → DLT	0.558	< .001	Supported
H4	DL → DLT → IWB	0.452	< .001	Supported
H5	DL × CWC → IWB	–0.124	.004	Supported
H6	DL × CWC → DLT	–0.211	< .001	Supported
H7	DLT×CWC→ IWB	–0.023	.522	Not Supported

Discussion

This paper has investigated how digital leadership affects innovative work behavior by employees, with the concept of digital literacy being a mediator, and creative work climate as the moderator. The study revealed that the measurement model and the structural model have high validity and reliability, thus proving the strength of the suggested framework. Taken together, the findings illuminate the clear influence of the leadership, digital competence, and organizational environment that can predetermine the innovative work behaviors of the employees under the digital transformation conditions.

The findings that are summarized in the structural model indicate that digital literacy is the strongest predictor of innovative work behaviors. More competent and convinced employees using digital technologies will be more inclined to resort to creative and innovative activities at work. The close and meaningful relationship between digital literacy and innovative work behavior ($\beta = 0.809$, $p < 0.001$) confirms the idea that technological capability is a direct facilitator of innovation. On the other hand, the digital leadership ($\beta = 0.107$, $p < 0.001$) does not have much direct influence, but it is less influential. This trend implies that the role of leadership is indirect through the development of a digitally competent workforce instead of innovation. The impact of digital literacy also suggests that in the case of high digital competence of employees, the transformation of leadership direction into tangible innovative behavior can be achieved successfully. The study, in line with the theoretical anticipations, also indicated that there is a substantial mediating role of digital literacy between digital leadership and innovative work behavior. Digital leadership had a significant effect on digital literacy ($\beta = 0.558$, $p < 0.001$), and the mediation analysis proved that the effect of digital literacy on the results of innovation is mediated by a significant portion of the influence of leadership on it ($\beta = 0.452$, $p < 0.001$). This finding suggests that digital leadership is based on the capability of building employee potential. Leaders who drive learning, offer digital resources, and promote experimentation indirectly drive innovation through the advancement in technological fluency of employees. Therefore, the quality of predictability of digital leadership relies heavily on its ability to produce digitally competent and assured groups able to lead the innovation process independently.

This understanding is further expanded by the moderating nature of the creative work climate. The findings show that the climate of creative work positively influences digital literacy ($\beta = 0.501$, $p < 0.001$) and innovative working behavior ($\beta = 0.674$, $p < 0.001$) in a direct way, which means that the favorable and psychologically safe environment at work encourages digital learning and creative work.

The undesired interaction effects of digital leadership and creative work climate on both digital literacy ($\beta = 0.211$, $p < 0.001$) and innovative work behavior ($\beta = 0.124$, $p = 0.004$) however demonstrate a declining marginal effect of the leadership when the creative climate is already high. That is, the additional influence of leadership will be less required when the employees are already operating in an environment which is already open, innovative, and resourceful. On the other hand, in less favorable climates, leadership plays an essential role in the pursuit of digital competence and innovation. Interestingly, the mutual effect of the digital literacy and the creative work climate (DLT × CWC) on the innovative work behavior ($\beta = -0.023$) was not significant, suggesting that the positive coverage of digital literacy on innovation will not decrease with different levels of climate.

The general framework validates that digital leadership and creative climate act as complementary and separate facilitators of innovative work behaviors. Leadership enhances the digital skills and the creative work climate provides the psychological and organizational environments to implement the digital skills. A combination of them creates a comprehensive basis for nurturing innovation in digital workplaces. In theory, these results clarify existing points of view by depicting that the transformational aspects of leadership have the most critical impact on constructing capability instead of controlling the behavior directly. Practically, the results emphasize that to improve innovative working behavior the organizations aiming to increase it should focus on programs that will raise the level of digital literacy among the employees and the creation of a creative and favorable environment. Leaders are to work on offering digital training, technological support, and a culture of constant learning whereas management has to maintain the environment that promotes experimentation, autonomy, and risk-taking. Interventions of leadership are especially significant in the context where the creative climate is weak in order to balance the absence of environmental support. On the other hand, in situations where a strong climate already exists, leadership should focus on maintaining empowerment and alignment on strategies as opposed to taking action. Finally, this paper demonstrates that digital leadership is a force that promotes innovation when it comes to enhancing the digital literacy of employees, and a creative work climate increases the potential of innovation and moderates the role of leadership. A combination of these dimensions provides an overall picture of how digital-era leadership could be capitalized upon to foster sustainable innovation and improve the competitiveness of an organization in technologically dynamic settings.

Managerial implications

Besides the theoretical contributions, this research has several practical implications to managers, organization leaders, and policymakers. The results point out that digital leadership is very effective in improving the innovative work behavior of employees, which is mainly achieved by building digital literacy. As such, managers ought to understand that the digital era demands more than just promoting creativity to develop an innovative culture; it requires organizational efforts to develop a digitally skilled workforce. The leaders should make the investment in the ongoing digital training courses, mentorship, and technological support that will help to enhance the technical, cognitive, and social digital skills of employees because these three competencies directly provoke the innovative results.

Second, the high mediating effect of digital literacy implies that managers ought to place learning and building capabilities programs at the Centre of their leadership policies. An environment in which digital upskilling and knowledge sharing are appreciated will convert intentions of leadership into innovation on the employee level. The more employees are sure to use digital tools, the more they create, advance, and execute new ideas that will promote organizational advancement.

Third, the results concerning a creative work climate highlight the necessity to have a positive, open, and psychologically comfortable atmosphere. A positive climate in a creative work environment not only increases the process of innovation directly but also increases the effect of digital literacy. Managers ought to be able to encourage trust, autonomy, and participative decision making and they ought to have sufficient resources and recognition systems that do not ignore creative initiatives. But in situations when the creative environment is already robust, leaders can change their priorities to maintaining digital learning cultures, and facilitate self-directed innovation instead of top-down directions.

Lastly, companies ought to maintain a middle ground approach, which combines leadership training, digital competency building, and climate-building. The digitally savvy leaders who combine digital knowledge with transformational skills like personalized attention and mental engagement are capable of aligning technological change to innovation among employees. Incorporating these principles into the organizational culture and policy, companies can become more adaptive, more capable of innovating, and attain sustainable competitive advantage in the changing digital environment.

Theoretical Implications

The paper offers a number of theoretical contributions that enhance the comprehension of digital leadership, developing capability and innovative work behavior. First, the fact that the model is based on the Transformational Leadership Theory translates the theory into the digitalized work settings. The results indicate that the core transformational features such as vision, inspiration, and intellectual stimulation become digital leadership when they are implemented with the help of technology, which proves that the theory remains relevant in the organization environment characterized by technological changes. Second, the paper defines digital literacy as a critical mediating skill that allows the digital leadership to translate into innovative work behavior. Instead of considering innovation as a direct impact of the leadership, the results reveal the digital literacy as the underlying cognitive-technical tool that helps the employees to translate leadership influence into ideation, experimentation, and problem-solving. This progresses the ability-based and resource-based views by focusing on skill development as one of the core ways of leadership competence within the digital environment. Third, demonstrating that the creative work climate enhances the impact of digital leadership and digital literacy on innovation, the study adds to the interactionist and creativity theories. The results confirm that innovative behavior results as the interaction between personal competency and situational facilitation, which is the extrapolation of creativity theory to digitally transforming work-places where the psychological preparedness and climate-promising interaction co-determine innovation. Lastly, empirical data on the Bangladesh business world expands the cross-cultural scope of the digital leadership theory. The evidence of the strength of the leadership-literacy-innovation mechanism in an emerging economy makes the theoretical model more relevant to the global community. Taken together, these contributions provide a holistic theoretical approach whereby digitally competent leadership, staff abilities and a conducive creative environment together influence innovative action in contemporary organizations.

Limitations and Future Research

Despite the fact that the study provides valuable theoretical and practical insights, there are a number of limitations that leave the future research open. To start with, the research design adopted a cross-sectional one and this limits the possibility of making any causal inferences about the associations between digital leadership, digital literacy, creative work climate, and innovative work behavior. Future studies need to be based on longitudinal or experimental designs to determine how employee capabilities and innovative behavior change over time and to better establish causality. Second, all variables were measured at one point in time on the same respondents and this increases the probability of common method bias. The future research can overcome this issue through the adoption of time-lagged data collection, collecting responses of more than one source, or objective performance indicators to confirm the results of innovation among employees. Third, the paper was based on self-reported measurements, which can bias the study and exaggerate the relationships. Future studies need to take into account the use of supervisor assessments, peer-to-peer assessments, or digital trace data to gain a more detailed and objective evaluation of digital literacy and innovative behavior. Fourth, although digital literacy was investigated as a mediating factor, other psychological or capabilities related variables, including intrinsic motivation, learning agility, digital self-efficacy, or creative self-efficacy, also might influence the effects of digital leadership on innovative behavior. The analysis of other mediators may enhance the theoretical knowledge regarding the mechanisms of how digital transformation results in employee innovation. Lastly, the research was also done in the business community of Bangladesh, which is a developing economy that is highly digitalized yet at different stages of technological progress. Even though this setting makes the study relevant to the same developing economies, it could reduce the applicability of the results to other areas. The model needs to be replicated in other cultural, economic, and industrial contexts in the future, i.e., in the public sector organizations, digitally mature companies or any other global technological company to confirm the strength of the dual mechanism of digital literacy and creative work climate. Conducting comparative research at cross-country levels would also contribute to the cross-cultural generalizability of the findings and unfold some contextual specifics in the impact of digital leadership on innovative work behavior.

Conclusions

As the current research has revealed, digital leadership proves to be effective and influences innovative work behavior among the employees in the organizational environment of Bangladesh. The researchers also indicate that the association between digital leadership and innovative work behavior is mediated by digital literacy whereas the relationship is moderated by creative work climate. Digital leaders can enhance the level of innovative work behavior among employees by building up their level of digital competence, enabling technological flexibility, and providing a culture of creativity. The research work is relevant to the growing body of study on digital and transformational leadership because it connects leadership practices to creative results using the concept of digital literacy as a key process variable. The incorporation of creative work climate as a moderating variable enhances the knowledge on the effects of digital leadership on innovation underlining that leadership effectiveness is determined by cultivating the skill as well as providing a supportive and creative work environment. Although this research has some drawbacks, including the cross-sectional design and restricted sample size, the study represents the empirical validation of the interplay between leadership, employee capability, and the work climate in influencing the innovative work behavior. It also provides a solid base upon which future research on the dynamics of digital transformation can be conducted based on the inclusion of individual, organization-related, and environmental views, and explains the interplay of innovation in the digital era better.

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ANALYZİNG SPATIAL HETEROGENEITY IN TURKISH UNEMPLOYMENT RATES: A GEOGRAPHICALLY WEIGHTED REGRESSION APPROACH

İbrahim ARIK[1], Yeliz MERT KANTAR[2]

[1]Kütahya Dumlupınar University, Faculty of Economics and Administrative Sciences / Business Administration, Kütahya, Türkiye, ibrahim.arik@dpu.edu.tr

[2]Eskisehir Technical University, Faculty of Science, Department of Statistics, Eskisehir, Türkiye, ymert@eskisehir.edu.tr

ABSTRACT

The significant fluctuations observed in interprovincial unemployment rates across Türkiye reveal the non-stationarity of spatial processes and the varying impact of geographical factors on regional employment dynamics. This study aims to investigate the spatially varying relationships between unemployment and its determinants in Türkiye by employing the Geographically Weighted Regression (GWR) approach. In the study, provincial unemployment rates were designated as the dependent variable, while various socioeconomic indicators—such as population density, gross domestic product per capita, education level, labour force participation rate, and the proportion of youth population—were selected as explanatory variables. The finding that the GWR model demonstrates superior explanatory power compared to the global model indicates the distinct spatial structure of the unemployment issue in Türkiye. The observed findings suggest that policies aimed at reducing regional unemployment will be more effective if they consider place-specific determinants and dynamics of unemployment.

Keywords: Unemployment, Geographically Weighted Regression (GWR), Spatial Analysis, Regional Disparities, Türkiye

INTRODUCTION AND LITERATURE REVIEW

Unemployment is one of the fundamental indicators of economic and social welfare, and it is a critical macroeconomic issue that directly affects a country's production capacity, income distribution, and overall quality of life. Accurately measuring unemployment rates and analyzing them spatially are of great importance for designing regional development policies and addressing imbalances in the labor market. Indeed, unemployment is not only an economic problem but also a multidimensional

phenomenon shaped by spatial, demographic, and structural factors. Therefore, the use of spatial econometric methods has become increasingly important for understanding the underlying causes of unemployment and developing effective policy interventions.

Empirical studies conducted in Türkiye reveal that unemployment rates exhibit significant spatial disparities across provinces. Tekgün and Yayar (2022) demonstrated, through Moran's I, LISA, and the Spatial Lag Model (SAR), that there is a positive spatial dependence among provinces in Türkiye, and that the primary factors reducing unemployment are the labor force participation rate and the employment share of the agricultural sector. Similarly, Kantar and Aktaş (2016) examined provincial unemployment rates in Türkiye for the period 2004–2013 and showed, through mapping and autocorrelation analyses, that unemployment is spatially concentrated particularly in the eastern provinces. Using spatial panel data analysis with data from 2008–2012, Türkcan and Akseki (2017) explained regional unemployment disparities and identified the socioeconomic variables influencing unemployment. Likewise, Güçlü (2017) found, through panel data methods, that unemployment rates are high in the eastern regions and low in the western regions of Türkiye, and that education level, youth population ratio, and the share of agriculture have significant effects on unemployment. These findings collectively indicate that unemployment in Türkiye exhibits spatial dependence and regional heterogeneity.

Similar patterns are also observed in the international literature. Niebuhr (2003), using European data from the period 1986–2000, demonstrated that regional unemployment rates tend to exhibit spatial clustering and that high-unemployment regions are geographically close to one another. Cheng and Li (2010) found that the relationship between unemployment and new firm formation in the United States varies spatially; employing the Geographically Weighted Regression (GWR) method, they identified that this relationship is positive in some regions and negative in others. Lin and Lin (2025), in their study on U.S. states, analyzed the asymmetric and spatial effects of unemployment rates on mortality using the Asymmetric Spatial Durbin Model and showed that during periods of economic recession, unemployment can influence even neighboring regions.

Recent studies conducted in Europe indicate that the GWR method has been increasingly used in unemployment analyses. Lewandowska-Gwarda (2018a) reported that unemployment rates in Poland vary across regions and that key determinants (such as budget revenues, investments, and social expenditures) differ according to geographic location. In another study, the same author (2018b) analyzed female unemployment using 2016 data and found that social factors play a decisive role in shaping unemployment. Similarly, Chocholatá (2020) conducted GWR analyses for 79 regions in Slovakia and demonstrated that unemployment rates exhibit varying local relationships with variables such as average wages, youth dependency ratios, and migration. In the case of Indonesia, Sartika and Suryani (2020) showed that the GWR model provides higher explanatory power than the classical model in West Java and that the determinants of unemployment vary at the local level.

Within this context, as far as can be determined from the existing literature, research directly applying the GWR method to unemployment in Türkiye appears to be limited. Therefore, this study aims to fill this gap by examining the spatial distribution and determinants of unemployment in Türkiye through the GWR approach. In doing so, the study seeks to reveal unemployment dynamics that vary at the regional level and to develop policy recommendations that take spatial differences into account.

SPATIAL STATISTICS AND GEOGRAPHICALLY WEIGHTED REGRESSION

This section explains the fundamental concepts of spatial statistical methods and Geographically Weighted Regression (GWR). First, the use of the Global Moran's I statistic in identifying spatial autocorrelation is discussed. Then, the logic of the GWR method, local coefficient estimations, and its role in revealing spatial heterogeneity are presented. Within this framework, the capacity of GWR to analyze regional variations in economic variables—such as unemployment—is evaluated.

Global Moran's I

Spatial statistics encompass statistical methods used to analyze spatial distributions, similarities, relationships, and correlations. One of the most widely used global measures of spatial autocorrelation is Moran's I, which is expressed as follows:

$$I = \frac{n}{\sum_{i=1}^{n}(x_i-\bar{x})^2} \times \frac{\sum_{i=1}^{n}\sum_{j=1}^{n} w_{ij}(x_i-\bar{x})(x_j-\bar{x})}{\sum_{i=1}^{n}\sum_{j=1}^{n} w_{ij}} \quad (1)$$

Here, *n* denotes the total number of spatial observations (e.g., districts); x_i, represents the value in region *i*; x_j, represents the value in region *j*; $\bar{x}$ is the mean value across all regions; and w_{ij} denotes the spatial weight between regions *i* and *j*. In general, a Moran's I value greater than zero indicates positive spatial autocorrelation, while a value less than zero indicates negative spatial autocorrelation. If Moran's I equals zero, it implies the absence of spatial autocorrelation.

Geographically Weighted Regression

Geographically Weighted Regression (GWR) is a local regression method that, unlike classical regression models (OLS), reveals whether the relationship between dependent and independent variables varies spatially. Traditional regression models provide a single global coefficient estimate for all observations and do not account for spatial heterogeneity. In contrast, GWR estimates separate coefficients for each region, allowing an examination of whether the relationships among variables differ from one location to another.

Mathematically, GWR is expressed as follows:

$$y_i = \beta_0(u_i, v_i) + \beta_1(u_i, v_i)x_{1i} + \beta_2(u_i, v_i)x_{2i} + \cdots + \beta_k(u_i, v_i)x_{ki} + \varepsilon_i$$

u_i, v_i → Denotes, the latitude and longitude values of the *i*-th observation.

The fundamental estimator of Geographically Weighted Regression (GWR) is the Weighted Least Squares (WLS) method. This approach employs a weight matrix that reduces the influence of distant observations while assigning greater importance to nearby ones when estimating coefficients for each location. In this way, the classical OLS framework is made location-sensitive, thereby capturing spatial variability. As seen in the model, the GWR approach is essentially based on the OLS structure.

$$\hat{\beta}_i = (X_i{}'W_iX_i)^{-1}X_i{}'W_iY_i$$

In calculating the weight matrix, three different approaches are commonly used: fixed, adaptive, and mixed.

1. Bandwidth:

- Determines the *scope* of the model. If selected too large, the model approaches OLS; if too small, the model becomes overly sensitive. Therefore, it must be balanced.
- **Fixed:** The same distance threshold is used for all points.
- **Adaptive:** The distance varies for each point while keeping the number of neighbors constant.

2. Kernel Function:

- A mathematical function that determines how weights decrease as distance increases.
- Main Types:

▪ **Gaussian:** Weights decrease smoothly and continuously with distance and never reach zero.

$$w_{ij} = \exp(-\frac{{d_{ij}}^2}{h^2})$$

▪ **Bi-square:** The most commonly used kernel in practice; it assigns no weight (i.e., zero) to observations outside the specified bandwidth.

$$w_{ij} = \begin{cases} 1 - (\frac{{d_{ij}}^2}{h^2})^2, & d_{ij} < h \\ 0, & d_{ij} \geq h \end{cases}$$

▪ **Uniform:** Does not account for distance; assigns equal weight to all observations within the bandwidth. It is rarely used in practice.

$$w_{ij} = \begin{cases} 1, & d_{ij} < h \\ 0, & d_{ij} \geq h \end{cases}$$

▪ **Exponential:** Assigns weights based on an exponential distance decay function.

$$w_{ij} = \exp(-\frac{d_{ij}}{h})$$

ANALYZING AND FINDINGS

In this study, the socioeconomic determinants influencing provincial unemployment rates in Türkiye are examined from a spatial perspective. The dependent variable used in the analyses is the unemployment rate (*Y*), while the independent variables consist of indicators representing economic, demographic, and human capital characteristics. The explanatory variables included in the model are per capita GDP (X_1), average years of schooling (X_2), youth population ratio (X_3), population density (X_4), and labor force participation rate (X_5). These variables serve as key indicators that reflect the structural characteristics of the labor market and regional heterogeneity across provinces.

The dataset was compiled from province-level statistics for the year 2023 published by the Turkish Statistical Institute (TUIK). To conduct spatial analyses, a shapefile containing the administrative boundaries and coordinate information of Türkiye's provinces was utilized, allowing socioeconomic indicators for each province to be linked with their spatial locations. Selecting the province level as the unit of analysis provides an appropriate framework for revealing the geographic patterns of regional unemployment disparities.

First, the classical linear regression model (OLS) was estimated to assess the overall effects of the selected variables on unemployment rates. However, as is frequently the case with spatial data,

significant spatial autocorrelation was detected in the model residuals, indicating that the relationships were not regionally constant and that spatial heterogeneity needed to be taken into account. Therefore, in the second stage, the Geographically Weighted Regression (GWR) approach—which allows parameters to vary according to geographic location—was employed.

All statistical procedures were conducted using the R programming language, and the "GWmodel" package was employed for the spatial regression analyses. This package provides an appropriate framework for the purposes of the study, as it supports both classical GWR models and multiscale GWR (MS-GWR) approaches, allowing spatial processes to be modeled at varying scales.

The table below presents a comparative summary of the results obtained from the OLS and MS-GWR models.

Table 1. Criterion Results Obtained from the OLS and MS-GWR Models

Criteria	OLS	MS-GWR
R^2	0.3603	0.7028
Adjusted R^2	0.3176	0.5397
AIC	398.70	344.64
AICc	400.23	388.10
Moran's I	0.434 (1.19E-10)	-0.116 (0.9234)

When the goodness-of-fit measures, Moran's I statistics (as indicators of spatial dependence), and information criteria obtained from the models in Table 1 are considered together, it is evident that the MS-GWR model captures spatial heterogeneity to a substantial degree and demonstrates a clear superiority over the OLS model.

For the OLS model, the R^2 value was found to be 0.3603, while the adjusted R^2 value was 0.3176. This result indicates that only approximately 32–36% of the variance in the dependent variable is explained by the model.

The MS-GWR model, on the other hand, demonstrates a considerably high explanatory power with R^2 = 0.7028 and adjusted R^2 = 0.5397. This improvement clearly indicates that the spatially varying coefficients enhance the model's fit and that the spatially heterogeneous structure in the dependent variable cannot be captured by the OLS model. The findings are consistent with the literature, which reports that GWR-type models yield higher explanatory power for socioeconomic and demographic indicators influenced by spatial processes.

The Akaike Information Criterion (AIC) and the corrected AIC (AICc), which are commonly used in model comparisons, also demonstrate the clear superiority of the MS-GWR model. The substantial decrease in both AIC and AICc values indicates that, even when accounting for model complexity, the MS-GWR model provides a better fit to the data structure. In particular, the approximately 54-point improvement in AIC serves as strong evidence that spatial variability has been appropriately incorporated into the model.

The Moran's I value for the OLS residuals was obtained as 0.434 ($p < 0.001$), whereas the Moran's I value for the MS-GWR residuals was –0.116 ($p = 0.9234$). These results indicate that the spatial dependence in the residuals persists in the OLS model, while in the MS-GWR model, significant spatial

dependence has been eliminated. This finding demonstrates that the MS-GWR approach successfully accounts for spatial dependence by effectively removing it from the residual structure.

These analytical results reveal that the relationships observed in the study area are not spatially stationary and that the effects of the variables differ according to geographic location. Since the OLS model is unable to capture this heterogeneous structure, its explanatory power is reduced and spatial autocorrelation emerges as a problem. In contrast, the MS-GWR model:

- Substantially increased the explained variance,
- Significantly improved the AIC and AICc values,
- Eliminated spatial autocorrelation in the residuals,
- Allowed parameter estimates to vary at the local level.

In conclusion, the findings indicate a strong presence of spatial heterogeneity and demonstrate that the classical OLS model is inadequate for this type of data. The MS-GWR model can be considered the most appropriate approach for the study, both in terms of model performance and its capacity to address spatial dependence.

CONCLUSION

This study comparatively examined the classical linear regression (OLS) model and the multiscale geographically weighted regression (MS-GWR) model to identify the spatial determinants of provincial unemployment rates in Türkiye. Using province-level data from TÜİK for the year 2023, the analyses demonstrate that unemployment does not exhibit a spatially homogeneous pattern; rather, pronounced regional disparities are evident. The OLS model was able to explain only a limited portion of the variation in unemployment ($R^2 = 0.3603$) and exhibited significant spatial autocorrelation in its residuals. This finding indicates that spatial dependence cannot be adequately captured by classical, non-spatial models.

In contrast, the MS-GWR model substantially increased the explained variance ($R^2 = 0.7028$) and successfully eliminated spatial autocorrelation in the residuals. The marked reduction in AIC and AICc values further shows that models incorporating spatial variability are far more effective in explaining complex socioeconomic indicators such as unemployment.

The findings reveal that key determinants of unemployment—such as per capita GDP, education level, youth population ratio, population density, and labor force participation—do not exert uniform effects across Türkiye; instead, their influence varies considerably with geographic location.

Therefore, policies aimed at combating unemployment must take into account the structural characteristics of each region. The findings support the view that uniform national policies are insufficient; instead, localized policies tailored to the dynamics of regional labor markets are likely to be more effective. The use of spatial methods in labor market analyses will enable more accurate decision-making in policy design. Employment incentives for young people, entrepreneurship programs, and vocational guidance activities should be shaped according to regional needs. In provinces with low per capita GDP, programs that support local production, small and medium-sized enterprises (SMEs), and entrepreneurship will be more effective in reducing unemployment.

This study has several methodological and data-related limitations. First, it relies on cross-sectional data and includes only the statistics for the year 2023. Therefore, changes over time in the relationship between unemployment and its determinants cannot be examined within the scope of this research.

Future studies using spatial panel models could allow for a joint assessment of both temporal and spatial dynamics.

Second, although the variables used in the study capture key indicators of the labor market, other factors that may influence unemployment—such as migration flows, sectoral employment structure, informal employment, or regional incentive mechanisms—were not included in the model. Incorporating such variables could contribute to a more detailed understanding of the structural causes underlying spatial disparities.

Third, the unit of analysis is the provincial level. Smaller spatial units (such as districts or NUTS-3/4 regions) could reveal finer spatial patterns of unemployment dynamics; however, due to limitations in data availability across regions, the analysis was restricted to the provincial scale.

Finally, although the GWR and MS-GWR models effectively capture spatial variability, they carry methodological limitations related to bandwidth selection, sample size, and sensitivity to the spatial weight matrix. Therefore, the findings should be interpreted considering both the flexibility and limitations inherent in these modeling approaches.

Despite these limitations, the study provides important insights into the spatial dimension of unemployment dynamics at the provincial level in Türkiye and clearly demonstrates the valuable contribution of spatial approaches to labor market analysis.

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A NEW BRIDGE BETWEEN THE GLOBAL SOUTH AND EUROPE : AN ECONOMIC AND POLITICAL ANALYSIS OF THE INDONESIA–EU FREE TRADE AGREEMENT

Dr. Murat ÖZTÜRK

City St George's, University of London, UK
E-mail: murat.ozturk.1@citystgeorges.ac.uk
ORCID ID: 0000-0002-5983-331X
Std. Arina KHAİRUNİSA

University Utara Malaysia, Malaysia
E-mail: khairunisaarina@gmail.com
ORCID ID: 0009-0002-6117-260X

Abstract

This study examines whether the Comprehensive Economic Partnership Agreement (CEPA) between Indonesia and the European Union, which was recently signed, can serve as a practical bridge connecting European market access and sustainability standards with Indonesia's industrial upgrading and long-term development agenda. Based on the theory of regional trade agreements, global value chains, and green industrial policy, this study focuses on how deep and comprehensive free trade agreements (FTAs) can change incentives for exporters, regulators, and business associations in asymmetrical North-South partnerships. This article discusses three main questions: how Indonesian regulators, business associations and exporters view the opportunities and risks associated with CEPA; what adjustment strategies they are pursuing to meet new demands related to sustainability and traceability; and what institutional conditions are needed to reduce uncertainty in implementation. This article discusses three main questions: how Indonesian regulators, business associations and exporters view the opportunities and risks associated with CEPA; what adjustment strategies they are pursuing to meet new demands related to sustainability and traceability; and what institutional conditions are needed to reduce uncertainty in implementation. The analysis identifies four main themes: the deepening and asymmetric nature of market access packages in CEPA; the role of Trade and Sustainable Development (TSD) provisions and unilateral measures by the European Union (Carbon Border Adjustment Mechanism/CBAM, EU Deforestation Regulation/EUDR) in generating 'double adjustment shocks' the prospects for increasing Indonesia's industrial capacity amid the EU's supply chain de-risking strategy; and the political contestation surrounding 'green protectionism' and sovereignty costs. This article argues that the potential for CEPA to serve as a legitimate bridge, rather than developing into a new conflict zone, depends on focused assistance for small and medium-sized exporters, a solid collaborative institutional framework, and a partnership-driven enforcement strategy. The article also proposes an agenda for further empirical research that can be developed once implementation data becomes available.

Keywords: Indonesia-EU CEPA, Free Trade Agreement, CBAM and EUDR, Industrial Upgrading

INTRODUCTION

Free trade agreements (FTAs) are now a key instrument in shaping the structure and direction of global trade. FTAs no longer focus solely on tariff reduction, but extend to various areas, including trade in services, investment flows, intellectual property rights protection, regulatory cooperation and harmonisation, and commitments to sustainability agendas. In policy literature, FTAs are understood as a vehicle for establishing standards that link market access with strengthening environmental and labour governance, in line with the dynamics of global value chains described by Baldwin (2016). (Baldwin, 2016; European Parliamentary Research Service [EPRS], 2023)

In the aftermath of the pandemic, the European Union's external strategy was formulated through the Global Gateway initiative and the EU Strategy for Cooperation in the Indo-Pacific. Both frameworks emphasise value-based connectivity, the mobilisation of financing sources, and regulatory harmonisation with partners in Asia. In this context, free trade agreements (FTAs) are positioned to serve a dual function as instruments for market access and as tools for normative diplomacy. (European Commission, 2023; European External Action Service [EEAS], 2021). Within this broader reconfiguration, Indonesia stands out as a crucial Global South economy: it is the largest market in ASEAN, a G20 member, and a state that has explicitly positioned itself as a "voice for developing countries" and a "bridge-builder" in its foreign policy, which makes the EU-Indonesia free trade agreement an important test case for assessing whether North-South economic frameworks can balance the development and sustainability priorities of the Global South with the European Union's market-access and regulatory objectives (Karim, 2023; United Nations Conference on Trade and Development [UNCTAD], 2018, 2024).

For Indonesia, trade in goods with the European Union exceeded €27 billion in 2024, underscoring both the scale and the potential for deeper integration in manufacturing and processed commodity value chains (European Commission, Directorate-General for Trade, 2024; Consilium of the European Union, 2024). Negotiations on the EU-Indonesia Comprehensive Economic Partnership Agreement (CEPA), which began in 2016, had by mid-2024 gone through nineteen formal rounds, with the latest held in July 2024, yet sensitive issues in the Trade and Sustainable Development chapter and in market access remained unresolved at that stage (European Commission, Directorate-General for Trade, 2024; Ministry of Trade of the Republic of Indonesia, 2024). On 23 September 2025, the European Union and Indonesia announced the substantive conclusion of negotiations on the CEPA and a parallel investment protection agreement, with both texts now undergoing legal scrubbing and translation prior to signature and ratification, thereby beginning the transformation of this high-volume trade relationship into a comprehensive, rules-based partnership framework (European Commission, 2025; European Commission, Directorate-General for Trade, 2025).

This article's original contribution is twofold. Empirically, while studies exist on the EVFTA (Marsley & Staritz, 2024) or EUDR's general impact, no research has yet prospectively analyzed the anticipatory strategies of Indonesian actors facing the dual pressure of CEPA negotiations and new unilateral regulations. Conceptually, this paper is not limited to a descriptive study of impact. The metaphor of a ‘bridge’ is used as an operational framework to formulate an analytical tool relevant to policy, in order to explain how negotiated trade agreements and unilateral regulatory standards interact in practice. Therefore, the following analysis is expected to provide important insights for Indonesian policymakers in addressing this new trade governance framework.

This paper synthesizes academic research, primary policy documents, and expert evaluations from secondary sources to answer the stated research questions, serving as a critical literature review and comparative policy analysis. The "bridge" metaphor serves as an analytical framework for assessing the fundamental role of the CEPA: does it truly serve as an effective integration channel, or has it instead become a new battleground for conflicts over market access and sustainability initiatives? Three main questions are examined. First, how do Indonesians, such as regulators, business groups, and exporters, perceive and anticipate the opportunities and risks that the CEPA will bring? Second, what changes are they making now and will they make in the future to meet new sustainability and traceability requirements? Third, what institutions need to be established to make the agreement unenforceable? (EPRS, 2023; European Union, 2023a, 2023b).

Methodology and Scope

This paper was compiled using a systematic methodology to maintain transparency in the analysis process.

The literature search was conducted through a comprehensive search of various academic and policy databases, such as Scopus and Web of Science, as well as policy research portals such as EPRS, CSIS, and Bruegel. Keywords included "EU-Indonesia CEPA," "EU-ASEAN trade," and "trade and sustainable development." Documents released between 2016, when CEPA negotiations began, and 2024 were the primary focus of the inclusion criteria. To accommodate the most relevant scholarly and policy discussions on CEPA and sustainability, references in both English and Indonesian were considered.

The comparative policy analysis involved a close reading of primary official documents. This included legal texts negotiation reports, and press releases from the European Commission (DG Trade, EEAS) on one side, and the Indonesian Ministry of Trade and coordinating ministries on the other. These documents were analyzed to identify stated objectives, points of convergence (e.g., shared goals on industrial upgrading), and key points of divergence (e.g., framing of EUDR as a "barrier" vs. a "sustainability tool"). This comparison forms the basis for assessing the "bridge vs. conflict" framework.

Given the very recent conclusion of the Indonesia-EU CEPA and the absence of post-implementation data, this study deliberately adopts a critical literature review combined with comparative policy analysis rather than ex post econometric or computable general equilibrium approaches. At the time of writing, the agreement has only just been finalized and has not yet generated a sufficiently long implementation period to observe trade, investment or sectoral adjustment outcomes in a robust way, which makes model-based impact evaluation premature (European Commission, Directorate-General for Trade, 2025). In such early stages, structured literature reviews are recognized as an appropriate method for systematically mapping and synthesizing fragmented empirical findings and policy debates, provided that search strategies and inclusion criteria are made transparent (Snyder, 2019). Comparative policy analysis, in turn, is well suited to interrogate the design of trade agreements and their political consequences, since it allows the Indonesia-EU CEPA to be read against other EU FTAs and against unilateral regulatory instruments such as CBAM and EUDR, while keeping distributional and normative conflicts at the centre of the analysis (Geva-May, Hoffman, & Muhleisen, 2020; de Wee, 2022). Future research will be able to build on this conceptual and documentary baseline by applying ex ante and ex post quantitative models, firm-level surveys or process-tracing once CEPA has been in force long enough to generate reliable data, but under current conditions a critical literature review coupled with comparative policy analysis provides the most logically coherent and methodologically defensible strategy.

CONCEPTUAL FRAMEWORK: FREE TRADE AGREEMENT AND ECONOMIC INTEGRATION

Definition and scope. By spending, an FTA is a reciprocal deal to lower trade barriers. New-generation FTAs, however, cover much more, including non-tariff disciplines like SPS, TBT, trade facilitation, investment, and regulatory cooperation. The WTO Regional Trade Agreements database shows that trade agreements are not only increasing in number, but also in scope and commitments. These changes will have a significant impact on how countries manage their economies and how they address cross-border economic integration. (World Trade Organization, 2024; Baldwin, 2016).

The economic foundations of free trade agreements (FTAs) are based on Viner's (1950) framework of trade creation and diversion. Recent empirical studies using a structural gravity model with a controlled PPML estimator show that deeper FTAs increase the potential for trade creation while mitigating the

risk of trade diversion. However, these results are strongly influenced by the rules of origin and the liberalization timeframe outlined in the agreement (Viner, 1950; Pfaffermayr, 2020).

From a political point of view, FTAs serve as economic governance tools that link market access with processes of normative convergence. The business-focused literature on global value chains helps us understand why the European Union prefers to trade with Asia. This literature also helps us understand how the Trade and Sustainable Development (TSD) chapter is used to add environmental and employment commitments to agreements (Eckhardt & Poletti, 2016; EPRS, 2023).

The example of EU FTAs in Asia provides an important reference point. The EU-Vietnam Free Trade Agreement (EU-Vietnam FTA/EVFTA) includes a range of liberalizations, as well as TSD mechanisms and committees to implement them. Recent studies on its implementation confirm that institutional capacity and the quality of law enforcement are key determinants of employment outcomes and policy legitimacy (Marslev & Staritz, 2024). The EU-Singapore FTA (EUSFTA) demonstrates a high degree of regulatory coherence. Starting in November 2022, the EU-Singapore Digital Trade Agreement further ensures that electronic transactions between the two countries will proceed smoothly. The EU-Korea Free Trade Agreement, which demonstrates deep integration of goods and services and significant reductions in non-tariff barriers, provides a worthy benchmark. (European Commission, 2022; Government of Singapore, 2022).

HISTORICAL BACKGROUND OF EU-INDONESIA RELATIONS

From development cooperation to strategic partnership. The modern foundation of the relationship begins with the 1980 ASEAN-EEC Cooperation Agreement, which established a Joint Cooperation Committee for regional economic and trade agendas. (ASEAN, 1980). Bilateral ties were strengthened by the EU-Indonesia Partnership and Cooperation Agreement (PCA). Signed on November 9, 2009, and effective May 1, 2014, the PCA expanded the relationship to cover peace and security, trade and investment, justice, and socio-economic development. (Consilium of the European Union, 2014; European Commission, 2010).

Evolution of trade flows in the last two decades. Official statistics show a strengthening of EU-Indonesia trade in goods. This trade was valued at over €27 billion in 2023, with a composition relevant for analyzing integration in manufacturing and processed commodity value chains. An EPRS infographic from June 26, 2024, adds further context on macro indicators and trade dynamics. (European Commission, Directorate-General for Trade, 2024; Consilium of the European Union, 2024; EPRS, 2024).

Chronology of the CEPA negotiations and motivations. CEPA negotiations began in 2016 and are still ongoing (European Commission, 2024a, 2024b). Indonesia's primary goal has been to attract more foreign direct investment and help improve the structure and capacity of its domestic industry. Meanwhile, the European Union has prioritized strengthening supply chains and increasing its influence in the Indo-Pacific region. The Indonesian Ministry of Trade (2024) stated that the CEPA is crucial for expanding and developing Indonesia's export base.

Overall, the evolving relationship over time, from aid provision and receipt, political negotiations, to a more comprehensive Partnership and Cooperation Agreement and the lengthy CEPA negotiations, demonstrates a gradual shift from a donor-recipient model to a more strategic partnership. In this regard, Indonesia is striving to be seen as a leader in the region and a link between Asia and Europe in the Southern Hemisphere. The CEPA provides the institutional support Indonesia needs to establish this role as a true "bridge" between the EU's market access and regulatory framework and Indonesia's goals for industrial growth and sustainable development. (European Commission, 2010; European Commission, Directorate-General for Trade, 2024; Wicksana & Karim, 2022; Karim, 2022).

This historic event has paved the way for EU-Indonesia relations to develop into a true bridge facilitating economic integration and achieving sustainability goals.

STRUCTURE AND KEY COMPONENTS OF THE EU-INDONESIA FREE TRADE AGREEMENT (FTA)

The negotiation process, which concluded in 2025, produced the CEPA text, which serves as the legal basis for building an economic "bridge" between Indonesia and the European Union. This agreement goes beyond market access issues. It also includes more advanced regulatory areas in line with the "new generation" FTA model described in the conceptual framework. The draft CEPA is based on five key ideas: tariff reductions, rules of origin, and a commitment to sustainable development, rules for the digital economy and investment, and a framework for institutions to monitor and enforce their implementation.

Tariff Liberalization Schedule

This agreement's main goal is to make it easier to trade goods, which is a very ambitious goal. The negotiating mandate calls for a lot of openness, and the final CEPA text gets rid of import duties on more than 95% of tariff lines. This makes it possible for the Indonesian and European Union economies to trade directly with each other.

This deal gives Indonesia a big edge over its competitors in the European market. The CEPA guarantees duty-free access for a number of important Indonesian-made goods, including textiles, shoes, and electronics. These goods were at risk of losing the Generalised Scheme of Preferences (GSP) facility. The tariff liberalisation plan that was chosen is not fair. The European Union got rid of import duties on most of its tariff lines right after the agreement went into effect. Indonesia, on the other hand, was given a transition period for some sectors that were considered sensitive. This deal gives businesses in the country time to make small changes. The asymmetry is meant to lower the risk of "trade diversion," as Viner (1950) put it, and promote "trade creation" by making Indonesian producers and the European Union supply chain work together more closely (European Commission, 2024a).

Rules of Origin and Market Access Mechanisms

The CEPA establishes rules of origin that are designed to be more modern and flexible to ensure that the benefits of tariff elimination are truly enjoyed by the parties signing the agreement. These rules of origin serve as gatekeepers because they determine which products can be classified as Indonesian or European Union products within the framework of the CEPA.

This agreement recognises the fact that the global value chain is now highly fragmented. Therefore, the CEPA includes regional cumulation provisions that allow Indonesian exporters to count raw materials originating from other ASEAN countries that already have FTAs with the European Union as part of the origin content. This provision is very important for the Indonesian automotive and electronics sectors, which are part of regional production networks. In addition, the chapter on rules of origin simplifies the fulfilment of administrative requirements through the implementation of a self-certification system by exporters. This measure is intended to reduce transaction costs, which often hinder the utilisation of FTAs in developing countries. (European Commission, Directorate General for Trade, 2024; Pfaffermayr, 2020).

Sustainable Development Chapter: The "Green" Pillar

The Trade and Sustainable Development (TSD) chapter is one of the most controversial parts of the CEPA. It is in this segment that the ‘bridge’ function is truly tested, as the provisions must be able to

bridge the differences in the regulatory landscapes between countries in the Global North and Global South.

The Chapter of TSD reflects the European Union's strategy of utilising trade instruments to expand the influence of norms. It contains binding commitments to the Paris Agreement and core ILO conventions. The Indonesia-EU CEPA is unique compared to a number of previous agreements because it explicitly raises the link between trade and deforestation. The agreement establishes a Joint Committee on Vegetable Oils, which specifically addresses sensitive issues surrounding palm oil commodities and the implementation of the EU Deforestation Regulation (EUDR). Through this mechanism, the relationship, which was previously based on unilateral standard setting, is being directed towards a pattern of bilateral cooperation. The committee provides a forum for dialogue that can open up space for mutual recognition of sustainability standard schemes, including the Indonesian Sustainable Palm Oil (ISPO) scheme. (European Commission, 2024b; Indonesian Ministry of Trade, 2024).

Digital Trade, Investment Protection, and Dispute Settlement

CEPA modernises the economic partnership between Indonesia and the European Union through a strong chapter on digital trade and investment. In the area of digital trade, the agreement prohibits the imposition of import duties on electronic transmissions and guarantees the smooth flow of cross-border data. The standards used are in line with the high-level provisions reflected in the EU-Singapore Digital Trade Agreement, thereby providing greater legal certainty for businesses that rely on technology-based transactions and services.

In the field of investment, CEPA replaces various old Bilateral Investment Treaties (BITs) with a permanent Investment Court System (ICS). This change in institutional architecture is a response to Indonesia's worries about sovereignty and the state's right to control important sectors. ICS is meant to be a fair and open way to settle disputes, with higher standards of accountability. It is run by an independent panel. This deal is expected to bring in high-quality foreign direct investment (FDI) from the European Union to Indonesia's downstream sectors, especially those that are part of the downstream agenda and help increase the value of industrial goods. The investment chapter in the CEPA is meant to help achieve the goal of improving the country's industrial structure while still giving the host country room to make its own policies. (European Commission, 2024c).

Institutional Mechanisms for Monitoring and Enforcement

CEPA sets up a strong institutional framework to make sure that it works well. A Joint Committee made up of officials at the ministerial level has been set up to make sure that the agreement is carried out as a whole. This committee has special working groups that deal with specific technical problems, such as putting in place Sanitary and Phytosanitary (SPS) measures and meeting the obligations in the Trade and Sustainable Development (TSD) chapter.

The TSD chapter's enforcement plan is meant to be stricter. The draft agreement allows for trade sanctions to be put in place if the Paris Agreement commitments are seriously broken. This is in line with the 2022 EU Trade and Sustainable Development (TSD) Review. The European Union is serious about stopping environmental dumping practices, and this increase in enforcement powers shows that. These rules also make Indonesia's ability to monitor and enforce its own environmental laws a key factor in the success of the CEPA. (European Commission, 2022; EPRS, 2023).

ECONOMIC IMPLICATIONS FOR INDONESIA AND THE EUROPEAN UNION

The signing of CEPA creates a new economic corridor that could change the way Indonesia and the EU trade with each other in a big way. We can guess what will happen to the economies of both partners by looking at the tariff liberalisation schedule and the regulatory commitments in this agreement. These

effects go beyond just changes in trade volume numbers. They also include changes in the structure of industries and the strategic repositioning of Indonesia and the European Union in the global and regional geopolitical landscape.

For Indonesia: Industrial Upgrading and Investment Flows

The main economic benefits of CEPA for Indonesia are not just that it will increase the volume of exports, but also that it will speed up the diversification of the economy. This agreement gives Indonesian-made goods immediate duty-free access, which levels the playing field for textile, footwear, and electronics exporters who were previously at a disadvantage compared to partners like Vietnam. This expansion of market access is expected to lead to a big increase in exports that require a lot of labour. It will also help protect against changes in global commodity prices. (World Bank, 2023)

CEPA is more than just a way to make things; it is also an outside anchor for Indonesia's downstreaming policy. The deal encourages European businesses to invest in higher-value chains in their own countries by removing tariffs on processed metal goods and making investment protection stronger. This is especially important for the ecosystem of electric vehicle batteries. Indonesia can use its wealth of resources to become a global industrial hub instead of just a supplier of raw materials. This is possible because technology and foreign direct investment (FDI) from Europe are coming into nickel processing plants and battery factories. This kind of technology transfer is very important for changing the economy so that it makes more valuable goods. (OECD, 2023; Ministry of Investment, 2024).

These chances, on the other hand, come with big compliance problems that could make it harder for businesses to get into the market. The agreement's strict environmental standards will require a lot of changes that will cost a lot of money. Small and medium-sized businesses in the palm oil and furniture industries are at a high risk of being left out because it costs a lot to set up the traceability systems needed to show compliance. If there isn't any targeted technical help or changes to the supply chain, the benefits of CEPA could be limited to big companies that have the money and technology to meet these different "green" non-tariff requirements. (UNCTAD, 2023).

For the European Union: Strategic Autonomy and Geopolitical Balancing

The EU sees the economic logic behind CEPA as being very similar to the agenda for reducing risk in the supply chain. Indonesia has become an important partner for Indonesia because it wants to reduce its reliance on one big supplier of green technology. CEPA gives the European Union safer, rules-based access to a number of important raw materials, especially nickel, which is a key part of Europe's plan to go green. By joining the European Union's industrial supply chain, Indonesia helps the battery and stainless steel industries get supplies from more places. This makes the European Union's strategic autonomy stronger. (European Commission, 2023).

From a geopolitical point of view, CEPA is one of the most important parts of the European Union's Indo-Pacific Strategy. Brussels can now use this agreement to increase its economic and normative influence in Southeast Asia, which is becoming more competitive between the US and China. The European Union offers a trade partnership based on high regulatory standards and a promise to be environmentally friendly. This is different from other regional frameworks. This way, the EU can balance its trade interests with its environmental commitments. It also shows that doing business with countries in the Global South doesn't have to mean lowering environmental standards.

The EU also has a strategic bargaining position against China's Belt and Road Initiative because it has a strong economic presence in Indonesia. This helps Europe stay a major rule-maker in the ever-changing Indo-Pacific region instead of just a rule-follower. (European External Action Service, 2024; Smith, 2023).

POLITICAL AND STRATEGIC DIMENSIONS

The Indonesia-EU CEPA is important for more than just the technical details of tariffs and customs. In this time of geopolitical fragmentation, the agreement is a crucial tool for balancing the interests of Jakarta and Brussels. The CEPA puts each side's foreign policy ideas into a legally binding framework. It also serves as a meeting point between the EU's normative power and Indonesia's growing role as a leader among the Global South.

The EU views the conclusion of the CEPA as a clear sign that the Global Gateway initiative and the Indo-Pacific Strategy are being implemented. Brussels has been working to diversify its partnerships so that it doesn't have to rely on just a few. This is especially important now that supply chains have proven weak after the pandemic. The EU is countering the perception that it is withdrawing from global engagement by signing a high-standard trade agreement with Southeast Asia's largest economy. Meanwhile, the EU is seeking to demonstrate that it can be a reliable partner in the region by offering a different approach to cooperation than the US and China. The CEPA serves as a rules-based counterweight to other regional frameworks. This means that European standards on sustainability and digital governance will continue to be crucial in the rapidly changing Indo-Pacific region (European External Action Service, 2024; Smith, 2023).

Jakarta views the CEPA as proof that Indonesia is a key country in the ASEAN region. Indonesia differs from many of its neighbors in achieving a "deep integration" agreement with the European Union. This demonstrates that Indonesia can negotiate complex regulatory harmonization without sacrificing its right to develop as a nation. This success aligns with Indonesia's goal of becoming a bridge and a vital part of the global supply chain network. The ability to handle sensitive topics such as palm oil and sustainability at the negotiating table demonstrates a type of diplomacy capable of balancing national interests and fulfilling international commitments. Indonesia's position as a key representative of developing countries in the Global South is further strengthened, demonstrating that developing countries can interact with developed markets more equitably (Laksmana, 2022; Ministry of Foreign Affairs of the Republic of Indonesia, 2024).

This agreement holds profound symbolic significance for the future of North-South relations as a whole. In the past, trade between Europe and Southeast Asia was largely based on a one-way donor-recipient relationship or resource extraction. The CEPA shifts this mindset toward a more equitable way of strategic cooperation. This agreement demonstrates that rigorous sustainability standards, such as those outlined in the Trade and Sustainable Development chapter, can meet the needs of developing countries. The Indonesia-EU CEPA establishes a system in which "green" policies can be implemented through cooperation, rather than through force. This is a good starting point for how North-South economic relations will work in the future. It means that the "Green Transition" can become a shared goal, rather than simply a cause for greater conflict. (Böze! & Risse, 2021; UNCTAD, 2023).

Although the two regions share some strategic similarities, the CEPA still faces considerable political opposition in both regions. In Indonesia, a key point of contention is the "sovereignty costs" arising from regulatory harmonization efforts. Some commodity associations and nationalist interest groups still view some EU regulations, such as the EUDR, as non-tariff barriers that endanger the livelihoods of smallholder farmers. Meanwhile, civil society and environmental groups are using the Trade and Sustainable Development (TSD) commitments in the CEPA to call for stronger enforcement of rights to protect workers and forests. In Europe, the ratification process is closely watched by agricultural lobbies concerned about competition and environmental groups who feel the enforcement instruments are insufficient. To address these multiple domestic pressures, ongoing political dialogue is needed. This will enable stakeholders at the implementation level to maintain the "bridges" built at the negotiating table. (EPRS, 2023).

PROJECTED MACROECONOMIC AND SECTORAL EFFECTS

The shift from the negotiation stage to the implementation phase of the CEPA is a key moment for figuring out how much real economic benefit Indonesia and the European Union can get from it. The political and strategic aspects discussed earlier are the basis of the relationship between the two parties' relationship. However, the agreement's success will ultimately depend on its ability to improve welfare and bring about structural changes in the economy.

Before and during the negotiations, studies on the economic impacts indicated that both parties would benefit, but the magnitude of these benefits varied. The CEPA is expected to significantly increase Indonesia's real Gross Domestic Product (GDP). In a highly ambitious liberalization scenario, modeling suggests that Indonesia's GDP could grow by 0.19 to 0.25 percent per year compared to the baseline scenario. The primary reason for this increase is that bilateral exports are expected to increase by more than €5 billion per year once the agreement fully enters into force. The removal of tariff barriers makes Indonesian goods cheaper than those from other countries in the region, such as Vietnam, which has had preferential access to the EU market since 2020. This additional GDP growth is a smaller percentage for the EU, given its much larger economy. However, its benefits are seen as strategic in terms of trade efficiency. CEPA is estimated to provide the European Union with approximately 3.1 billion euros in welfare benefits annually. Most of these benefits come from lowering non-tariff barriers and providing greater market access for EU machinery, transport equipment, and other high-value services. The agreement will also help European manufacturers who rely heavily on critical raw materials by diversifying their supply chains. This will reduce their volatility costs. (Ecorys, 2020; European Commission, Directorate-General for Trade, 2024).

The overall benefits shown in the various models mask significant differences at the sector level. This is due to the degree of liberalization and the regulations businesses must comply with, which will significantly impact the bottom line in each sector. The manufacturing sector is expected to be the biggest beneficiary for Indonesia. The elimination of EU tariffs, which previously ranged between 12% and 17% on footwear and clothing, puts Indonesian exporters on par with their main Vietnamese competitors. Estimates suggest that the textile and footwear industry could see its export volumes grow by up to 30% in the medium term. Regional cumulative provisions also benefit the automotive industry by enabling Indonesia's burgeoning electric vehicle ecosystem to connect with larger production networks. The agricultural sector, on the other hand, faces a much more complex dual dynamic. While tariff removal does open up more markets for coffee, spices, and cocoa, the palm oil subsector faces stringent non-tariff barriers related to sustainability standards. The CEPA lowers import duties on biodiesel and its derivatives, but the costs of following the EU Deforestation Regulation (EUDR) could reduce tariff margin benefits, especially for small producers. So, the overall economic benefits for this sub-sector depend a lot on how well the the Trade and Sustainable Development chapter's traceability mechanisms can be put into action. (Center for Indonesian Policy Studies, 2023).

The energy and services sectors have different strategic implications than the primary goods sector. In the energy sector, the way countries cooperate is based on how well Indonesia's downstream agenda aligns with European industrial needs. The CEPA facilitates the construction of nickel and cobalt processing plants and investment in renewable energy infrastructure. This measure facilitates the restructuring of Indonesia's industry, but also places related sectors under stricter scrutiny through the use of the Carbon Border Adjustment Mechanism (CBAM). This could make production processes that remain carbon-intensive more expensive during the transition period. Trade liberalization provides the EU with a prime opportunity to invade the services sector. This agreement allows European service providers to enter several key subsectors in Indonesia, such as maritime transport, telecommunications, and environmental services. Indonesia hopes that the arrival of more efficient service providers will

lower logistics and digital infrastructure costs, making the national economy more competitive overall. (IEA, 2024; Ecorys, 2020).

The Indonesia–EU CEPA differs significantly from other EU agreements in the region. The draft Indonesia CEPA is more similar to the EU–Vietnam Free Trade Agreement (EVFTA) than to the EU–Singapore Free Trade Agreement, which places a strong emphasis on digital integration and high-standard finance suited to a service-based economy. Both agreements with Indonesia and Vietnam aim to make it easier for people to work in factories and promote long-term growth. The timeframe and depth of the accompanying green requirements are two crucial differences. The EVFTA entered into force before the European Green Deal's external instruments, such as the CBAM and the EUDR, were fully in place. Therefore, Indonesian exporters faced a greater regulatory burden initially than Vietnamese exporters in 2020. This late arrival highlights the need to accelerate institutional capacity building as mandated by the CEPA. On the other hand, the Indonesia–EU CEPA includes more advanced investment protection provisions modeled on the Investment Court System. This could provide greater certainty to investors than the Investor-State Dispute Settlement scheme still used in some older regional agreements. (Marslev & Staritz, 2024).

CHALLENGES AND RISKS

The Indonesia-EU CEPA holds many potential benefits, but the process from ratification to full implementation will be difficult due to a number of structural and external issues. If these risks are not addressed seriously, they could hinder the expected welfare gains. The main challenge lies in the disparity between the level of regulatory aspirations and existing institutional capacity. For Indonesian exporters, especially Micro, Small, and Medium Enterprises (MSMEs), the Rules of Origin (RUU) and stringent sustainability requirements in the CEPA could make it difficult for them to do business. Without adequate technical assistance, small businesses may not be able to capitalize on the opportunities offered by this agreement. Conversely, the benefits will be felt by larger companies that have the resources to handle complex compliance requirements. (UNCTAD, 2024)

The most important and specific have to do with the costs of following with environmental and social regulations. Businesses have had to deal with a "double adjustment shock" because both the European Union Deforestation Regulation (EUDR) and the Carbon Border Adjustment Mechanism (CBAM) are now in effect at the same time. To continue selling to the European Union, Indonesian palm oil, timber, and coffee producers need to spend heavily on geolocation technology and certification schemes that demonstrate they are not cutting down trees. Estimates suggest that these compliance costs could eat away at any gains from initial tariff removal. If the support schemes outlined in the Trade and Sustainable Development (TSD) chapter of the CEPA are not implemented promptly, this could lead to trade diversion. This would mean Indonesian exporters would focus on more leniently regulated markets in Asia or Africa, weakening their "bridge" function to Europe (OECD, 2024).

For the EU, the political landscape in each country presents a distinct risk. Public rejection or protectionist tendencies in a number of member states could hinder the smooth implementation of the agreement. The European agricultural lobby has historically expressed concerns about competition from lower-cost producers in Southeast Asia. Such political pressure has the potential to trigger the repeated use of safeguard instruments or the application of sanitary and phytosanitary (SPS) barriers that are not entirely based on scientific evidence, which in practice limits market access for Indonesian products. Beyond that, uncertain global economic conditions add another layer of uncertainty. Commodity price fluctuations and supply chain disruptions due to geopolitical tensions could alter the basic economic assumptions used in CEPA projection modelling. (WTO, 2023; World Bank, 2023).

CONCLUSION AND POLICY IMPLICATIONS

This study begins with the key question of whether the Indonesia-EU CEPA will function as a bridge for integration or become an arena for a battle of norms. Analysis of the final draft and projections of its impact show that this agreement does indeed provide an architectural blueprint for a 'new bridge' between the Global South and Europe, but the extent to which this bridge will actually function is largely determined by how risks are managed during the implementation phase. When linked back to the three research questions formulated at the outset, the findings of this study reveal a fairly clear pattern in terms of the expectations and adjustment strategies of the actors. First, regarding how actors view opportunities and risks, Indonesian regulators and large exporter groups generally see the CEPA as an instrument to encourage industrial upgrading and as a catalyst for accelerating the downstream agenda. However, this optimism is offset by strong concerns among commodity associations about the phenomenon of 'green protectionism'. They believe that without intensive and targeted engagement, EU sustainability standards have the potential to function as a de facto barrier to market entry.

Second, businesses are using two distinct strategies to address change. At the business level, private companies are investing more in digital traceability systems to comply with the European Union Deforestation Regulation (EUDR). On the other hand, the government wants to leverage the CEPA to secure European funding for green infrastructure that could reduce the carbon intensity of Indonesian exports.

Third, the analysis shows that strong institutions that foster cooperation are needed to reduce uncertainty. The establishment of specialized Joint Committees and the provision of binding technical assistance are not merely administrative details; they are also crucial for preventing regulatory differences from escalating into open trade disputes. Therefore, if the Indonesia-EU CEPA is to truly serve as a stable and inclusive bridge for long-term economic change, strengthening shared institutional capacity must be an undeniable policy objective. (European Commission, 2025; Indonesian Ministry of Trade, 2024).

Policy Recommendations

To ensure that the Indonesia-EU CEPA truly serves as a constructive bridge and not as a new venue for conflict, strong policy measures are needed at three interrelated levels: strengthening implementation in Indonesia, a consistent and supportive EU, and creating common institutions that can handle adjustment pressures on both sides.

- For the Indonesian government, the most important thing is to transform the CEPA from a mere legal document into a national strategy that integrates industrial policy, sustainable governance, and export support. To achieve this, the government needs to establish a CEPA Implementation Task Force, encompassing various ministries and run by the Coordinating Ministry for Economic Affairs. This task force's role is to coordinate the work of the Ministries of Trade, Foreign Affairs, Environment and Forestry, Investment, Agriculture, and Finance, as well as local governments in key export-driven provinces. This task force is responsible for developing a public implementation roadmap, ensuring that domestic laws and regulations align with CEPA obligations and European Union instruments such as the EUDR and CBAM, and holding regular consultation forums with business groups and civil society. Another crucial aspect is developing a compliance strategy for MSMEs so that the benefits of this agreement extend beyond large companies. To achieve this, SME Compliance Fund should be established to help finance certification and audits, and a digital traceability system should be implemented. Chambers of commerce, cooperatives, and other business support organizations should offer targeted technical assistance services to enhance this program. The creation of cluster-based traceability platforms for goods such as palm oil, coffee, and textiles could also lower unit compliance costs by enabling companies to share databases and infrastructure.

At the same time, national sustainability programs such as the Indonesian Sustainability Report (ISPO) need to be enhanced with a clear focus on achieving international recognition. Reforms should focus on comprehensive geolocation coverage, a robust third-party audit system, and the implementation of clear labor rights standards. Thus, these schemes can be proposed as systems that meet EU standards in terms of functionality. Finally, the industrial policy framework of the CEPA needs to be clearly linked to the technology transfer agenda. Investment facilitation tools should focus on projects that combine downstreaming with low-carbon technologies, particularly in the nickel and electric vehicle battery value chains. This is the only way to ensure that FDI flows align with Indonesia's long-term development goals.

• For the European Union: The EU's biggest problem is ensuring that high regulatory goals are met with consistent and predictable patterns of support. This way, sustainability standards will be seen as a means of cooperation, not simply as a requirement to be met by one party. To help cover the costs of adjusting to the CEPA, CBAM, and EUDR, the EU needs to use the Global Gateway and NDICI Global Europe tools in Indonesia in a more targeted manner. Funding should be prioritized to build digital traceability infrastructure, help smallholder farmers transition to supply chains that do not involve felling trees, and invest in renewable energy in CEPA focus areas.

The EU should take a phased approach to enforcing Trade and Sustainable Development (TSD) provisions. This approach should focus on partnerships, especially in the first few years after the agreement enters into force. Before imposing sanctions, the EU should utilize joint action plans and technical assistance programs with indicators of success developed with Indonesian partners. This approach can make enforcement appear more legitimate and reduce public perceptions of "green protectionism." Clear regulations are also crucial. To help Indonesian companies feel more confident, the European Union should provide clear and early instructions on how to implement the CBAM and EUDR. These instructions should include standard formats and sector-specific FAQs for businesses in specific areas. The EU could also leverage the CEPA to help Indonesia's export basket expand beyond raw materials by providing targeted support for process improvements in the manufacturing and services sectors. This step would strengthen the developmental aspects of the CEPA and put position of Indonesia more firmly within the EU's high-value-added value chain.
This set of suggestions transforms the bridge metaphor into a concrete plan for making it a reality. This approach emphasizes that a CEPA does not automatically generate inclusive benefits. Rather, it can serve as a credible model for North-South economic cooperation in a highly regulated environment if policy choices are carefully planned and coordinated.

Future Research Directions

As the agreement enters into force, the focus of future research should shift from prospective modeling to empirical impact studies. Future research should investigate the distribution of post-implementation CEPA benefits, particularly across different business scales, to assess the agreement's inclusiveness. Furthermore, examining spillover effects at the regional level will be crucial to understanding the impact of the Indonesia-EU CEPA on broader interregional trade dynamics between ASEAN and the EU.

Final Reflection

The Indonesia-EU CEPA is a crucial example of how economic diplomacy works today. The agreement seeks to find a balance between the needs of developing countries and the strict rules of wealthy economies. If it is carried out well, the CEPA can really be a "new bridge" that shows how trade agreements can be a powerful way to promote sustainable development and make North-South economic relations more equitable.

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THE FUTURE OF PROCESS EXCELLENCE: AI-POWERED LEAN TRANSFORMATION AND SMART QUALITY MANAGEMENT

Yusuf GÜMÜŞ
Prof. Dr. Dokuz Eylül University
E-mail: yusuf.gumus@deu.edu.tr
ORCID ID: 0000- 0002-3791-1938

Aytaj MAMMADOVA

MA, Azersun Holding
E-mail: aytac.memmedova@azersun.com
ORCID ID: 0009-0004-4824-2743

Abstract

This study examines the intersection of management accounting and food engineering disciplines, focusing on the Process Excellence 4.0 paradigm and the necessity of transitioning to Smart Quality Management (SQM). The research addresses how the integration of Artificial Intelligence (AI) and Lean production principles transforms corporate quality management from a reactive structure to a proactive model, considering both theoretical and practical dimensions. The engineering perspective highlights the deterministic role of AI-supported HACCP, blockchain-based traceability, and digital twin applications in food safety, while the financial perspective analyzes the structural transformation in the Cost of Quality (COQ) model and the shift from failure costs to strategic prevention investments. The study's key finding is that the sustainability of operational and financial performance is only possible with robust data governance frameworks and interdisciplinary integration.

Keywords: Artificial Intelligence, Lean Transformation, Smart Quality Management

Süreç Mükemmelliğinin Geleceği:

Yapay Zeka Destekli Yalın Dönüşüm ve Akıllı Kalite Yönetimi

Özet

Bu çalışma, yönetim muhasebesi ve gıda mühendisliği disiplinlerinin kesişim noktasında, Süreç Mükemmelliği 4.0 paradigmasını ve Akıllı Kalite Yönetimine (SQM) geçişin zorunluluğunu incelemektedir. Araştırmada, Yapay Zeka (YZ) ve Yalın üretim ilkelerinin entegrasyonunun, kurumsal kalite yönetimini reaktif (tepkisel) bir yapıdan önleyici (proaktif) bir modele nasıl dönüştürdüğü teorik ve pratik boyutlarıyla ele alınmıştır. Mühendislik perspektifi, Yapay Zeka destekli HACCP, blokzincir tabanlı izlenebilirlik ve dijital ikiz uygulamalarının gıda güvenliğindeki deterministik rolünü ortaya koyarken; finansal perspektif, Kalite Maliyeti (COQ) modelindeki yapısal dönüşümü ve başarısızlık maliyetlerinden stratejik önleme yatırımlarına geçişi analiz etmektedir. Çalışmanın temel bulgusu, operasyonel ve finansal performansın sürdürülebilirliğinin, ancak sağlam veri yönetişim çerçeveleri ve disiplinler arası bir entegrasyonla mümkün olabileceğidir.

Anahtar Kelimeler: Yapay Zekâ, Yalın Dönüşüm, Akıllı Kalite Yönetimi

1. GİRİŞ

Küresel tedarik zincirlerinin artan karmaşıklığı, jeopolitik belirsizlikler ve veri hacmindeki eksponansiyel büyüme, geleneksel kalite kontrol mekanizmalarının etkinliğini ciddi biçimde tartışmaya açmıştır. Özellikle gıda endüstrisi gibi raf ömrü kısıtlı ve regülasyon baskısı yüksek sektörlerde, statik denetimlere ve geçmişe dönük (ex-post) belgelendirmeye dayalı konvansiyonel yöntemler, modern operasyonların dinamik risklerini yönetmekte yetersiz kalmaktadır. Gıda mühendisliği açısından operasyonel bir aksaklık veya basit bir parametre sapması olarak görülen olaylar, yönetim muhasebesi perspektifinden bakıldığında kârlılığı, marka değerini ve nakit akışını tehdit eden sistematik birer finansal risk unsuru olarak tezahür etmektedir.

Bu bağlamda çalışma, fiziksel operasyonların kontrolünün ötesine geçerek, algoritmik güvenilirliği ve finansal risk yönetimini kapsayan bütünleşik ve disiplinler arası bir model önermektedir. **Süreç Mükemmelliği 4.0** olarak tanımlanan bu yaklaşım, teknolojiyi sadece bir verimlilik aracı olarak görmenin ötesine geçer. Yapay Zeka teknolojileri, insan faktörünü ikame eden bir unsur olarak değil; literatürdeki **"Operatör 4.0"** ve giderek önem kazanan **"Endüstri 5.0"** vizyonuyla uyumlu şekilde, insan yeteneklerini artıran bir destek mekanizması olarak konumlandırılmaktadır (Romero et al., 2023). Endüstri 4.0'ın "otomasyon" odaklı yaklaşımının aksine, Endüstri 5.0 "insan odaklılık" (human-centricity) ilkesini merkeze alır. Nitekim Xu, Lu ve Vogel-Heuser (2025), sürdürülebilir üretim sistemlerinde teknolojinin insan merkezli kullanımının, sadece verimliliği değil, aynı zamanda kriz anlarında örgütsel dayanıklılığı (resilience) da artırdığını vurgulamaktadır. Bu entegrasyonun temel amacı, gıda mühendisliğinin teknik hassasiyeti ile yönetim muhasebesinin finansal hesap verebilirliğini ortak bir stratejik düzlemde buluşturarak, işletmeleri "kırılgan" yapıdan "antifrajil" (anti-fragile) yapıya taşımaktır.

2. TEORİK ÇERÇEVE: YALIN FELSEFENİN DİJİTAL EVRİMİ

Yalın felsefenin dijital teknolojilerle bütünleştirilmesi sonucu ortaya çıkan bu teoride, kavramların isimleri değişse de özdeki felsefe değişmemektedir. Dijital tabanlı yalın dönüşümün temelinde de yalın ve çevik felsefeyle örtüşen aynı unsurlar yer alır: verimlilik, hız ve kalite. Dolayısıyla amaç sabit kalırken, değişen yalnızca bu amaca ulaşmada kullanılan yöntemdir. Bu yöntemin ayırt edici unsuru ise teknolojinin sürece dâhil edilmesidir (Apilioğulları, 2025).

2.1. Yalın 4.0 ve Kaizen'in Dönüşümü

Yalın üretim felsefesi (Lean), temelinde katma değer sağlamayan faaliyetlerin (israfın/muda) sistematik eliminasyonuna dayanır. Ancak A3 raporlama, Balık Kılçığı diyagramları veya kök neden analizleri gibi geleneksel Yalın araçların etkinliği, büyük ölçüde uygulayıcıların bilişsel kapasitesi, deneyimi ve veriye erişim hızı ile sınırlıdır. Manuel veri toplama süreçlerindeki gecikmeler, problemlerin tespit edilmesini zorlaştırmakta ve "sürekli iyileştirme" (Kaizen) faaliyetlerini kesintili hale getirmektedir.

Yapay Zeka entegrasyonu, bu sınırlılıkları aşarak **Kaizen 4.0** modelini ortaya çıkarmaktadır. Bu modelde iyileştirme faaliyetleri, aralıklı ve reaktif çabalar olmaktan çıkarak, gerçek zamanlı veri akışlarına dayalı, otonom ve sürekli bir döngüye dönüşmektedir. YZ algoritmaları, geniş veri setlerini (Big Data) tarayarak insan algısının ötesindeki örüntüleri ve korelasyonları tespit etmekte, problem çözme süreçlerine matematiksel bir disiplin getirmektedir. Cifone, Hoda ve Noll (2023) tarafından yapılan kapsamlı literatür taraması, firmaların veri analitiği yeteneklerini Yalın süreçlere entegre ettiklerinde, operasyonel çeviklikte (agility) anlamlı bir artış sağladıklarını doğrulamaktadır. Buna ek olarak, Wamba, Queiroz ve Trinchera (2024), büyük veri analitiği yetkinliğinin tedarik zinciri esnekliği üzerindeki düzenleyici etkisini kanıtlamış ve veriye dayalı karar alma kültürünün, belirsizlik ortamlarında firmalara rekabet üstünlüğü sağladığını ortaya koymuştur.

2.2. Akıllı Kalite Yönetimi (SQM) ve Kültürel Dönüşüm

Teknolojik altyapı tek başına yeterli değildir. Literatürde **Kalite 4.0** olarak adlandırılan Akıllı Kalite Yönetimi (SQM), teknolojik bir yatırımdan ziyade kültürel ve operasyonel bir dönüşüm gerektirmektedir (Sony ve Naik, 2024). Geleneksel Kalite Yönetimi (TQM), süreçlerin standartlaştırılmasına odaklanırken; SQM, verilerin demokratize edilmesine ve kalitenin herkesin sorumluluğunda olduğu, veriye dayalı bir ekosisteme odaklanır. Bu dönüşümün başarısı için ön koşul, **veri bütünlüğünün** sağlanmasıdır; zira hatalı veya kirli veriye (dirty data) dayalı tahmin modelleri, operasyonel riski azaltmak yerine artırma potansiyeli taşımaktadır. Dolayısıyla yatırım stratejileri, sadece algoritma geliştirmeye değil, veri kalitesi, veri temizliği ve yönetişim süreçlerine odaklanmalıdır.

3. GIDA MÜHENDİSLİĞİ PERSPEKTİFİ: DETERMİNİSTİK VE İZLENEBİLİR KALİTE

Gıda güvenliği yönetim sistemlerinin temelini oluşturan HACCP (Tehlike Analizi ve Kritik Kontrol Noktaları), tarihsel olarak insan beyanına, manuel kayıtlara ve periyodik kontrollere bağımlı olmuştur. Bu durum, insan hatasına açık, manipüle edilebilir ve reaktif bir yapı doğurmaktadır.

3.1. HACCP Protokollerinin Otonomizasyonu ve Blokzincir Güvencesi

Yapay Zeka destekli HACCP sistemleri, Kritik Kontrol Noktalarından (CCP) gelen sıcaklık, nem, pH gibi süreç verilerini gerçek zamanlı izleyerek potansiyel tehlikeleri kritik limitlere ulaşmadan tespit etme yeteneğine sahiptir. Ancak dijitalleşen dünyada verinin sadece toplanması yetmez, güvenliği de en az verinin kendisi kadar kritiktir.

Kumar ve Tripathi (2024), gıda güvenliğinde **"değiştirilemez kayıtlar" (immutable records)** oluşturmak için Blokzincir (Blockchain) teknolojisinin HACCP süreçlerine entegre edilmesinin önemini vurgulamaktadır. Blokzincir, tedarik zincirindeki her bir adımın şifreli ve merkeziyetsiz bir defterde tutulmasını sağlayarak, geçmişe dönük veri manipülasyonunu imkansız kılar. Bu entegrasyon, gıda sahteciliğini (food fraud) önlemede ve tüketici güvenini sağlamada günümüzün en etkili yöntemi olarak kabul edilmektedir. Böylece gıda güvenliği yönetimi, olay sonrası müdahale gerektiren reaktif bir yapıdan, riskleri kaynağında engelleyen, şeffaf ve denetlenebilir proaktif bir sisteme dönüşmektedir.

3.2. Dijital İkizler, TinyML ve Raf Ömrü Tahmini

Nesnelerin İnterneti (IoT) ve Makine Öğrenimi (ML) teknolojilerindeki gelişmeler, ürün kalitesinin izlenmesinde devrim niteliğinde imkanlar sunmaktadır. Özellikle literatürde vurgulanan **"Gıda Dijital İkizleri"** (Food Digital Twins) (Defraeye et al., 2023), fiziksel ürünün sanal bir kopyasını oluşturarak, tedarik zinciri boyunca maruz kalabileceği sıcaklık dalgalanmalarının ürün kalitesi üzerindeki etkisini simüle etmeyi sağlar.

Ray (2024) tarafından yapılan incelemede, **TinyML** (Tiny Machine Learning) modelleri kullanılarak, karmaşık bulut sistemlerine ihtiyaç duymadan, sensör üzerindeki mikroçipte (on-edge) raf ömrü tahminlerinin yapılabildiği gösterilmiştir. Çalışmalar, bu yöntemle **%91,9** gibi yüksek doğruluk oranlarına ulaşıldığını ve kalite yönetiminde subjektif "gözle kontrol" döneminin kapandığını, yerini objektif verilere bıraktığını göstermektedir. Vaganan ve Wahi (2024) ise bu tür öngörücü mikrobiyoloji modellerinin gıda güvenliği risklerini minimize etmedeki rolünü bibliyometrik analizlerle desteklemektedir.

3.3. Tedarik Zinciri Canlılığı (Viability)

Tedarik zinciri görünürlüğü, sadece "ürün nerede?" sorusuna cevap vermek değildir; "ürün hangi koşullarda ve ne kadar güvende?" sorusunu yanıtlamaktır. Ivanov ve Dolgui (2024), **"Viable Supply**

Chain" modelinde, görünürlüğün ve dijital adaptasyonun, firmaların sadece kaliteyi korumalarını değil, aynı zamanda pandemi, doğal afet veya ekonomik krizler karşısında hayatta kalma yeteneklerini (viability) korumak için elzem olduğunu savunmaktadır. Duan ve Feng (2024) de tedarik zinciri verilerine dayalı risk değerlendirmesinin, gıda güvenliği performansını doğrudan etkilediğini ortaya koyarak bu görüşü desteklemektedir.

4.YÖNETİM MUHASEBESİ PERSPEKTİFİ: FİNANSAL DEĞERLEME VE STRATEJİ

Mühendislik tabanlı teknolojik dönüşümlerin kurumsal stratejide kalıcı yer bulabilmesi, yarattıkları değerin CFO'ların ve yatırımcıların anlayacağı finansal metriklere dönüştürülmesiyle mümkündür.

4.1. Kalite Maliyeti (COQ) Modelinin Yeniden Yapılandırılması

Dijital dönüşüm, Crosby ve Juran gibi öncülerden bu yana kullanılan geleneksel Kalite Maliyeti (COQ) modelinde köklü bir değişikliği zorunlu kılmaktadır. Geleneksel modelde "optimum kalite maliyeti" bir denge noktası olarak görülürken, yeni yaklaşımda hedef "Sıfır Hata"dır. Temel strateji, yüksek maliyetli ve öngörülemez **Başarısızlık Maliyetlerini** (iade, imha, itibar kaybı) minimize etmek amacıyla, **Önleme Maliyetlerine** (teknoloji, veri altyapısı) ayrılan bütçenin artırılmasıdır.

Psarommatis, May ve Azamfirei (2023) tarafından savunulan **"Sıfır Hatalı Üretim"** (Zero Defect Manufacturing) vizyonu, dijital önlemenin en nihayetinde en ucuz kalite yönetimi yöntemi olduğunu savunur. Ayrıca, Sardanelli, Ingenito ve Vronis (2024) bu tartışmayı bir adım öteye taşıyarak **"Yeşil Kalite" (Green Quality)** kavramını ortaya atmıştır. Bu çalışmaya göre, kalite hatalarının azaltılması (daha az hurda, daha az enerji israfı, daha az iade lojistiği), firmaların **Çevresel, Sosyal ve Yönetişim (ESG)** skorlarını doğrudan iyileştirmekte; yüksek ESG skorları ise firmaların sermaye maliyetlerini düşürerek finansal piyasalarda daha ucuza borçlanmalarını sağlamaktadır.

4.2. Yatırım Getirisi (ROI) ve Risk Minimizasyonu

Yapay Zeka yatırımlarının finansal getirisi hesaplanırken, sadece doğrudan maliyet tasarrufları (azalan işçilik vb.) değil, "kaçınılan maliyetler" (avoided costs) de hesaba katılmalıdır:

- **Operasyonel Verimlilik (Dahili Başarı):** Oye, Luther ve Emerson (2024) tarafından detaylandırılan Tahmine Dayalı Bakım (PdM) stratejileri, plansız duruşların (downtime) azaltılması ve Genel Ekipman Etkinliği (OEE) oranlarının artırılması yoluyla birim üretim maliyetlerini düşürmektedir.

- **Marka Değeri ve Risk (Harici Başarı):** Gıda geri çağırma (recall) operasyonlarının ortalama maliyeti milyonlarca doları bulabilmektedir. YZ destekli izlenebilirlik, bu riskin gerçekleşme olasılığını minimize eder.

Aşağıdaki tablo, bu dönüşümün finansal ve stratejik boyutlarını, destekleyici akademik kaynaklarla birlikte özetlemektedir.

Tablo 1: Yapay Zeka Destekli Kalite Maliyeti Dönüşümü ve Kaynak Analizi

KM Kategorisi	Geleneksel Yaklaşım	Dijital Dönüşüm Yaklaşımı	Finansal ve Stratejik Çıktı	Dayanak Kaynaklar

Önleme Maliyetleri	Periyodik eğitim, manuel prosedür yazımı.	Verialtyapısı, Blokzincir, IoT sensörleri ve YZ modellerine stratejik yatırım.	Sürdürülebilir uyumluluk, **ESG uyumu**, düşük sermaye maliyeti ve sistematik risk minimizasyonu.	Psarommatis et al. (2023); Sardanelli et al. (2024); Kumar & Tripathi (2024).
Değerlendirme Maliyetleri	Örneklem bazlı (sampling) manuel laboratuvar analizleri.	Otonom, sürekli (%100) ve gerçek zamanlı doğrulama sistemleri (TinyML).	İşgücü verimliliği artışı, analiz maliyetlerinde düşüş ve kaynak optimizasyonu.	Ray (2024); Defraeye et al. (2023); Romero et al. (2023).
Başarısızlık Maliyetleri	Yüksek fire oranları, müşteri şikayetleri ve kriz yönetimi giderleri.	Tahmine dayalı analitik ve erken uyarı sistemleri ile proaktif risk engelleme.	**FAVÖK (EBITDA) artışı**, nakit akışı istikrarı ve kurumsal itibarın korunması.	Oye et al. (2024); Zhang & Chen (2024); Ivanov & Dolgui (2024).

5. UYGULAMA ZORLUKLARI VE ÇÖZÜM ÖNERİLERİ

Bu dönüşüm süreci, yalnızca teknolojik bir yatırım değil, aynı zamanda ciddi yönetimsel zorlukları da beraberinde getirmektedir.

5.1. Veri Yönetişimi ve "Kirli Veri" Sorunu

Finansal raporlamanın güvenilirliği, artık operasyonel verilerin doğruluğu ile doğrudan ilişkilidir. Yapay Zeka algoritmalarının, stok değer düşüklüğü (impairment) veya raf ömrü dolan ürünlerin karşılık ayrılması gibi finansal kararları otonom olarak tetiklediği senaryolarda, bu algoritmaların denetimi **Finansal Raporlama Üzerindeki İç Kontrollerin (ICFR)** temel bir bileşeni haline gelmektedir. Zhang ve Chen (2024), finansal risk erken uyarı mekanizmalarının başarısının, veri setlerinin temizliğine ve homojenliğine bağlı olduğunu belirtmektedir. Çözüm olarak, veri giriş noktalarında "otomatik doğrulama" (auto-validation) protokollerinin devreye alınması önerilmektedir.

5.2. Siber Güvenlik ve "Kara Kutu" Riski

Otonom sistemlerin yaygınlaşması, siber güvenlik risklerini artırmaktadır. Özellikle Blokzincir tabanlı sistemlerde verinin değiştirilemez olması bir avantajken, sisteme ilk giren verinin doğruluğu (Oracle problem) kritik bir güvenlik açığı olabilir. Ayrıca, YZ modellerinin kararlarının açıklanabilir olmaması ("Black Box" sorunu), denetçiler ve düzenleyici kurumlar nezdinde güvensizlik yaratabilir. Xu ve arkadaşları (2025), **Açıklanabilir Yapay Zeka (XAI)** tekniklerinin kullanımının, Endüstri 5.0 kapsamında insan-makine güvenini tesis etmek için zorunlu olduğunu vurgulamaktadır.

5.3. Yetkinlik Açığı ve Kültürel Direnç

Teknolojik dönüşümün önündeki en büyük engel genellikle teknik değil, beşeridir. Romero ve arkadaşları (2023), "Operatör 4.0" vizyonunun hayata geçmesi için, çalışanların sadece teknolojiyi kullanan değil, onu denetleyen ve geliştiren bir yetkinlik setine (upskilling) sahip olması gerektiğini belirtir. Bu bağlamda, organizasyonların teknoloji yatırımı kadar "dijital okuryazarlık" eğitimlerine de bütçe ayırması stratejik bir zorunluluktur.

6. SONUÇ

Bu çalışma, süreç mükemmelliğinin geleceğinin, operasyonel verilerin eş zamanlı olarak finansal veri niteliği taşıdığı, mühendislik ve finansın aynı dili konuştuğu entegre bir yönetim modelinde yattığını ortaya koymaktadır.

Yapay Zeka destekli Yalın (Kaizen 4.0) yaklaşımı operasyonel verimliliği optimize ederek israfı yok ederken; **Akıllı Kalite Yönetimi (SQM)**, kalite fonksiyonunu bir maliyet merkezi olmaktan çıkarıp stratejik bir rekabet avantajına ve ESG performans göstergesine dönüştürmektedir.

Elde edilen bulgular ışığında, geleceğin organizasyonları için şu iki temel disiplinler arası işbirliği zorunlu görülmektedir:

1)Operasyonel Yönetim için: Tamamen otonom sistemler yerine, insan sezgisi ile yapay zeka analitiğini sentezleyen, **hibrit ve insan odaklı (Endüstri 5.0)** karar alma mekanizmalarına odaklanılmalıdır.

2) Finansal Yönetim için: Veri yönetişimi bir "BT sorunu" olarak değil, stratejik bir "sermaye yatırımı" olarak değerlendirilmelidir. Zira hatalı veriye dayalı stratejiler, dijital çağın en büyük ve en sinsi finansal riskini oluşturmaktadır.

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GOVERNANCE SUSTAINABILITY AND GREEN INNOVATION IN WEST AFRICA

Gbenga Festus BABARINDE

Ph.D., Department of Banking and Finance, Modibbo Adama University, Yola, Adamwa State, Nigeria
E-mail: liftedfgb@gmail.com
ORCID ID: 0000-0002-5613-9883

Charles Adefikayo JIMOH

Ph.D., Department of Business Administration, Faculty of Management and Social Sciences, Thomas Adewumi University Oko, Kwara State, Nigeria
E-mail: jimoh.charles@tau.edu.ng
ORCID ID: 0000-

Tajudeen Idera ABDULMAJEED

Ph.D., Department of Banking and Finance, University of Abuja, Federal Capital Territory, Nigeria,
E-mail: abdulmajeed.idera@uniabuja.edu.ng
ORCID ID: 0000-0002-5661-2570

Bashir Mohammed ABDULLAHI

M.Sc., Department of Banking and Finance, University of Abuja, Federal Capital Territory, Nigeria,
E-mail: bashir.abudilahi@uniabuja.edu.ng
ORCID ID: 0000-0002-7048-7120

Abstract

In this study, governance sustainability, approached from the angle of the six-dimensional Worldwide Governance Indicators (control of corruption, political stability, regulatory quality, rule of law, government effectiveness, and voice and accountability) was examined vis-à-vis its relationship with green innovation (proxied by renewable energy consumption as a percent of total green energy consumption) in all the 16 West African countries between 1996 and 2024. The panel data obtained from Worldwide Governance Indicators and World Development Indicators were analysed using Pearson correlation test and Toda-Yamamoto causality technique. Findings from the Pearson correlation test indicates the existence of a positive relationship between governance sustainability and green innovation in West Africa. Furthermore, Toda-Yamamoto causality analysis reveals the existence of a unidirectional causality flowing from rule of law, and voice and accountability to green innovation in West Africa. The study therefore concludes that governance sustainability is pivotal to improving green innovation in West Africa. The study emphasizes the need for West Africa sub-region to improve its public governance structure, particularly its rule of law, and voice and accountability, in order to enhance its green innovation.

Keywords: Governance sustainability, green innovation, sustainable finance

INTRODUCTION

Green innovation is at the heart of the global goals, called Sustainable Development Goals (SDG), particularly part of goal 9 and goal 13 (...fostering innovation; and combating climate change). Greening is a global agenda considering the devastating effect of global warming and as a result, government of the world through various policies and programmes findings ways to reducing the negative effect of environmental degradation, particularly, pollution. One particular approach to improving the

environment is through greening initiative, particularly, green innovation. Fernando and Wah (2017) observed that green innovation serves as a strategic tool that allows organizations to harmonize competitiveness with environmental responsibility. This frames green innovation not merely as a corporate social responsibility effort but as a means of achieving sustained competitive advantage in increasingly environmentally aware markets. Green innovation pertains to the creation of new products, processes, services, or practices that lessen environmental impact while preserving or enhancing economic performance.

Sustainability is based on the notion of using the present resources with the future implications in mind, such that the future needs are not shortchanged. It involves the pursuit of long-term value by integrating environmental, social and governance considerations in economic, financial and other value-adding decisions making. Sustainability is multi-dimensional: economic, environmental, social, and governance. Governance as an aspect of sustainability, can be described as the operation of the governance framework in such a way that the future capacity is not jeopardized while long-term values are created. Governance sustainability could be viewed from either corporate or public governance perspectives. Corporate governance sustainability is regarded as the operation, control and direction of corporate affairs with an intention of creating long term value for the organization, the environment and the society at large. On the other hands, public governance sustainability is the operation, control and direction of public affairs with an intention of creating long term value for the people, the environment and the society at large without jeopardizing the future capacity.

Public governance, according to the World Bank is a six-dimensional concept consisting of voice and accountability, government effectiveness, regulatory quality, rule of law, control of corruption, political stability and absence of violence. Public governance can be made sustainable by operating the different dimensions of public governance in a manner to attain sustained and long-term objective. One of these objectives is green innovation, which involves creation of new products and services that is capable of improving the environment. It can also involves use of natural resources in an innovative way to improve environmental quality, for example the consumption of renewable energy consumption thereby facilitating greening of the environment.

Considering the foregoing, this study therefore aims to investigate causal relationship between governance sustainability and green innovation in West African countries between 1996 and 2024.Specifically, the study aims to:

i. Examine the causality between rule of law and green innovation in West Africa;

ii. Assess the causality between political stability and green innovation in West Africa;

iii. Investigate the causality between control of corruption and green innovation in West Africa;

iv. Determine the causality between voice and accountability and green innovation in West Africa;

v. Examine the causality between regulatory quality and green innovation in West Africa; and

vi. Evaluate the causality between government effectiveness and green innovation in West Africa.

LITERATURE REVIEW

Conceptual Review

Concept of Green Innovation

Green innovation has become a pivotal concept in sustainability studies, especially in developing nations like Nigeria and other West African countries. Green innovation, also known as eco-innovation or environmental innovation, involves the creation and application of novel products, processes, services, or organizational practices that mitigate environmental damage while providing economic and social advantages (Nwagu, 2024). Green innovation signifies the launch of new or substantially enhanced products, processes, managerial practices, or services that concurrently diminish environmental impact and improve economic outcomes (Johnson & Adebisi, 2024). In essence, green innovation transcends mere technological modifications; it includes organizational, financial, and marketing aspects that weave environmental awareness into corporate strategy. In contrast to conventional innovations, which focus on market performance and efficiency, green innovations incorporate sustainability goals such as resource efficiency, waste reduction, carbon footprint minimization, and the adoption of renewable energy sources (Onyeneke & Nnonyelu, 2025). Abubakar et al. (2022) characterized green innovation as an 'innovation process with both ecological and economic benefits,' underscoring its dual objectives.

Researchers have delineated various aspects of green innovation that companies may implement: Green product innovation, which centers on creating products that are energy-efficient, recyclable, biodegradable, or less detrimental to the environment (Chen, 2008); green process innovation, which focuses on altering production methods to minimize waste, emissions, and energy usage (Chiou et al., 2011); green organizational/management innovation, which entails the introduction of policies, strategies, and frameworks that integrate environmental accountability into corporate culture (Xie et al., 2016); and lastly, green marketing innovation, which seeks to promote products and brands with environmentally friendly characteristics to attract consumers who are environmentally aware (Dangelico & Vocalelli, 2017).\

Aside the organizational perspective to green innovation, there is also the national perspective to green innovation. This study examines green innovation from this angle by viewing green innovation from energy consumption pattern which discounts the environmental implication into it. Hence, the use of renewable energy consumption, the use of energy that promotes environmental benefits in the aspect if greening. This is considered innovative in that the use of this kind of energy source does not result in environmental degradation cause of environmental pollution, that is air, water, land pollution.

Concept of Governance Indicators

The notion of governance indicators has attracted considerable interest in modern development discussions, as they offer measurable proxies for evaluating the quality and effectiveness of Governance frameworks across countries, regions, and institutions. Governance, as broadly articulated by the World Bank, encompasses the traditions and institutions through which authority is exercised within a nation, including the processes by which governments are selected and replaced, their ability to devise and execute policies, and the respect that citizens and the state have for the institutions that regulate economic and social interactions (World Bank, 2023).

Consequently, governance indicators translate these dimensions into quantifiable metrics that facilitate comparative and longitudinal studies. The most widely acknowledged framework is the Worldwide Governance Indicators (WGI) established by Kaufmann, Kraay, and Mastruzzi, which includes six principal dimensions: voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law, and control of corruption (World Bank, 2023). Explaining each of these dimensions, Kaufmann et al. (2011), asserts that voice and accountability and political

stability and absence of violence/terrorism are involved in the process by which governments are selected, monitored, and replaced encompasses. Voice and accountability captures the perceptions of the extent to which a country's citizens can participate in selecting their government, as well as freedom of expression, freedom of association, and a free media. Political stability and absence of violence/terrorism refers to the perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically-motivated violence and terrorism.

Furthermore, government effectiveness and regulatory quality are two governance dimensions that relate to the capacity of the government to effectively formulate and implement sound policies. Government effectiveness captures the perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. Regulatory quality, however, captures the perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development (Kaufmann et al., 2011).

Rule of law and control of corruption are two governance dimensions that bothers on the respect of citizens and the state for the institutions that govern economic and social interactions among them is indicated by. Rule of law is the perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence. Control of corruption captures the perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as 'capture' of the state by elites and private interests (Kaufmann et al., 2011).

Theoretical Framework

The Resource-Based View (RBV) proposed by Barney (1991) suggests that green innovation can yield unique, valuable, and inimitable resources that serve as the foundation for competitive advantage (Barney, 1991). For example, the adoption of green technologies can set firms apart in markets characterized by a strong demand for sustainability. Conversely, Institutional Theory, as articulated by DiMaggio and Powell (1983), asserts that firms are compelled to embrace green innovation due to regulatory frameworks, societal expectations, and pressures from stakeholders (DiMaggio & Powell, 1983). This is especially pertinent in situations where governments impose environmental regulations.

Empirical Review

Johnson and Adebisi (2024) performed a survey involving 151 managers from a multinational corporation located in Lagos, discovering that green innovation is a significant predictor of both environmental success and competitive advantage. The regression analysis results demonstrated that green innovation positively impacts environmental outcomes and competitive advantage, with competitive advantage serving as a mediator in the relationship between green innovation and environmental success. This finding empirically supports the notion of green innovation as a strategic resource that enhances the environmental and market performance of firms in Nigeria.

In a similar vein, Nwagu (2024) conducted a survey of 370 employees from multinational companies in South-West Nigeria, revealing that green product and marketing innovations have a positive effect on economic sustainability, whereas green process and organizational innovations exhibited negative

coefficients. These findings imply that while green innovation contributes to sustainability, not all aspects are equally advantageous in the short term, and challenges in implementation may impede the effectiveness of process and organizational innovations.

In the context of the Nigerian construction industry, Soji et al. (2024) utilized a Delphi survey targeting industry experts to identify and validate the competencies necessary for the adoption of green innovation. Their research identified four essential competency dimensions: social, environmental, economic, and technical, which practitioners deemed crucial for sustainable construction. This consensus among experts emphasizes the contextual necessity for multi-dimensional skills and competencies as facilitators of green innovation within Nigeria's built environment.

From a financial performance standpoint, Ibrahim and Ibrahim (2024) proposed a conceptual model that investigates the moderating role of environmental costs in the relationship between green innovation and firm performance within Nigerian consumer goods companies. Although the model is primarily conceptual, it highlights the significance of financial factors in assessing the effectiveness of green innovation and advocates for additional empirical research in Nigeria's manufacturing sector.

At the small and medium enterprises (SME) level, Onyeneke and Nnonyelu (2025) conducted a survey involving 325 managers of small and medium enterprises in Anambra State, revealing that the adoption of green practices was notably low. The primary obstacles identified were financial limitations, insufficient technical expertise, and inadequate regulatory enforcement. These findings suggest that, although larger firms and multinational corporations in Nigeria are embracing green innovation to enhance sustainability and competitiveness, SMEs are still confronted with considerable challenges that hinder their participation in green practices.

In a related study, Adeyokunnu et al. (2025) explored green innovation among SMEs in Lagos State, underscoring the importance of entrepreneurial initiatives, green financing, and sustainable practices in bolstering SME competitiveness. This research highlights the crucial role of GI in establishing market advantages within environments constrained by resources.

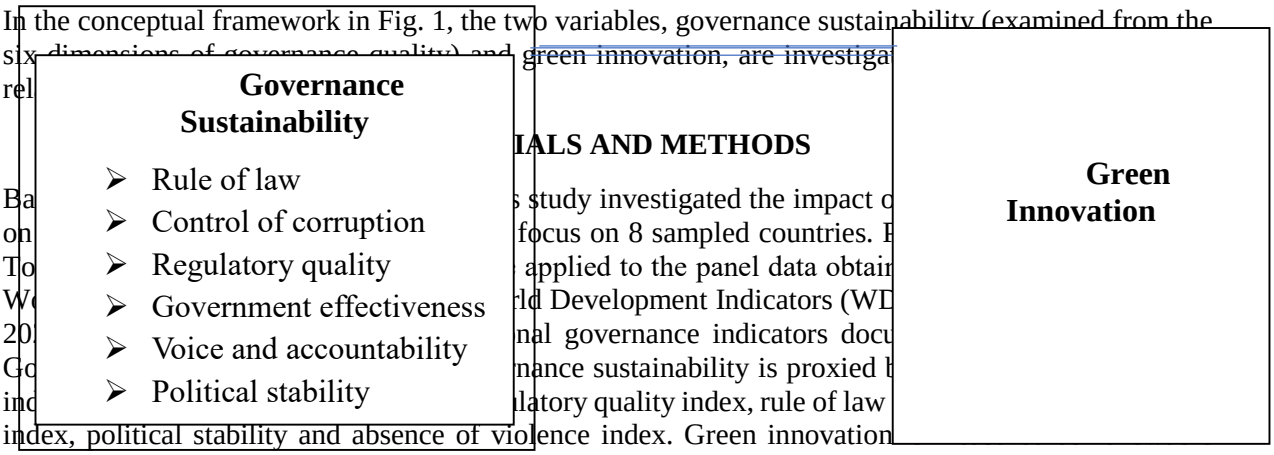
Likewise, Wilson-Oshilim and Omoye (2025) examined the relationship between green knowledge, product, process, and management innovation and SME performance. Their results indicated that while green knowledge did not have a significant impact, innovations in green products, processes, and management each positively and significantly influenced performance, thereby confirming the multifaceted nature of green innovation.

The review of literature clearly shows that most past studies evaluated green innovation from organizational perspective, relating the concept to organizational performance. There is scarcity of studies on the link between green innovation and governance sustainability, particularly the ones examined from the national or public perspective. Hence, the need for this study that focuses on national green innovation and public governance sustainability performance.

Conceptual Framework

The conceptual framework for the study is as depicted in Fig. 1.

Fig 1: Conceptual Framework on Governance Sustainability and Green Innovation



In the conceptual framework in Fig. 1, the two variables, governance sustainability (examined from the six dimensions of governance quality) and green innovation, are investiga
rel

IALS AND METHODS

Ba s study investigated the impact o
on focus on 8 sampled countries. F
To applied to the panel data obtai
W rld Development Indicators (WD
20 nal governance indicators docu
Go nance sustainability is proxied b
inc latory quality index, rule of law
index, political stability and absence of violence index. Green innovation
energy consumption (% of total final energy consumption) (Babarinde et al., 2025).

The functional relationship between governance sustainability and green innovations is specified in equation (1).

$$GRIN_{it} = \beta_0 + \beta_1 ROL_{it} + \beta_2 PST_{it} + \beta_3 COC_{it} + \beta_4 VAC_{it} + \beta_5 REQ_{it} + \beta_6 GEF_{it} + e_{it} \quad (1)$$

Where: GRIN=Green innovation; ROL=Rule of law; PST=Political stability; COC=Control of corruption; VAC=Voice and accountability; REQ=Regulatory quality; GEF=Government effectiveness; e =error term; i=cross sectional unit in countries; t=time in years, 1996-2024; β_0 is the intercept of the model while $\beta_1 - \beta_6$ are the parameters of the model.

FINDINGS

Correlation Analysis

Table 1 presents the result of the Pearson correlation test of relationship between governance sustainability and green innovation in West Africa.

Table 1: Correlation Matrix

	GRIN	COC	GEF	PST	REQ	ROL	VAC
GRIN	1.0000						

COC	0.0835	1.0000					
	0.0722	-----					

GEF	0.0334	0.7017	1.0000				
	0.4724	0.0000	-----				
PST	0.0792	0.6965	0.6197	1.0000			
	0.0882	0.0000	0.0000	-----			
REQ	0.0066	0.7874	0.5577	0.8083	1.0000		
	0.8870	0.0000	0.0000	0.0000	-----		
ROL	0.1367	0.7473	0.6215	0.6962	0.8031	1.0000	
	0.0032	0.0000	0.0000	0.0000	0.0000	-----	
VAC	0.0496	0.6305	0.6188	0.7994	0.6904	0.6292	1.0000
	0.2858	0.0000	0.0000	0.0000	0.0000	0.0000	-----

Evidence from Pearson correlation test in Table 2 indicates that all the six governance indicators (control of corruption, political stability, regulatory quality, rule of law, government effectiveness, and voice and accountability) are positively correlated with green innovation in West Africa but only regulatory quality, government effectiveness, and voice and accountability are statistically significant.

Optimal Lag Selection

As a necessary condition for Toda-Yamamot causality test to determine the optimum lag for the model, the Vector Autoregressive (VAR) lag order selection criteria test was conducted and the result reported in Table 2.

Table 2: VAR Lag Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	3818.372	NA	3.31e-19	-22.68674	-22.60722	-22.65504
1	5414.567	3116.380	3.31e-23	-31.89623	-31.26005	-31.64263
2	5623.425	399.0692	1.28e-23	-32.84777	-31.65492	-32.37227
3	5767.410	269.1141	7.28e-24	-33.41315	-31.66365	-32.71575
4	5917.814	274.8455	3.99e-24	-34.01675	-31.71058*	-33.09745
5	6057.853	250.0703	2.33e-24	-34.55865	-31.69582	-33.41745
6	6138.606	140.8369	1.93e-24	-34.74766	-31.32816	-33.38455
7	6258.059	203.3537	1.28e-24	-35.16702	-31.19086	-33.58201
8	6409.627	251.7112*	6.99e-25*	35.77754*	-31.24472	-33.97063*

* indicates lag order selected by the criterion

LR: sequential modified LR test statistic (each test at 5% level)

FPE: Final prediction error

AIC: Akaike information criterion

SC: Schwarz information criterion

HQ: Hannan-Quinn information criterion

Panel Unit Root Test

To be able to ascertain the maximum lag length for the Toda-Yamamoto causality equation, unit root test (Levin, Lin & Chu t) was conducted and the result reported in Table 3.

Table 3: Levin, Lin & Chu t (LLC) Panel Unit Root Test

Variable	Test Stat. in Level		Test Stat. at 1st Difference		Integration Order
	LLC Statistics	**Prob.**	**LLC Statistics**	**Prob.**	**I(d)**
GRIN	-3.15624	0.0008			I(0)
COC	-1.80763	0.0353			I(0)
GEF	-0.14342	0.4430	-6.74954	0.0000	I(1)
PST	-3.03838	0.0012			I(0)
REQ	-3.46044	0.0003			I(0)
ROL	-2.90965	0.0018			I(0)
VAC	-4.48531	0.0000			I(0)

Table 3 reports that except government effectiveness which is integrated of order one, all other variables (green innovation, control of corruption, political stability, regulatory quality, rule of law, and voice and accountability) are integrated of order zero. Given that the maximum order of integration is one, then the maximum order of integration for the Toda-Yamamoto causality test is two (integration order plus 1).

Causality Test

Table 4 reports the result of the Toda-Yamamoto causality test.

Table 4: Toda-Yamamoto Causality Test

Dependent variable: GRIN				**Dependent variable: REQ**		
Excluded	**Chi-square**	**d**	**Prob.**	**Excluded**	**Chi-square**	**Prob.**
COC	6.520610	8	0.5891	GRIN	3.895884	0.8664
GEF	9.238007	8	0.3226	COC	7.225100	0.5126
PST	9.528073	8	0.2997	GEF	17.58255	0.0246

REQ	1.358958	8	0.9948	PST	59.67722	0.0000
ROL	18.80822	8	0.0159	ROL	47.16027	0.0000
VAC	17.21025	8	0.0280	VAC	8.061937	0.4274
Dependent variable: COC				**Dependent variable: ROL**		
Excluded	**Chi-square**	**d**	**Prob.**	**Excluded**	**Chi-square**	**Prob.**
GRIN	5.204954	8	0.7355	GRIN	2.860040	0.9428
GEF	34.45901	8	0.0000	COC	10.66017	0.2217
PST	52.01348	8	0.0000	GEF	24.73841	0.0017
REQ	74.49116	8	0.0000	PST	35.91486	0.0000
ROL	40.31371	8	0.0000	REQ	63.13633	0.0000
VAC	16.21348	8	0.0394	VAC	8.363283	0.3988
Dependent variable: GEF				**Dependent variable: VAC**		
Excluded	**Chi-square**	**D**	**Prob.**	**Excluded**	**Chi-square**	**Prob.**
GRIN	1.803810	8	0.9864	GRIN	7.473456	0.4865
COC	15.34390	8	0.0528	COC	11.06878	0.1978
PST	48.46921	8	0.0000	GEF	51.13719	0.0000
REQ	61.65048	8	0.0000	PST	56.10367	0.0000
ROL	40.64362	8	0.0000	REQ	55.42016	0.0000
VAC	33.41484	8	0.0001	ROL	41.76272	0.0000
Dependent variable: PST						
Excluded	**Chi-square**	**D**	**Prob.**			
GRIN	2.658011	8	0.9540			
COC	12.40373	8	0.1341			
GEF	33.28503	8	0.0001			
REQ	70.66207	8	0.0000			
ROL	44.31977	8	0.0000			
VAC	26.86470	8	0.0007			

The result of the Toda-Yamamoto causality test (otherwise called VAR Granger Causality/Block Exogeneity Wald test) as reported in Table 4 in that there is a unidirectional causality running from rule of law, and voice and accountability to green innovation in West Africa. This means that out of the six indicators of governance sustainability, only two (rule of law, and voice and accountability) were found to be drivers of green innovation in West Africa.

DISCUSSION AND CONCLUSION

In this study, governance sustainability was examined vis-à-vis its relationship with green innovation in all the 16 West African countries between 1996 and 2024 using Pearson correlation test and Toda-Yamamoto technique. The study found that there is a positive relationship between governance sustainability and green innovation in West Africa. Further, there is a unidirectional causality flowing from rule of law, and voice and accountability to green innovation in West Africa.

The study therefore concludes that governance sustainability is pivotal to improving green innovation in West Africa. This emphasizes the need for West Africa sub-region to improve its public governance structure, particularly its rule of law, and voice and accountability, in order to enhance its green innovation.

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FINANCIAL INCLUSION: INTRODUCTION AND OVERVIEW

Dr. Ramzi Abdullah Ahmed Hassan
Assistant Professor - University of the Holy Quran and Islamic Sciences - Hadhramaut, Yemen
captinrmzy@uqs-ye.info

Abstract

Financial inclusion has emerged as a critical pillar for promoting inclusive economic growth, reducing poverty, and ensuring social equity. This paper examines the global initiatives undertaken by governments, international institutions, and financial regulators to bridge the financial gap and expand access to essential financial services, such as savings, credit, insurance, and digital payments, to underserved populations. Drawing on a wide range of country case studies, including Kenya, Jordan, Brazil, the Philippines, and others, the study highlights how innovative tools like mobile banking, agent banking, and digital finance platforms have helped reach remote and low-income communities. The research also underscores the role of coordinated national strategies, regulatory reforms, and financial education in advancing inclusion, particularly for women, youth, refugees, and micro-enterprises. Despite the progress made, significant barriers remain, including a lack of awareness, limited digital infrastructure, and socio-economic inequalities. The paper concludes by advocating for evidence-based policies, stronger public-private partnerships, and the integration of financial inclusion into broader sustainable development frameworks. By learning from global best practices, countries can build resilient, inclusive financial ecosystems that empower individuals and drive long-term economic prosperity.

Keywords: *Financial Inclusion, Economic Growth, Poverty Reduction, Financial Literacy, Digital Financial Services, Mobile Banking, Financial Exclusion, Sustainable Development Goals*

Introduction

The basic tenet of financial inclusion is to offer affordable banking services to low-income and underprivileged populations. For individuals who are now excluded, this includes simple access to credit, insurance, payments, and transfers via the official financial system. When everyone in society has access to formal financial services, regardless of income level, this is known as financial inclusion. It includes a variety of financial services, including insurance, equity products, and pension plans, in addition to banking services. The phrase "inclusion" highlights the need for these services to be accessible to all community members, guaranteeing equitable and reasonably priced access to financial services.

Financial exclusion, on the other hand, is a relatively recent idea that was introduced in 1994. This idea describes people's incapacity to get or utilise financial items that enable them to engage in a variety of everyday activities. Low-paid people, the unemployed, the elderly, young people not engaged in school or vocational training, and people with physical disabilities are among the social categories most at risk of financial exclusion. Concerns and perceptions of the restricted physical access to banking services brought about by bank branch closures led to the creation of the phrase "financial exclusion." The phrase started to be used more broadly in 1999 to refer to those who had little access to traditional financial institutions. Research on the barriers that some groups of people have when trying to use contemporary payment methods, other banking services, consumer credit, and insurance has also grown.

Issue Definition

Despite significant advancements in global financial systems, a large portion of the world's population, especially those in low-income, marginalised, and rural communities, remains excluded from formal financial services. This exclusion limits their ability to save, invest, manage risks, and access credit, thereby constraining economic growth, increasing poverty, and widening social inequalities. The challenge lies in designing and implementing effective frameworks, policies, and innovative solutions that ensure affordable, accessible, and sustainable financial services for all.

Research Objectives

1. To analyse the global frameworks and initiatives aimed at promoting financial inclusion in developing and developed countries.
2. To examine the socio-economic benefits of financial inclusion, including poverty reduction, empowerment of women, and economic stability.
3. To identify the barriers and challenges that hinder financial inclusion, such as infrastructural limitations, regulatory gaps, and socio-cultural factors.
4. To evaluate innovative financial tools and delivery channels, such as digital finance, mobile banking, and agent banking, in expanding access to underserved populations.
5. To propose evidence-based policy recommendations for governments, regulators, and financial institutions to foster inclusive financial ecosystems aligned with sustainable development goals.

Research Questions

1. What are the key global initiatives and national strategies implemented to advance financial inclusion?
2. How does financial inclusion contribute to poverty alleviation, economic growth, and social empowerment?
3. What are the main challenges and barriers faced by marginalised groups in accessing formal financial services?
4. How effective are digital financial services and agent banking models in increasing financial access in remote and underserved areas?
5. What policy and regulatory measures can best support the expansion and sustainability of financial inclusion initiatives?

Literature Review

Kashif Iqbal (2021) has published his work on "Modelling Relationship between Financial and Social Inclusion" in the Centre for Management Studies, Jamia Millia Islamia in 2021. Kashif aimed to investigate the connections between financial and social inclusion in India. The research employed multistage random sampling to gather data from 601 respondents through a structured questionnaire, with 300 respondents coming from Bihar and 301 from Delhi. The findings indicated a significant relationship between financial and social inclusion and identified the dimensions of this relationship. However, the small sample size of 601 may limit the generalisability of the results, and Iqbal recommends that future studies use a larger sample size to strengthen the reliability of the findings.

Naveen (2014) has published his work on "Micro-Finance and Financial Inclusion – A Case Study of Mysore and Chamarajanagar Districts" at the University of Mysore in 2014. Naveen's study examined the function of micro-finance organisations in enabling financial inclusion for the underprivileged. These institutions offer a range of products, including micro-credit, micro-savings, micro-insurance and micro-finance training to meet the diverse needs of their clients. The researcher

found that micro-finance institutions can help bridge the gap between exclusion and inclusion in access to financial services and reduce reliance on informal, costly borrowing sources. Additionally, the study found that savings can help mitigate the impact of economic shocks and absorb severe shocks. As a result, the researcher recommended that the government encourage banks to promote financial inclusion through advertising, financial assistance and awareness programs to achieve inclusive growth in India.

K. Thirumamagal (2016) has published his work on "Issues and Challenges of Financial Inclusion – A Study Concerning Rural Areas in Tamil Nadu" University of Madras in 2016. The study examined the problems faced by financial institutions in implementing financial inclusion, including stagnant banking services, technological issues, inadequate infrastructure and changing regulatory policies. The research also identified measures banks should take to promote inclusive growth and discussed linking individuals' income-generating activities to banking transactions through multiple channels. The government's decentralisation approach to financial inclusion, which involves banks and other financial institutions, was also discussed to promote financial inclusion for all individuals. Overall, the study concluded that the primary goal of financial inclusion is to ensure that all individuals have access to financial services.

Garg (2019) has published his work on "Financial Inclusion of Urban Poor in India with Special Reference to Delhi Slums" at Maharshi Dayanand University in 2019. The main objective of the study was to examine the level of financial inclusion among slum dwellers in Delhi and to identify any challenges faced by commercial banks in achieving financial inclusion in these communities. The study results showed a significant increase in commercial banks in both urban and rural areas in India over the years. However, the researchers recommend that similar studies be conducted in other states to validate the findings of this study and facilitate the generalisation of the results. This research aimed to improve the financial inclusion of marginalised communities in India, particularly in Delhi's slums.

Methodology

This study adopts a conceptual and comparative research methodology combined with case-based analysis to explore the multifaceted dimensions of financial inclusion globally. The research is primarily qualitative, drawing upon existing literature, policy documents, international reports, and empirical studies to develop a comprehensive understanding of financial inclusion frameworks, challenges, and socio-economic impacts.

Conceptual Analysis:

The study first establishes a theoretical foundation by reviewing key definitions, goals, and frameworks of financial inclusion from academic and institutional sources. It synthesises various theories and models related to financial access, inclusion policies, and economic development.

Comparative Approach:

The research compares different national and international financial inclusion initiatives, highlighting variations in strategies, implementation, and outcomes. This comparative analysis includes examples from countries such as Kenya, Mexico, Jordan, the Philippines, Nigeria, and others, illustrating diverse approaches to expanding financial access.

Case-Based Analysis:

Specific case studies are examined to illustrate the practical application of financial inclusion policies and innovations. These include Kenya's agency banking system, the UK's Post Office Current Account scheme, and Jordan's national financial inclusion strategy. The cases provide insights into effective mechanisms, challenges encountered, and lessons learned.

Data Sources:

Secondary data is collected from global databases such as the Global Findex, World Bank reports, IMF publications, and peer-reviewed articles. This data supports the evaluation of progress in financial inclusion and the identification of gaps in access.

Limitations:

While the study provides broad insights, it relies on secondary data and published case studies, which may limit the depth of localised or real-time analysis. Future research could incorporate primary data collection to enhance empirical robustness. This mixed methodological approach allows for a rich, contextual understanding of financial inclusion efforts across different socio-economic environments, providing a basis for informed policy recommendations.

Background of the Study

Financial Development and Economy

An entrepreneurial spirit can be encouraged among the populace by offering formal credit alternatives and guaranteeing sufficient and transparent credit availability through financial institutions and conventional channels, which will boost output and wealth in the nation. As a result, unbanked people will be less reliant on unofficial funding sources, including loans from friends, family, and moneylenders. In 90% of economies, the primary financial regulator is in charge of at least some components of the financial inclusion agenda, according to Financial Access's 2010 CGAP study. However, financial authorities in low- and middle-income nations are more likely to concentrate on promoting access to deposit and credit services.

Sharma (2014) asserts that, based on each nation's degree of development, different areas have varied interpretations of economic progress. Every nation prioritises economic growth and employs different strategies based on its unique situation. In order to prevent a product or program from failing, economic growth must be inclusive and beneficial to all members of society. The usage of electronic bill payment methods and digital channels may be viewed as a type of financial exclusion in industrialised nations. However, in developing countries, where the financial sector does not offer sophisticated services, this perspective may not be valid. As a result, it is difficult to compare nations based on economic development, and care should be taken. A key element of total economic growth and an important factor in an economy's development is financial development.

Promoting Global Financial Literacy

With the help of OECD/INFE, the World Bank, and G20 nations have been actively promoting financial inclusion and financial literacy among people worldwide since 2010. 515 million adults globally opened a bank account between 2014 and 2017, according to the Findex 2017 study. Nonetheless, 1.7 billion adults are still unbanked, out of the 2 billion people who lack access to banking globally. Interestingly, women make up 56% of the unbanked population.

Approximately 38% of bank accounts in India, although over 80% of people have one, are not active. Therefore, it is essential to create a comprehensive financial system that gives the underprivileged segments of society the ability to easily engage in personal financial planning activities while fostering confidence and trust. The underprivileged should have their needs met by updating and customising this system.

However, financial inclusion is not ensured by merely opening a bank account. Encouraging the underprivileged population to use the formal financial system for financial services and establishing and maintaining banking habits are the real challenges. Dhillon (2019) highlights the significance of giving

low-income households basic financial education and information. They must have access to trustworthy investment sources that can yield future returns, concentrate on building wealth through prudent saving, and comprehend the risks involved in the financial industry.

Poor people should have access to funds that are solely intended for future use as part of the financial system's contingency planning sector, which is where financial inclusion operates. It has been noted that merely enhancing one's lifestyle through financial inclusion is insufficient; people also need to have the right tools and resources to properly plan for their later years. Many impoverished people are unaware of retirement planning and lack the requisite expertise. Therefore, it is crucial to offer them reasonably priced retirement plans to guarantee they obtain beneficial returns in their later years.

Financial Inclusion

In recent years, financial inclusion has gained a lot of attention, particularly when it comes to fostering economic growth and lowering poverty. In essence, it entails making sure that a range of financial services and products, such as credit, insurance, savings accounts, and payment systems, are easily and reasonably accessible to both individuals and enterprises. Nonetheless, the notion of financial inclusion is multifaceted and subject to several interpretations. We will examine several definitions, conceptualisations, and viewpoints regarding financial inclusion in this conversation.

All societal segments must be included in the financial sector and have equitable access to banking and other financial services, according to Bhagwandas (2018).Universal access to a variety of financial services at affordable prices, including equity and insurance products, is referred to as financial inclusion. The World Bank defines financial inclusion as the availability of practical, reasonably priced financial services and products that satisfy the needs of people and enterprises, including credit, insurance, savings, payments, and transactions, and that are provided ethically and sustainably.

Established financial institutions effectively and transparently carry out the goal of providing accessible and affordable financial products and services to economically disadvantaged, underserved, underprivileged, and below-poverty vulnerable groups in compliance with the guidelines established by the RBI.

Ahmed Al-Bakle claims that a broad range of excellent public financial services and products are included in financial inclusion. Payments, current and savings accounts, transfers, credit, loans, financing, insurance, and more are all included in this category. Regulations supporting these services and goods are designed to increase their accessibility and use by all societal groups. The goal of financial inclusion is to offer these services and goods in a timely, equitable, transparent, affordable, and suitable quality manner. It should be customised to fit each person's demands and guarantee efficient use. These services must be provided responsibly, sustainably, and in accordance with the relevant legal and regulatory framework via the official financial system channels.

According to Priyanka Sharma, financial inclusion is the process of making sure that everyone in an economy can easily access, use, and utilise the official financial system. According to Lakhwinder Kaur Dhillon's research, financial inclusion is a system that provides banking services to a larger percentage of low-income and disadvantaged populations at a fair and accessible price. According to The Rangarajan Committee (2008), "the process of ensuring access to financial services and timely and adequate credit needed by vulnerable groups such as weaker segments and low-income groups at an affordable cost" is the definition of an inclusive financial system, also referred to as financial inclusion.

"A financial sector that provides credit to all bankable people and firms, as well as savings and payment services to everyone" is how the UN defines financial inclusion. While not everyone must be able to use all services for inclusive finance, they should have the option to do so if they so choose.(Raihanath & Pavithran, 2019) According to ADB (2000), financial inclusion offers low-income

and impoverished households and their microbusinesses a wide range of financial services, including deposits, loans, payment services, money transfers, and insurance.(Lin et al., 2023)

Renuka Bacharaju defines financial inclusion as giving vulnerable groups, such as those in lower-income and weaker segments, timely access to financial services and reasonably priced credit. Making banking services accessible to all people in order to satisfy their demands for credit, savings, remittances, and other financial goods and services is the main objective of financial inclusion.[i]

Reema Rabha claims that financial inclusion enables all societal groups to have access to fundamental financial services like credit, insurance, and savings opportunities.(Kumar & Manjunath, 2014)

Financial Exclusion

Lack of access to financial services and goods for both individuals and communities is known as financial exclusion. The capacity of people and enterprises to frequently and affordably use financial services is known as financial inclusion; the opposite of this is financial exclusion. Lack of access to bank accounts, credit, insurance, and payment services is just a few examples of the many ways that people might be financially excluded. Inadequate financial infrastructure, discriminatory practices, and excessive transaction costs are some further ways it may show up.

Financial exclusion, according to Guar, is the inability of large populations, particularly the less fortunate and economically disadvantaged, to obtain beneficial banking services.(Mohana et al., 2023). Financial exclusions, according to Leyshon & Thrift, are procedures used to keep members of particular social groups and individuals from having access to the official financial system. Financial exclusion, according to Sinclair, is the inability to obtain essential financial services.

Financial exclusion, according to Stephen P. Sinclair (2001), is the inability to access necessary financial services. Problems with conditions, pricing, promotion, access, or self-exclusion as a result of unfavourable experiences or opinions can all lead to exclusion. When financial exclusion impacts low-income consumers and those going through financial difficulties, it becomes a communal concern.(Priti & Aggarwal, 2019)

Table 1.1: Financial Inclusion vs Financial Exclusion

Elements	Financial Inclusion	Financial Exclusion
Product	Access to sensible, practical, and transparent goods, as well as additional financial services like micropensions, is guaranteed by the variety of offerings. They offer high-quality services and products that are adaptable and configurable, and they have access to goods that help them establish a steady income.	Exclusion may occur when products are inconvenient, rigid, uncustomisable, or of poor quality.
Price	• Their products and mechanisms are competitive and fairly priced.	When products are unaffordable, they may be excluded.

Elements	Financial Inclusion	Financial Exclusion
	• The product's effective cost is not seen as being excessively expensive or usurious. The customer is not impacted by inefficiencies.	
Awareness	•Active promotion of the product is required. • Every term and condition needs to be fully and openly defined. • Security, education, and customer service are prioritised.	When clients are unaware, they may be excluded.
Delivery	• It is accessible in remote locations, has a straightforward and practical distribution mechanism, and lowers client transaction costs.	Exclusion may occur when clients are difficult to reach and have a low transaction cost.

Source**:** (Renjith Jose & Thomas Com, 2019)

Importance and Need of Financial Inclusion

All societal sectors can access financial inclusion services thanks to the reliable and effective frameworks(Kumari et al., 2023). It is crucial to provide investments, digital payments, lending, and deposits. More resources and a wider range of financial administration solutions are made available through financial inclusion. Programs for education regarding the functions of infrastructure, bank services, and promising development prospects are also included. This feature creates a setting in which people can readily access the financial institutions' services and goods. Financial inclusion is growing and receiving attention in many contemporary nations since it is crucial to uplifting those who are financially excluded. Universal access to a variety of reasonably priced financial services is referred to as financial inclusion. It ensures that everyone, including those with modest incomes, has fair and uncomplicated access to financial goods and services at affordable rates. It also entails educating people about the use of financial goods and providing debt counselling and money management guidance.

76% of people worldwide and 71% of individuals in developing nations now own an account. For many years, the gender disparity in account ownership in developing nations was 9%, but it has since shrunk to 6%. Getting digital payments like government transfers, wage payments, or domestic transfers encourages people to use other financial services like borrowing, saving, and holding money. In developing nations, 18% of individuals, or 40% of those who paid utility bills, did so straight from their bank accounts. Only 20% of adults in other developing nations are paid using digital business payments, compared to 80% in China. The adoption of digital financial services has increased as a result of the coronavirus pandemic; 40% of adults in developing economies (apart from China) paid a digital merchant online, over the phone, or with a card, and 33% of adults in developing economies who paid a utility bill straight from their account did so for the first time since the pandemic started. Because it encourages account ownership and use through mobile payments, savings, and borrowing, mobile money has emerged as a crucial facilitator of financial inclusion in sub-Saharan Africa, especially for women. In developing economies, over 50% of adults can get more money within 30 days if they have unforeseen expenses.(Demirguc-Kunt et al., 2018)**.**

The main aims of inclusive finance, according to the United Nations, are:

1) Market monitoring, industry performance values, and an appropriate management system can all help create sound financial institutions.

2) It should be possible to use financial services appropriately by ensuring institutional and financial sustainability.

3) Where necessary, more financial service providers should be present to give clients a wide range of choices.

The policymakers have been emphasising financial inclusion of the country's rural and semi-rural areas primarily for the three most critical imperative needs:

1) Developing saving habits: People in poverty are more susceptible when they don't have any savings. Due to a lack of protection, this low-income group has always been under financial strain. The goal of banking services and products is to offer a valuable instrument to promote saving. People will shift away from traditional savings strategies, including investing in real estate, buildings, and bullion, as a result of financial inclusion. This action will raise the nation's capital formation and, after financial inclusion policies are implemented, should strengthen the economy.

Offering formal credit options: By making sure that sufficient and transparent financing is available through financial institutions and conventional channels, people will be more inclined to start their businesses, which will boost national output and wealth. Consequently, it will lessen the reliance of unbanked people on unofficial funding sources, including loans from friends, relatives, and moneylenders. One of the best instances of offering credit at a convenient and reasonable cost is microfinance.

Resolving public subsidy and welfare program leaks: The development and well-being of the impoverished are the goals of government programs and initiatives. But a sizable portion of funds intended for the impoverished do not make it to them. On the other hand, a large portion of the funds is leaked and fails to reach the intended recipients due to a complex system of government administration. By allowing the government to send benefits straight to the recipients' bank accounts rather than through cash payments, subsidies, or concessions, financial inclusion has assisted in resolving this problem. The real beneficiaries have benefited from this admirable endeavour, which has also decreased the government's subsidy expense and stopped money from leaking before it reaches its intended users. Establishing a transaction system where the impoverished can directly profit from an economical and effective financial system is crucial to achieving this. Consequently, financial inclusion must be given top priority. The official financial system must address two issues: Using financial counsellors to raise farmers' financial literacy and emphasising their financial inclusion. Indian banks and other financial market participants should aggressively promote initiatives that raise understanding of loan consequences, interest computations, and other unique banking aspects so that consumers can make educated decisions as part of their CSR. Small borrowers, particularly farmers, should have access to full-day counselling sessions offered by banks. It takes a lot of work and engagement in this area.

Establishing a bank account is not the end goal of financial inclusion; it is only the first step. Accounts must be actively used; simply establishing an account is not enough. Understanding the lives, needs, production, and vulnerabilities of the impoverished is essential to inclusion. They can gradually stabilise, reduce risk, boost earnings, acquire assets, and eventually become self-sufficient when banks step in and open accounts. By meeting their financial needs, fostering savings, and advancing financial awareness, financial inclusion is viewed as a way to empower the targeted group. Treating account holders as clients rather than as beneficiaries is essential.

A larger portion of the economy is encouraged to interact with the official financial system through financial inclusion. It facilitates the shift to bank accounts, which are easily monitored, from a

cash-based economy. Additionally, it makes it easier to monitor suspicious transactions by facilitating the application of Anti-Money Laundering and Combating the Financing of Terrorism (AML/CFT) rules.

Advantages of Financial Inclusion

First, financial inclusion contributes to economic growth to a certain extent. Research suggests that when credit is issued without adequate management, the dangers to financial stability increase. Financial stability is unaffected by expanding access to other forms of financial services, in contrast to credit. Financial independence can only be attained by people who have investments, insurance, and retirement plans. Only until impoverished households and isolated regions are financially included will all of this be feasible.

Another benefit of financial inclusion is that it opens up new avenues for private-sector company models that put social service first and offer a fresh approach to growth. For instance, M-PESA and other mobile money services have reached around 80% of Kenyans, and innovative use cases and business models are finding their way into the infrastructure. Additionally, M-KOPA and Mobisol have created microleasing for community-based, off-grid solar electricity in Tanzania, which is a great illustration of innovation in the context of climate change adaptation. The effect on household wellbeing has not yet been confirmed.

Global poverty can be reduced with the help of financial inclusion, especially in developing and impoverished nations. It accomplishes this by giving those in need prompt, affordable access to better credit and thrift savings. Because many individuals lack access to financial services and are forced to rely on their own resources or unofficial sources of financial services, financial inclusion has become a global concern. All nations are working together to get a sizable portion of the population, especially the disadvantaged groups in both rural and urban areas, into the banking industry.

Financial empowerment is also a set of results proven to improve the economic well-being of impoverished people. It offers many advantages, including:

1) Financial literacy education and counselling

2) Assistance with receiving government benefits and tax credits

3) Access to safe and affordable financial products and services

4) Opportunities for savings, asset building, and investment

5) Consumer education and safety

6) The removal of financial barriers and connection to opportunities to increase incomes quickly and begin saving and building assets for a secure future will enable people with low incomes to improve their financial outcomes.

In recent years, financial inclusion has also been seen as a growth factor. Financial inclusion expands the total amount of savings and investment options available to society at large. The literature claims that many European nations adopted universal banking systems because of the concern that market-based competitive banking would fail to deliver the social advantages of full financial inclusion.

Indicators of Financial Inclusion

Three factors—access to financial services, use of financial services, product quality, and service delivery—can be used to gauge financial inclusion. The indicators are set by the G20. Point of sale services, ATMs, opening accounts, department cards, and complaints are some of the signs. Three

factors—access to financial services, use of financial services, product quality, and service delivery—can be used to gauge financial inclusion. The indicators are set by the G20. Point of sale services, ATMs, opening accounts, department cards, and complaints are some of the signs.

Each definition has key terms that distinguish it from the others. The following are the key terms identified and described in the definitions:

1) **ACCESS**: Permission to utilise a product or service is known as access. Financial products and services are referred to as financial inclusion services in terms of accessibility.

2) **USE**: Utilising is the act of carrying out a plan. Usage refers to the usage of financial services and products that have been approved by official authorities in order to access financial institutions in the context of financial inclusion.

3) **Financial Products**: Financial products include small savings accounts. Examples of schemes include savings accounts, public provident funds, and national savings.

Data plays a crucial part in the policymaking process, from design and execution to monitoring and assessment, and policymakers are becoming more aware of the significance of evidence-based policymaking. With rigorous, unbiased, and trustworthy data, policymakers can precisely diagnose the state of financial inclusion, set reasonable goals, pinpoint current obstacles, create efficient policies, and track and evaluate the effects of those policies.

Although the need to gather statistics on financial inclusion is widely acknowledged, there is no consensus on what should be measured or how. At the moment, several nations employ various metrics and approaches to accomplish comparable objectives. While some nations have advanced systems for gathering data, others do not.

To meet the requirement for a minimum collection of financial inclusion data that is uniform across nations and a shared concept of financial inclusion, the Financial Inclusion Data Working Group (FIDWG) has created a Core collection of financial inclusion indicators. The first step in reaching a common understanding of financial inclusion in terms of measurement and data is the Core Set of Financial Inclusion Indicators, or "the Core Set."The FIDWG will create a broader, more thorough framework for financial inclusion, of which the Core Set will be a component. The framework will incorporate recommendations for evaluating financial inclusion, including guiding comments on measuring quality and a more comprehensive catalogue of indicators spanning the access and usage components of financial inclusion.

The Core Set is a condensed collection of numerical metrics that represent the degree of financial inclusion in a nation. The indicators are intended to evaluate the most basic facets of financial inclusion, which are as follows, per AFI (2011):

- Deposit accounts
- Credit arrangements
- Insurance contracts
- Securities
- Foreign currency contracts

Goals of Financial Inclusion

The economic (financial and banking) as well as social and political contexts would benefit from rising levels of financial inclusion, which aims to include societal sectors in the formal financial system and attain financial stability and economic progress. Before defining goals, it is essential to comprehend the governmental, regulatory, and economic settings because of their significance in attaining financial inclusion. These situations feature certain elements that need to be taken into account when establishing objectives. Among the objectives of financial inclusion are the following:

1) It offers a program to help people save more money, especially those in low-income groups who are constantly under financial pressure, which puts them in danger because they don't save enough. Therefore, instead of depending on unofficial credit channels like friends, family, and moneylenders, the provision of banking products and services that combine savings results in higher savings and the development of formal credit channels that draw in the unbanked population.(Pradhan et al., 2021)

2) Financial inclusion has the potential to generate positive factors that increase savings and investment, thereby stimulating economic growth processes and increasing societal welfare and economic prosperity.

3) By controlling the payments infrastructure and cash flows that lessen shocks, financial inclusion promotes regular usage of financial services, which are provided with integrity by a collection of official service providers. Additionally, it tackles the problem of social and geographic inequality in financial services and works to provide alternative, well-being-directed banking and financial services that are affordable and available to all societal groups.

4) In order to boost production outputs and attain economic prosperity, it promotes the growth of mass entrepreneurship in rural areas by offering timely and sufficient credit as well as transparency through formal banking channels. Additionally, it makes it possible for low-income individuals who do not deal with banks to receive legitimate transfers instead of transferring money between locations through unofficial means, which are typically costly and dangerous.

5) Financial inclusion is currently seen as a remedy to fill the gaps in distributing government benefits and financial subsidies through transfers, interest, and subsidies directly to the beneficiaries (with a bank account) and not through product support and cash payments.

6) Disparities in income and savings are lessened when all facets of society experience equitable growth. Financial inclusion can help achieve equitable growth, which will benefit developing nations by mobilising savings and effectively using them for capital production and growth. It results in the establishment of sizable financial markets that satisfy the demand for financial services from a broad swath of the population. As a result, it creates a deep and wide financial system that makes it possible for new financial and banking institutions to join it, which boosts the banking industry.

7) "The eradication of poverty" and the establishment of sustainable livelihoods are two of the social objectives. Since financial inclusion is characterised as the link between the weaker segments of society and the sources of income, and because it provides a source of income for vulnerable groups through loans and advances, its primary goal is the eradication of poverty. Regarding sustainable livelihoods, after receiving a loan, the most vulnerable members of society can launch their own companies and pursue education that would enable them to manage their income. According to financial studies, financial inclusion may directly affect poverty by promoting economic growth and the well-being of the impoverished by facilitating their access to official financial institutions. In order to improve low-income families' access to financial services from all financial institutions and, consequently, their well-being, financial and economic authorities must reform the financial sector during the decision-making process.(Kthirumamagal & Professor, 2016)

8) Other political objectives that focus on the poorest groups can be accomplished through financial inclusion, and it can also act as a guide for government programs. For example, some governments have policies that aim to reduce unemployment, alleviate poverty, and achieve sustainable development.

9) In addition to offering banks a vast database that can be used for analysis and exploration in a way that influences the possibility of introducing new products that satisfy the needs of these segments and building models for credit assessment to facilitate financing, it also helps the banking industry by diversifying banking assets, luring banks to new clients, stabilising deposits, and lowering liquidity risks.

10) How to access and utilise financial services to get advantages, enhance social and economic circumstances, and attain financial and social stability is what makes them important. Through the creation of guidelines and policies, it also seeks to uphold and defend the rights of financial services consumers, especially by educating present and prospective customers about their obligations and rights.

11) When a woman is financially independent, she makes investments in the education, health care, and nutrition of her family—investments that have a beneficial intergenerational influence on the society in which she lives. The extension of universal financial services for women has a significant macroeconomic impact on both economic growth and the advancement of society.(Pradhan et al., 2021)

Global Framework for Financial Inclusion

During Mexico's 2012 presidency, the G-20 nations demanded an action plan to boost financial inclusion in their nations with World Bank assistance. The goal was to safeguard citizens from economic uncertainty and close the "financial gap" to bring them out of poverty. For people in the UK who are unable to access basic bank accounts, the government established the Post Office Current Account (POCA). For low-income employed people, they also launched the "Savings Gateway," which offers £1 for every £1 invested in the scheme, up to a monthly limit of £25. In order to provide clients with affordable banking services, the State of New York Banking Department has mandated that financial institutions offer basic banking accounts.(HASANOV, 2022)

Global partners in the public and private sectors pledged to advance financial inclusion and declared a new global development objective of attaining universal financial access by 2020, according to the 2015 IMF World Bank Group meeting report. Established in 2002, the USA Treasury's Office of Financial Education, which is supported by the Federal Deposit Insurance Corporation (FDIC), organises the work of other federal agencies to provide financial education.

Approximately 515 million adults globally opened bank accounts or accounts with mobile money providers between fiscal years 2014 and 2017, according to the Global Findex 2017 database. This means that, compared to 51% in 2011 and 62% in 2014, 69% of adults globally now have accounts. In order to unite different financial institutions and give adult members throughout the county access to financial knowledge and efficient financial service utilisation, the "Money Smart Alliances" initiative was established.

Significant action has been taken by a number of nations to advance financial inclusion. For example, Tanzania sought to expand financial access to 50% of its people in 2015 through programs like mobile banking, while Brazil launched the National Partnerships for Financial Inclusion. By 2014, it was agreed that all municipalities in Mexico would have banking agents and branches. In 2020, Nigeria was able to cut the number of unbanked areas by half. Malawi planned to introduce agent banking in 2012, while Zambia sought to increase financial inclusion by 50% in two years. By 2017, Rwanda aimed to reach 80% of its people, and Peru promised to enact a new legislation governing electronic money the following year. In November 2009, the Central Bank of Kenya added agents to the financial banking system. These agents are allowed to perform a variety of financial services, including cash transactions, loan disbursement, bill payments, fund transfers, and mobile banking. These agents may be LLPs, Proprietorship Firms, Partnership Firms, Co-operative Societies, and Trust Corporations. However, they are prohibited from initiating electronic transactions during system failures, charging fees directly from customers, guaranteeing transactions, or continuing to serve customers if prohibited by law or due to criminal records or integrity issues. These agents operate on a commercially viable basis to ensure their financial sustainability (Cámara et al., 2014)

Other nations have pledged to extend banking services to underserved areas, including the Philippines, Burundi, Ethiopia, Uganda, Pakistan, and Fiji. In the Philippines, banks contract with mobile operators that employ prepaid account systems to handle a sizable amount of their banking operations. A mobile operator's subsidiary, Globe Telecom, offers virtual stored value accounts that let users send and receive money using their smartphones. G-Xchange, Inc. (GXI), another subsidiary of Globe, allows non-bank agents to use prepaid accounts. Smart Money and G Cash are required to provide the BangkoSentral ng Pilipinas (BSP) with detailed operational data. In addition to traditional branch facilities, banking institutions in South Africa may appoint non-bank third parties as agencies or outsourcing arrangements to provide banking services. Contract agents are authorised to offer basic banking services to customers on behalf of the banks.

To ascertain the effects of financial access via agency banking on Kenya's low-income population, a study was carried out. Descriptive, qualitative, and quantitative research approaches were used in the study. The results showed that expanding the number of agency banking services will improve access points and increase vulnerable groups' ability to obtain financial services. According to the study, authorities should push banks to maximise financial access and implement agency banking.

Sriram concentrated on investigating the availability of financial services for rural women. It was recommended that financial product designs be tailored to women's unique demands in areas including borrowing, insurance, and savings. Ensuring married women have direct access to financial services instead of depending on their spouses as middlemen is also crucial. Giving women financial autonomy gives them more authority and allows them to effectively manage resources to enhance their long-term production, education, and nutrition, among other areas of their lives.. The authors have also proposed a model that addresses the constraints posed by limited technological access and suggests tailoring financial products to women's preferences to enhance their access.

In terms of Jordan's financial inclusion experience, the government has shown a significant dedication to this cause for a number of years. An integrated financial ecosystem has been developed in Jordan via the joint efforts of numerous national and international organisations. After taking the lead in 2013, the Central Bank of Jordan concentrated on creating a strong regulatory framework and a favourable atmosphere for digital finance. The goal of these initiatives was to make all Jordanians financially included. The Jordanian Central Bank presented its national financial inclusion strategy in 2016, which covered the years 2018–2020. With an emphasis on addressing women, refugees, young people, and small and medium-sized businesses, this vision highlights the significance of improved financial education, customer safety, and electronic payments. To carry out this plan, the Central Bank of Jordan has successfully collaborated with a number of public and commercial sector players as well as members of civil society. The strategy's six main components served as the basis for the formation of working groups that worked with the Technical Committee and the Steering Committee. Six working groups were established in September 2016 after it was decided to start working on the national financial inclusion strategy. These groups concentrated on data collecting and analysis, consumer protection, microfinance, financing for small and medium-sized businesses, electronic payment systems, and financial literacy. The second regional conference, which was organised in collaboration with the Central Bank of Jordan, the Arab Monetary Fund, the German Agency for International Cooperation (GIZ), and the Kingdom's national agenda and strategic directions, saw the introduction of the strategic vision document for financial inclusion in Jordan. Jordan's comparatively low adult financial inclusion rate of 60.24% necessitated the development of a national financial inclusion policy. Even while this number is higher than that of other Middle Eastern and North African nations, it is still low when compared to nations with comparable income levels across the globe. The financial exclusion of underprivileged individuals, low-income and marginalised groups, micro, small, and medium-sized businesses, youth, women, non-Jordanians, and refugees will therefore be the primary focus of the upcoming three-year strategy (2018-2020). By strengthening the link between financial inclusion and the 2030 Sustainable Social Development Goals set forth by the UN General Assembly, this plan seeks to.(Bayram et al., 2021)

Conclusion

Global experiences with financial inclusion show that there's no single solution—successful efforts depend on tailoring approaches to local needs, like Kenya's agency banking or the UK's use of post offices to reach the unbanked. Technology, especially mobile banking, has been a powerful tool in expanding access, particularly in remote areas. But access alone isn't enough; financial literacy and

consumer protection are crucial so people can use these services wisely. Strong government commitment and clear regulations, as seen in Jordan, play a vital role, while partnerships between the public and private sectors help scale solutions effectively. Special attention to marginalized groups such as women, refugees, and small businesses boosts overall social and economic benefits. Despite progress, ongoing challenges like infrastructure gaps and cultural barriers mean that financial inclusion requires continuous effort and innovation to truly succeed.

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Tural Məmmədov

Azərbaycan Respublikası Elm və

Təhsil Nazirliyi İqtisadiyyat

İnstitutu, böyük elmi işçi

NAXÇIVAN MUXTAR RESPUBLIKASININ TURIZM POTENSIALININ QIYMƏTLƏNDIRILMƏSI

Açar sözlər - müasir turizm kompleksi, müalicə turizmi, kənd-yaşıl turizmi, tarixi-mədəni turizm, turizm sahibkarlığı.

Naxçıvan Muxtar Respublikasında çox güclü turizm potensialı mövcuddur. Bu turizm potensialı düzgün qiymətləndirilməli və səmərəli istifadə edilməlidir. Hər bir turizm növünün özünəməxsus spesifik xüsusiyyəti olduğuna görə də inkişafı üçün görülən işlər də ona uyğun olmalıdır. Bu spesifik xüsusiyyətlər nəzərə alınmaqla turizmin inkişafını şərtləndirən əsas amillərdən biri ixtisaslı kadrların hazırlanmasıdır. Naxçıvan Muxtar Respublikasında turizm sahəsinin peşəkar kadrlarla təmin edilməsi məqsədilə mütəmadi (NDU-də turizm ixtisası üzrə kadrlar hazırlanır) tədbirlər görülür.

Naxçıvan Muxtar Respublikası tarixi baxımdan çox qədimdir. Bura Midiya, Albaniya, Atropatena, Sasanilər, Atabəylər və s. qədim dövlətlərin tərkibində olmuş, buna görə də bir çox tarixi mədəni abidələri yaranmışdır. Regionda olan tarixi mədəni abidələrdən biri Mömünə xatun türbəsidir ki, bura tarixi-mədəni turizmin əsas obyektlərindən hesab olunur. Regionda olan mühüm obyektlərdən biri də Əlincə qalasıdır ki, bu qalanı Orta Asiya və Qafqazda ən güclü ordusu olan Teymurləng ordusu bu qalanı 14 il ala bilməmişdir. Bu qalanın möhtəşəmliyi və əzəməti görənləri heyran edir və turistləri özünə cəlb edir. Bu regionun qədim dövlətlərin tərkibində olması həmin dövlətlərə məxsus qədim tarixi abidələrin (kilsələrin, türbələrin və s.) mövcud olmasına gətirib çıxarmışdır. Bu tarixi mədəni abidələr (kilsələr,türbələr və s.) əsasən Naxçıvan şəhəri, Şahbuz və Ordubad rayonlarının (Buzxana, Came məscidi, Mədrəsə və s.) ərazilərindədir. Tarixi abidələr aşınaraq sıradan çıxsa da qalıqları bir çox qərb ölkələrindən gələn turistlərin marağını cəlb edir. Belə obyektlərə Yusif ibn Küseyr türbəsi, İsmayılxan hamamı, Gülüstan türbəsi, Xanəgah memarlıq kompleksi, Qarabağlar memarlıq kompleksi və s. tarixi-mədəni abidələri və qədim kilsələri misal göstərmək olar. Regionda və ölkəmizdə yaşayan əhalinin əksəriyyətini müsəlmanlar təşkil etsə də, region əhalisi tarixi-mədəni abidələrə hörmətlə yanaşır və qorunmasını təmin edirlər.

Naxçıvan Muxtar Respublikasında 250-dən çox müalicəvi əhəmiyyətli mineral bulaqlar mövcuddur ki, bunlar regionun müalicə-sağlamlıq turizminin inkişafında mühüm rol oynayır. Azərbaycan ərazisində olan mineral su ehtiyatlarının 60 faizindən çoxu Naxçıvan Muxtar Respublikasının payına düşür. Naxçıvanın zəngin mətbəxi, qədim tarixi və mədəniyyəti turizmin inkişafında önəmli yer tutur. Süfrələrin bəzəyi olan "Badamlı" və "Sirab" uzun müddətdir (SSRİ dövründən hazırkı dövrə qədər) ki, ölkəmizdən kənarda Azərbaycanın təbii sərvəti (şəfalı mineral su) kimi bir neçə ölkədə şöhrət qazanmışdır. Şahbuz rayonunun Badamlı kəndində (Şahbuz rayonunun mərkəzindən 14 km qərbdə yerləşir) 1980-ci ildən mineral bulağın bazası əsasında balneoloji müalicəxana fəaliyyət göstərir ki, bu da müalicə-sağlamlıq turizminin inkişafında mühüm rol oynayır. [1, s.58]

Naxçıvan regionunda müalicə sağlamlıq turizminin inkişafı üçün mineral bulaqlardan əlavə başqa (Fizioterapiya mərkəzləri) imkanlar da mövcuddur. Buna misal olaraq Duzdağ Fizioterapiya Mərkəzini və Darıdağ Balneoloji Mərkəzini göstərmək olar. Duzdağ Fizioterpiya Mərkəzində tənəffüs yolları

xəstəliklərindən əziyyət çəkənlərin müalicəsi məqsədi ilə müasir standartlara cavab verən şərait yaradılmışdır ki, bu da regiona gələn turistlərin axınına müsbət təsir edir.

Darıdağ Balneoloji Arsenli Su Müalicəxanası regionun müalicə-sağlamlıq turizmində əhəmiyyətli mövqeyə malikdir. Bu Balneoloji Mərkəzə müalicə məqsədilə gələn turistlərin sayı gündən-günə artmaqdadır. Bu mərkəzlə yanaşı Naxçıvan regionunda belə müalicəvi əhəmiyyətli turizm obyektləri də mövcuddur ki, bunlar da regionun müalicə-sağlamlıq turizminin inkişafında əsas yerlərdən birini tutur. Naxçıvan Muxtar Respublikasının saf və təmiz havasının olması bura gələn turistlərin daha çox marağına səbəb olur. Belə təmiz havanın və gözəl təbiətin mövcudluğu turistlərin burada yaxşı vaxt keçirməsi ilə yanaşı sağlamlığına da müsbət təsir göstərir. Məsələn Batabat yaylağının iqlimi bura gələn insanlara xoş təəssüratla yanaşı, bir çox xəstəliklərin (ciyər, ürək, əsəb və s.) müalicəsi üçün də münasib yer hesab olunur.

Turistlərin diqqətini daha çox cəlb edən və marağına səbəb olan sahələrdən biri səfər etdikləri yerə məxsus xalq sənətkarlığı əsərləri və əl işlərinin mövcud olmasıdır. Naxçıvan regionunda xalq sənətkarlığının müxtəlif sahələri inkişaf etdirilmiş, sənətkarlar üçün lazımi şərait yaradılmışdır. Ağacişləmə, misgərlik, papaqçılıq, dulusçuluq, xəttatlıq və digər sənət sahələri tarixən bu torpaqda inkişaf edən və böyük inkişaf yolu keçən sahələrdən hesab olunur. Naxçıvan Muxtar Respublikası Turizm Departamenti regionda olan sənətkarlarla müqavilələr bağlamış, onların hazırladıqları suvenirlərin və hədiyyəlik xatirə əşyalarının satışını təşkil etməkdədir. Belə sənətkarlıq əşyalarının satışı üçün mütəmadi sərgilər və yarmarkalar təşkil edilmiş, bu istiqamətdə bir neçə tədbir həyata keçirilmişdir. Belə tədbirlərin təşkilati məsələlərinin əsas iştirakçısı "Naxçıvan Biznes Mərkəzi" MMC hesab olunur ona görə ki, burada satış məqsədilə çoxlu əl işi və sənət əsəri qəbul edilmiş, on minlərlə manat dəyərində əl işlərinin satışı həyata keçirilmişdir.

Turizm sahibkarlığının inkişaf etdirilməsi, turizmlə məşğul olan sahibkarlara müvafiq tövsiyələrin verilməsi, biznes-planların işlənilməsi və onların tətbiqi haqqında Naxçıvan Muxtar Respublikası İqtisadiyyat Nazirliyi tərəfindən "Naxçıvan Biznes Mərkəzi" MMC-də sahibkarlarla mütəmadi görüşlər keçirilir, onlara məruzələr verilir. Burada turizm obyektlərində göstərilən xidmətlərin keyfiyyətinin artırılması istiqamətində maarifləndirici monitorinqlər aparılmış, müvafiq tövsiyələr verilmişdir.

Naxçıvan Muxtar Respublikasında turizmin inkişafı ilə bağlı öhdəliklərin icrası aidiyyatı qurumlar tərəfindən davam etdirilir, bu da onu göstərir ki, Naxçıvan Muxtar Respublikasında turizmin inkişafı ilə bağlı tədbirlər görülməkdədir. Naxçıvan regionun turizm potensialının bol olması hər il çoxlu turist qəbul etmək imkanı yaradır. Naxçıvanın zəngin turizm potensialının təbliği və tanıdılması istiqamətində ardıcıl tədbirlər görülür, müasir turizm infrastrukturu yaradılır. Naxçıvan Muxtar Respublikasının turizm potensialının təbliğində elektron resursların internetdə yerləşdirilməsi, internet səhifələrində regionun turizm potensialı ilə bağlı bölmələrin yaradılması və gənclərin bu sahədə fəallığının artırılması qarşıya qoyulmuş əsas prioritet məsələ hesab edilir.

Dünyada baş verən iqtisadi hadisələr – neftin qiymətinin kəskin surətdə aşağı düşməsi, onun Azərbaycan iqtisadiyyatına təsiri və devalvasiyanın baş verməsi bir daha onu göstərdi ki, bir ölkənin iqtisadiyyatının təkcə bir sahədən - neftdən asılı olması həmin ölkənin iqtisadiyyatını birtərəfli inkişaf etməsinə gətirib çıxarır. Bunun baş verməməsi üçün başqa sahələrin də inkişafı üçün müəyyən tədbirlər görülməlidir. Yəni qeyri-neft sektorunun inkişafı qarşıya qoyulan əsas hədəflərdən biridir. Qeyri-neft (xidmət) sektorunda turizm sahəsi aparıcı mövqeyə malikdir. Azərbaycanda, xüsusilə də Naxçıvan Muxtar Respublikasında turizm potensialı bu sahənin inkişafını labüd edir.

Qədim diyarda tarixi-mədəni turizmlə yanaşı, turizmin ekoloji, ziyarət, müalicə, dağçılıq, kənd və digər növlərinin inkişaf etdirilməsi üçün geniş imkanlar vardır. Muxtar respublika kəndlərinin əksəriyyəti

coğrafi baxımdan dağlıq ərazilərdə və çay vadilərində yerləşir. Bu xüsusiyyətlər regionda turizmin inkişafına müsbət təsir edir. Muxtar respublikada hal hazırda 3 yasaqlıq, 1 milli park, 1 qoruq fəaliyyət göstərir ki, bu da turizmin inkişafına müsbət təsir göstərir. Şahbuz rayonunun ərazisində yerləşən füsunkar gözəlliyə malik olan Batabat gölü və Ordubad rayonunda yerləşən insanları özünə valeh edən Göygöl gölü təbiəti sevənləri özünə cəlb edir və istirahət turizminin inkişafı üçün mühüm arqumentlər hesab olunur.

Hazırda muxtar respublikada 21 mehmanxana və mehmanxana tipli müəssisə vardır. Bu da muxtar respublikaya gələn turistlərə vaxtlarının səmərəli keçirmələrinə şərait yaradır. Bura gələn turistlər bir neçə turizm marşrutundan istifadə etməklə Naxçıvan Muxtar Respublikasının müəyyən bir ərazisini gəzə bilərlər və görməli yerləri ilə tanış ola bilərlər. Bura gələn turistlər Naxçıvan-Qarabağlar, Naxçıvan-Əshabi-Kəhf, Naxçıvan-Əlincə qalası, Naxçıvan-Ordubad, Naxçıvan-Batabat, Naxçıvan-Gülüstan turizm marşrutları regionun füsunkar gözəlliklərini görməyə, xoş vaxt keçirmələrinə şərait yaradır. Hal hazırda Naxçıvan regionunda yerləşən kəndlər təmiz havası, saf suyu və ekoloji təmiz məhsulları, əlverişli iqlim şəraiti, abad yol və müasir rabitə xidməti ilə turizmin inkişafı üçün böyük imkanlara malikdir. Bu imkanlardan səmərəli istifadə regionu "turizm regionu"-na çevirə bilər. 2013-cü ildə Şahbuz rayonunda yerləşən Ağbulaq kəndində Ağbulaq İstirahət Mərkəzinin istifadəyə verilməsi bu sahədə həyata keçirilən tədbirlərin davamlı fəaliyyətinin nəticəsidir. Muxtar respublikada müasir turizm komleksi ilə yanaşı, turizm cəhətdən ən çox cəlbedici edən amillərdən biri burada mövcud olan minlərlə tarixi-mədəni abidələrin olmasıdır. Bu abidələri görmək məqsədi ilə hər il yüzlərlə turist Naxçıvan iqtisadi rayonuna səfər edir. Təbii ki, abidələrin qorunması, bərpası və təbliği sahəsində görülən işlər turizmin gələcək inkişafından xəbər verir. Novruz bayramı ərəfəsində Naxçıvan regionuna qonşu Türkiyə və İrandan turistlər gəlir. Bunun da səbəbi gələn turistlərin əksəriyyətinin keçirilən Novruz şənliklərində yaxından iştirak etmək niyyətinin olmasıdır. Naxçıvana qonşu ölkələrdən gələn turistlər Əshabi-Kəhf deyilən dini (müqəddəs kitab olan Quran-i Kərimdə surə də vardır və sıralamada 18-ci surə Kəhf surəsidir) məkanı görməyi daha çox meyl edir. Bu dini ocaqla yanaşı başqa dini obyektlərin (Nuh peyğəmbərin türbəsi və s.) olması Türkiyə və İrandan gələn turistlərin daha çox diqqətini cəlb edir ki, bu da regionda dini turizmin inkişafına şərait yaradır.

Naxçıvanda turizm növlərinin içərisində güclü potensial olanlardan biri də kənd yaşıl turizmidir. Naxçıvan Muxtar Respublikası Turizm Departamenti tərəfindən kənd yaşıl turizmin inkişafı ilə bağlı muxtar respublikanın 5 rayonunun 19 kəndində kənd sakinləri ilə maarifləndirici görüşlər keçirilmişdir. Regionda mövcud olan hər bir kəndin, hətta ən ucqar dağ kəndlərinin kənd yaşıl turizminin inkişafı üçün potensialı mövcuddur ki, buna Biçənək, Kükü, Nəsirvaz, Bist, Tivi, Şahbulaq, Ərəfsə, Gümüşlü və başqa onlarla yaşayış məntəqəsini misal göstərmək olar.

Turizmin müasir inkişaf səviyyəsində Naxçıvan Muxtar Respublikasında qış turizmi üçün geniş imkanlar mövcuddur. Ona görə də qışda istirahətini mənalı keçirmək istəyənlər Naxçıvan şəhərindən çox da uzaqda olmayan məkanları seçirlər. Şahbuz, Culfa, Ordubad rayonlarının dağlıq və dağətəyi yerlərindəki ecazkar qış mənzərələri qış turizminin keçirilməsi üçün əla fürsətdir. Qışda Şahbuz rayonundakı Ağbulaq İstirahət Mərkəzinə çox sayda turist gəlir. Şahbuz şəhərindən təqribən, 20 kilometrlik (Naxçıvan şəhərindən 45 km məsafədə yerləşir) məsafədə, dəniz səviyyəsindən 2000 metr yüksəklikdə yerləşən bu turistik mərkəz yerləşdiyi relyefə, təbii iqlim xüsusiyyətlərinə və şəraitinə görə regionun, eləcə də Azərbaycanın qış turizminin əsas mərkəzlərindən birinə çevirmişdir. Ağbulaq Turizm İstirahət Mərkəzinə səyahət edən turistlər buranın gözəl təbiəti, təmiz havası və suyu ilə yanaşı, bölgəyə məxsus milli mətbəxi ilə də tanış olurlar. Yayda olduğu kimi, qışda da Ağbulaqda istirahət edən turistlərdə bu istirahət kompleksi gözəl təəssüratlar yaradır.

İstirahətini xoş keçirmək istəyən turistlər üçün digər bir maraqlı və cəlbedici yer – Batabat yaylağıdır. Batabat gölünün gözəlliyi ilə yanaşı burada olan "üzən ada" turistləri daha çox özünə cəlb edir. Batabat yaylağının yay aylarında qışdan da daha cazibədar və ürəkaçan mənzərəsi olur. Burada gül-çiçəkli

çəmənlikləri, gölü, saf və təmiz dağ havası, təbii meşələri, Zorbulaq, Südlübulaq kimi şirin suları turistlərin diqqətini cəlb edir. [1, s.63]

Turizm iqtisadiyyatın mühüm bir sahəsi, beynəlxalq turizmin gəlmə tipi ölkə ixracatının mühüm bir növüdür. Naxçıvan Muxtar Respublikasında daxili və gəlmə turizmin inkişafından regional inkişaf, yeni iş yerlərinin yaradılması və valyutanın ölkəyə axını kimi mühüm iqtisadi nəticələr əldə edilir.

Naxçıvan Muxtar Respublikasına çoxlu yerli və əcnəbi turist səyahət edir ki, bu da turizmin çoxçeşidli növlərinin inkişafı nəticəsində mümkün olmuşdur. Naxçıvan Beynəlxalq Hava Limanı vasitəsilə Bakı, İstanbul, Moskva və Gəncə şəhərlərindən, habelə qonşu ölkələrlə 24 saat iş rejimində olan gömrük-keçid məntəqələri ilə dünyanın hər yerindən bu regiona turistlər gələ bilirlər. Naxçıvanda yaradılmış sabitlik və təhlükəsiz həyat şəraiti turistlərin burda özünü rahat hiss etməsinə imkan yaradır. Naxçıvana gələn turistlər, əsasən, VFR ("Visiting Friends and Relatives"- VFR turizmi yaxud da etnik turizm) müalicə, ziyarət, əyləncə, gəzinti və işgüzar görüşlər məqsədilə buraya səyahət edirlər. Gələn turistlərin ölkə və sosial mənşəyi isə dövlət başçılarından (işgüzar görüşlər keçirmək məqsədi ilə) tutmuş sadə vətəndaşlara qədər genişdir.

Muxtar respublikanın əlverişli coğrafi-siyasi mövqeyi, müxtəlif iqlim qurşaqları və təbiəti, zəngin və çeşidli heyvanat aləmi, tarixi-mədəni irsi, özünəməxsus və zəngin mətbəxi, yüksək qonaqpərvərlik ənənələri Naxçıvan regionunda turizmin hərtərəfli inkişafına şərait yaradır.

Hər hansı bir ölkənin turizm potensialından danışdıqda oranın tarixi-mədəni irsi ön plana çəkilir. Mömінə xatın, Yusif ibn Küseyir türbələri, Qarabağlar Memarlıq Kompleksi, Xanəgah Abidə Kompleksi, adı Nuh Peyğəmbərin gəmisi ilə bağlanan Gəmiqaya daşüstü yazıları, əfsanəvi İlanlı dağ, abidələrlə zəngin olan qoruq-şəhər Ordubad, haqqında müqəddəs "Qurani-Kərim"də bəhs edilən Əshabi-Kəhf ziyarətgahı, 5000 ildən çox yaşı olan Naxçıvan şəhəri, qədim tikililər, qalalar, yaşayış yerləri və nekropollar, günümüzə qədər qorunub saxlanılmış xalq sənəti nümunələri turistlərin diqqətini daha çox cəlb edir.

Bütün bunlara əsasən demək olar ki, Naxçıvan Muxtar Respublikasında çox böyük turizm potensialı mövcuddur və bundan düzgün istifadə regionun turizminin inkişafına şərait yaradacaq, regionu "turizm regionu"-na çevirəcəkdir.

Mammadov Tural Vatan

The assessment of tourism potential of Nakhchivan Autonomous Republic

Resume

Key words - modern tourist complexes, medical tourism, rural and green tourism, historical and cultural tourism, tourism and entrepreneurship.

Among the indicators of social-cultural development of the community's growing interest in tourism occupies an important place. The attention to the development of tourism for the first time in this area to benefit every citizen of our country's beauty and historical and cultural wealth, is aimed at introducing the world. Colorful tourism resources in the autonomous republic and a modern tourist infrastructure creates favorable conditions for the development of this important sector.

Мамедов Турал Ватан

Оценка туристического потенциала Нахчыванской Автономной Республики

Резюме

Ключевые слова - современные туристические комплексы, медицинский туризм, сельский и зеленый туризм, исторический и культурный туризм, туризм и предпринимательство.

Среди показателей социально-культурного развития растущего интереса сообщества в сфере туризма занимает важное место. Внимание развитию туризма в первый раз в этой области, чтобы принести пользу каждому гражданину красоты нашей страны и исторического и культурного богатства, направлена на внедрение мира. Красочные туристические ресурсы в автономной республике и современной туристической инфраструктуре создают благоприятные условия для развития этого важного сектора.

İstifadə olunmuş ədəbiyyat siyahısı

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DİJİTAL İŞLETMELERDE ÖRGÜT KÜLTÜRÜ: VERİ ODAKLI, İNOVATİF VE ÇEVİK ÖRGÜTLERİN İNCELENMESİNE YÖNELİK KAVRAMSAL ÇALIŞMA

Kader Armağan
kader.armagann@gmail.com
0009-0000-1532-548X
Prof. Dr. İsa İpçioğlu
isa.ipcioglu@bilecik.edu.tr
0000-0002-6912-3290
Research Assistant Tolga Altıntaş
tolga.altintas@bilecik.edu.tr
0000-0003-0765-6195

ÖZET

Bu çalışmanın amacı, dijital dönüşüm sürecinde örgütlerin sürdürülebilir rekabet elde etmesinde rol oynayan üç kültürel yaklaşımı (veri odaklılık, çeviklik ve inovasyon) kavramsal olarak incelemek ve aralarındaki ilişkiyi ortaya koymaktır. Çalışma, dijitalleşmenin yalnızca teknolojik bir yatırım değil, aynı zamanda örgüt kültüründe de bir dönüşüm gerektirdiği düşüncesinden yola çıkmaktadır. Yapılan incelemeler, bu üç kültürün birbirinden bağımsız olmadığını; veri odaklı karar almanın çevikliği beslediğini, çevik yapıların da inovasyonu hızlandırdığını göstermektedir. Sonuç olarak, işletmelerin dijital başarısının, teknolojik altyapı kadar, kültürel zemine de bağlı olduğu düşünülmektedir.

Anahtar Kelimeler: Veri Odaklı Kültür, İnovatif Kültür, Çevik Kültür

ORGANIZATIONAL CULTURE IN DIGITAL ENTERPRISES: A CONCEPTUAL STUDY ON THE EXAMINATION OF DATA-DRIVEN, INNOVATIVE, AND AGILE ORGANIZATIONS

ABSTRACT

The aim of this study is to conceptually examine three cultural approaches (data-driven, agile, and innovative) that play a role in achieving sustainable competitiveness during the digital transformation process, and to reveal the relationship among them. The study is based on the idea that digitalization is not merely a technological investment but also requires a transformation in organizational culture. The analyses indicate that these three cultures are not independent of one another; data-driven decision-making fosters agility, and agile structures, in turn, accelerate innovation. Consequently, it is considered that the digital success of enterprises depends as much on their cultural foundation as on their technological infrastructure.

Keywords: Data-Driven Culture, Innovative Culture, Agile Culture

GİRİŞ

Dijital teknolojilerin gelişimi, endüstriyel alanda köklü dönüşümlere yol açan yeni bir devrim sürecini beraberinde getirmektedir. Bu gelişmeler, hem şirketler hem de toplumlar üzerinde derin etkiler yaratmakta ve değişen koşullara uyum sağlamak için yeni gereksinimler ortaya çıkarmaktadır. Dijital dönüşüm olarak da adlandırılan bu evrim, birbirine bağlı ve sürekli etkileşim içinde olan karmaşık yapılar ve sistemler oluşturmaktadır (Herve vd., 2021). Bu köklü değişim, örgütler için kaçınılmaz olarak zorlu bir uyum sürecini tetiklemektedir. Ancak sadece teknolojik bir uyum ile değil, aynı zamanda çalışanların becerilerini, takım dinamiklerini ve hatta kurum içi iletişim kanallarını dönüştüren kapsamlı bir uyarlanma çabasını gerektirir. Bu süreç, örgütün hayatta kalması ve rekabet gücünü sürdürebilmesi için

atması gereken kaçınılmaz bir adımdır (Nalbantoğlu, 2021).

Henriette vd., (2016) belirttiği gibi şirketlerin dijital dönüşümü yalnızca iş modeli olarak düşünmesi sığ bir düşünce olarak kalacaktır. Bu nedenle dijitalleşen işletmelerin, sürdürülebilir rekabet avantajı elde edebilmeleri için yeniliklere uyum sağlayarak organizasyonlarını da bu yönde geliştirmeleri beklenmektedir (Güleryüz vd., 2023).

Bu çalışmanın amacı, dijital işletmelerde veri odaklı, çevik ve inovatif kültürü, kavramsal olarak incelemek ve aralarındaki ilişikiyi ortaya koymaktır. Konu olan üç kavramın işletmelerin sürdürülebilir rekabet avatantajında bütün olarak ele alınması gerektiği düşünülmektedir. Çalışma, kavramların tanımlanması, ilgili çalışmaların incelenmesi ve sonuç bölümlerinden oluşmaktadır.

1.KAVRAMSAL ÇERÇEVE

1.1 Dijitalleşme ve Dijital İşletmelerde Örgütler

Dijitalleşme, kökeni Latince "digitus" (parmak) sözcüğüne dayanan ve verilerin sayısal biçime dönüştürülerek bilgisayarlar tarafından işlenebilir hale getirilmesi sürecini ifade eden bir kavramdır. İş dünyasında bu süreç ilk olarak iş operasyonlarının otomasyonu şeklinde başlamış, ardından internet ve çeşitli dijital teknolojilerin gelişimiyle birlikte iş modellerinde köklü dönüşümlere yol açmıştır (Klein, 2020). Kavramın günümüzdeki anlamına yakın ilk kullanımı ise 1971 yılında Robert Wachal tarafından North American Review dergisinde yapılmış, Wachal bu süreci özellikle beşerî bilimlerde bilgisayar kullanımının toplumsal etkileri üzerinden ele almıştır (Brennen & Kreiss, 2016). 1990'lı yıllarda teknolojik gelişmelerin hız kazanmasıyla birlikte dijitalleşme; işletmelere yeni pazarlara erişim, artan müşteri portföyü, farklı liderlik yaklaşımları ve örgütsel çeviklik gibi avantajlar sunmuştur. Bu dönemde sadece teknik sistemlerde değil, aynı zamanda örgütlerin yapısal ve kültürel yapılarında da önemli değişiklikler yaşanmıştır. Dijital başarı, değişen koşullara hızla uyum sağlayabilen, öğrenmeye açık, esnek ve rekabetçi yapılarla mümkün hale gelmiştir (Mert, 2024). Geleneksel kültür yapısı daha çok analog özelliklerle tanımlanırken, günümüz kültürü dijital dinamiklerle şekillenmektedir. Dijital kültürde müşteri talepleri ürün ve hizmetlerin oluşumunda belirleyici bir unsur haline gelirken, örgütsel yapılar daha yatay, hızlı karar alabilen ve sonuç odaklı bir yapıya evrilmektedir. Esneklik, yenilikçilik, iş birliği ve hız ise yeni çalışma düzenlerinin temelini oluşturmaktadır. Bu dönüşüm yalnızca teknik değil, aynı zamanda kültürel bir değişimi de beraberinde getirmektedir. Pandemi süreciyle birlikte hız kazanan dijitalleşme, örgüt kültürünü derinden etkileyerek, önümüzdeki dönemde daha büyük değişimlerin temelini atmaktadır (Nalbantoğlu, 2021).

Dijital işletmelerin sürdürülebilir rekabet elde etmesi için kurum içi örgütlerin de dönüşmesi önemlidir. Örgüt kültürünün veri odaklı, çevik ve inovatif olması işletmelerin dijital dönüşümünü hızlandırıp yeniliklere kolay adapte olacağı düşünülmektedir. Aynı zamanda oluşabilecek hataların da örgüt tarafından hızlı bir şekilde çözüme kavuşması işletmeler için avantaj sağlayacağı ön görülmektedir.

1.2 Dijital İşletmelerde Veri Odaklı Örgüt

Veriye dayalı kültür, işletmelerde karar alma süreçlerinin kişisel yargılar veya sezgiler yerine somut verilere ve analitik değerlendirmelere dayanmasını teşvik eden bir yaklaşımdır. Bu kültür, çalışanların veriye güven duymasını sağlayarak karar mekanizmalarının daha rasyonel ve sistematik bir şekilde işlemesine katkıda bulunur. Aynı zamanda, büyük veri analitiği yetkinliğinin gelişmesine uygun bir zemin hazırlar. Veriye dayalı düşünme biçiminin organizasyonun tüm kademelerinde benimsenmesi, stratejik avantaj elde etme

potansiyelini önemli ölçüde artırır (Gupta & George, 2016). Bu bağlamda, gelişmiş analitik araçlardan en yüksek düzeyde fayda sağlanabilmesi için, işletme genelinde veri odaklı bir zihniyetin yerleşmesi gerektiği genel kabul görmektedir. Berndtsson vd. (2018) da vurguladığı üzere, karar süreçlerinin merkezine veriyi yerleştiren işletmeler, hem operasyonel süreçlerini iyileştirme hem de rakiplerine kıyasla daha üstün bir performans sergileyerek sürdürülebilir rekabet avantajı elde etme konusunda önemli fırsatlar yakalayabilmektedir.

Veri odaklı kültürün, büyük veri stratejilerinin hem dış çevresel faktörlerle hem de iç organizasyonel süreçlerle uyum içerisinde şekillendirilmesi gerektiğini bildiren Karaboğa ve Zehir (2020), işletmelerdeki bu kültürün yerleşmesi, yalnızca teknolojik altyapının değil, aynı zamanda iş yapma biçimlerinin ve karar mekanizmalarının da dönüşmesinin zorunlu olduğunu ifade etmektedir. Öznel yargılardan çok, veriye dayalı öngörülere dayanan karar süreçleri ön plana çıkar. Bu nedenle, veri odaklı bir kültürün benimsenmesi, büyük veri projelerinin başarısı kadar, genel işletme performansının artmasında da belirleyici bir faktör haline gelmektedir. Benzer şekilde, Anton vd. (2023) göre , veri odaklı kültür, yalnızca veriye dayalı karar almayı değil, aynı zamanda bu karar süreçlerinin insan kaynağı, teknolojik yetkinlikler ve örgütsel yapı ile nasıl bütünleştiğini de kapsar. Bu doğrultuda, işletmelerin sürdürülebilir rekabet avantajı elde edebilmeleri için sadece veri toplamakla yetinmeyip, bu veriyi kurumsal karar alma ve değer yaratma süreçlerinin merkezine yerleştirmeleri gerekmektedir. Bu yaklaşımı destekleyen Chatterjee ve arkadaşları (2021), veri odaklı kültürün yalnızca karar alma süreçlerini değil, aynı zamanda ürün ve süreç inovasyonu aracılığıyla firma performansını doğrudan etkilediğini göstermektedir. Çalışmalarında, iş analitiği araçlarının etkin kullanımıyla desteklenen veri odaklı bir yapının, firmaların yenilikçilik kapasitelerini artırarak rekabet avantajı sağladığını ortaya koymuşlardır.

Literatürde veri odaklı kültürün örgütsel çıktılar üzerindeki rolünü inceleyen araştırmalar, bağlama ve modele göre değişen bulgular sunmaktadır. Türkiye'deki orta ve büyük ölçekli işletmeler üzerine yapılan bir araştırma (Düzcan & Fidan, 2023), veri odaklı kültürün dijital olgunluk ile yenilik performansı arasında anlamlı bir düzenleyici etki göstermediğini, ancak büyük veri analitiği yeteneğinin bu ilişkide güçlü bir aracı rol üstlendiğini ortaya koymuştur. Bu bulgu, Gupta vd. (2024) tarafından yapılan ve örgütsel kültürün veri odaklı dijital dönüşümü doğrudan ve pozitif olarak etkilediğini, bunun da operasyonel performansı artırdığını gösteren çalışmanın sonuçlarıyla kısmen bir tezat oluşturmaktadır. Öte yandan, Chatterjee vd. (2021)'nin çalışması, veri odaklı kültürün hem ürün hem de süreç inovasyonu üzerinde doğrudan ve anlamlı bir pozitif etkisi olduğunu doğrulamaktadır.

1.3 Dijital İşletmelerde Çevik Örgüt

Örgütsel çeviklik, işletmelerin değişen çevresel koşullara karşı hızlı ve etkili biçimde tepki verebilme, stratejik yönelimlerini sürekli olarak güncelleyebilme ve yenilikçi yaklaşımlar

geliştirerek sürdürülebilir değer yaratma yetkinliğidir. Bu yetkinlik, firmaların pazar fırsatlarını erkenden öngörebilmelerine, yeni iş modellerini hızla hayata geçirebilmelerine ve mevcut kaynak yapılarını çevresel gerekliliklere uygun şekilde yeniden düzenleyebilmelerine olanak tanımaktadır (Theyel ve Hofmann, 2021). Günümüzün dijitalleşme odaklı ve yoğun rekabet içeren piyasa koşulları, işletmeleri çevik bir yapıya sahip olmaya zorlamaktadır. Ancak dijital dönüşümün başarısı yalnızca teknolojik yatırımlara bağlı değildir; aynı zamanda kurum kültüründe dönüşümün sağlanması ve dijital teknolojilerin tüm organizasyonel süreçlerle bütünleştirilmesi gerekmektedir. Bu bağlamda çeviklik, dijital dönüşüm süreçlerinin merkezinde yer almakta; organizasyonların değişen

pazar dinamiklerine hızlı biçimde adapte olmasını ve daha etkili sonuçlara ulaşmasını mümkün kılmaktadır (Oğan, 2023).

Dijital dönüşümün beraberinde getirdiği yüksek hız ve belirsizlik, örgütlerde hata yapma riskini artırabilir. Ancak bu hataların birer öğrenme süreci olarak değerlendirilmesi ve cezalandırılmaması, risk almaya açık, çevik ve yenilikçi bir örgüt kültürünün gelişmesini destekler. Böyle bir kültür içerisinde, işletmeler değişen dijital koşullara karşı daha esnek yaklaşabilir, yeni stratejileri denemeye daha istekli olur ve bu sayede rekabet avantajı elde etme şanslarını artırabilirler (Mert, 2024).

İmamoğlu vd. (2024)'e göre, dijital örgütlerde çeviklik, hızlı değişen teknoloji ve pazar koşullarına uyum sağlayabilme yeteneğini ifade eder. Bu çeviklik, dijital araçların etkin kullanımıyla birlikte karar alma süreçlerinin hızlanmasını, esnek iş yapılarının benimsenmesini ve yenilikçi çözümlerin hızlıca hayata geçirilmesini sağlar. Dijital örgütler için çeviklik, rekabet avantajı elde etmede ve sürekli değişen dijital ortamda sürdürülebilirliği sağlamada temel bir unsurdur. Dijital teknolojiler sayesinde firmalar, çevresel değişimleri daha hızlı fark edebilmekte, kaynaklarını etkin biçimde yönetebilmekte ve fırsatlara hızlı tepki verebilmektedir. Bu da örgütsel çevikliğin güçlenmesini sağlayarak, firmaların değişken ve belirsiz piyasa koşullarında ayakta kalma ve rekabet etme yeteneğini artırmaktadır.

Farklı sektör ve bağlamlarda yapılan araştırmalar, örgütsel çevikliğin etkinlik ve dijital dönüşümün başarısındaki kritik rolünü ortaya koymaktadır. Holotiuk vd'nin (2018) profesyonel hizmet sektöründe yaptığı nicel çalışma, çevikliği algılama ve tepki verme olarak ikiye ayırarak bunun örgütsel etkinliğin temel bir unsuru olduğunu ve örgütsel tasarımın bu iki boyutu farklı şekilde etkilediğini göstermiştir. Kamu sektörüne odaklanan Zhang vd.'nin (2023) bulguları ise, örgütsel çevikliğin kurumların değişimleri algılamasını, strateji geliştirmesini, hizmet kalitesini ve dijital dönüşüm süreçlerindeki koordinasyonu doğrudan destekleyen bir yetkinlik olduğunu vurgulamaktadır. Benzer şekilde, Özdemir'in (2023) Türkiye'deki büyük ölçekli işletmeler üzerine yaptığı doktora tezinde, yapısal eşitlik modeli analizleri dijital dönüşüm olgunluğunun örgütsel çeviklik üzerinde anlamlı ve güçlü bir pozitif etkisi olduğunu kanıtlamış; bu da dijitalleşmenin çeviklik kapasitesini artırdığı yönündeki bulguları desteklemiştir. Özetle, örgütsel çeviklik hem özel hem de kamu sektöründe değişime uyum sağlama ve dijital dönüşümü yönetmede kilit bir özellik olarak öne çıkmaktadır.

1.4 Dijital İşletmelerde İnovatif Örgüt

İnovasyon, yalnızca ürün, süreç, pazarlama ya da yönetim alanlarında yapılan yenilikler veya iyileştirmelerden ibaret değildir; aynı zamanda teknik ve ekonomik yönlerinin ötesinde, toplumsal etkileri de olan çok boyutlu bir süreçtir. Bu sürecin gelişip sürdürülebilir hale gelmesi, farklı bakış açıları ve motivasyonlara sahip yapıların sürekli ve dinamik etkileşimine bağlıdır (Karaata, 2021). Çellek'in (2003) değerlendirmesi ise inovasyonu, farklı alanlarda özgün ve bilinmeyen çözümler üretme süreci olarak tanımlar. Bu süreç, yaratıcı düşünce, hayal gücü, sezgi, ilişkilendirme ve bireysel ifade gibi unsurları içerir. Daha önce ilişkisiz gibi görünen kavramların bir araya getirilerek özgün sonuçlara ulaşılması, inovasyonun temelini oluşturur. Aynı zamanda sistemli bir düşünme biçimi olan inovasyon, bireyler tarafından geliştirilebilir ve eğitilebilir bir yeti olarak da öne çıkar.

Siebel'e göre (2019), dijital örgütlerde inovasyon, teknolojiyle sınırlı olmayan; kültürel dönüşüm, liderlik, esneklik ve müşteri odaklılıkla beslenen bir süreç olarak anlatılır. İnovasyon; bulut, yapay zeka, IoT gibi teknolojilerle desteklenir, ancak esas başarı, örgütün değişime açık ve deneyime izin veren bir yapıya sahip olmasındadır.

Dyer vd.'ne (2011) göre, sorgulama, gözlemleme, ağ kurma, deney yapma ve ilişkilendirme gibi beş temel beceri, dijital dönüşüm süreçlerinin temelini oluşturan inovatif düşünme biçimini yansıtır. Dijital dönüşüm yalnızca teknolojiyi kullanmakla sınırlı olmayıp; yerleşik iş modellerini sorgulayan, kullanıcı deneyimini merkeze alan, denemeye açık ve farklı fikirleri bir araya getirebilen bir zihniyet gerektirir. Benzer şekilde, Westerman vd.'nin (2014)çalışmasında da inovasyon, teknolojiyi yalnızca destekleyici bir unsur olarak değil, iş stratejisinin odağına yerleştiren bir dönüşüm süreci olarak ele alınır. Dijital inovasyon; yeni ürünlerin geliştirilmesinin ötesinde, iş süreçlerinin yeniden tasarlanması, veri temelli karar alma sistemlerinin oluşturulması ve müşteri deneyiminin dijital olarak yeniden yapılandırılmasıyla sağlanır.

Farklı araştırmalar, dijital çağda inovatif bir örgüt yapısının ürün odaklı değil, bütünleşik ve kültürel bir dönüşüm gerektirdiğini ortaya koymaktadır. Porter ve Heppelmann'ın (2015) sektör öncüsü şirketler üzerine yaptığı kavramsal analiz, inovasyonun artık yalnızca fiziksel ürünle sınırlı olmadığını; yazılım, veri analitiği ve bağlantı özellikleriyle desteklenen, sürekli ve hizmet odaklı bir modele evrildiğini göstermiştir. Bu yaklaşım, Bughin vd.'nin (2017) 2.000'den fazla şirketle yaptığı geniş ölçekli çalışmada desteklenmiş; inovasyon kültürünün sürekli öğrenme, risk alma ve deney yapmaya dayalı çevik bir yapı olduğu, bunun sürdürülebilirliği için ise liderlik desteği ve çalışanların yetkilendirilmesinin kritik önemi vurgulanmıştır. Nihayet, Vial'ın (2019) literatür taraması da bu bulgularla uyumlu olarak, dijital dönüşümle rekabet avantajı elde etmenin, esnek, öğrenmeye açık ve yenilikçi bir örgütsel kültür geliştirmekten geçtiğini teyit etmektedir. Tüm bu çalışmalar, teknolojik değişime uyum sağlayan ve yeni iş modelleri geliştiren inovatif örgütlerin, inovasyonu yalnızca bir sonuç değil, aynı zamanda sürekli bir organizasyonel süreç olarak benimsemesi gerektiğine işaret etmektedir.

2. Dijital İşletmelerde Örgüt Kültürü: Veri Odaklı, İnovatif ve Çevik Örgütlerin Kavramsal Olarak İncelenmesi

Araştırmanın veri kaynağını, konuyla ilgili hakemli akademik dergilerde yayımlanmış makaleler, kitaplar ve lisansüstü tezler oluşturmaktadır. Yapılan kavramsal inceleme Google Scholar, Web of Science (WoS), Scopus ve YÖK Ulusal Tez Merkezi akademik veri tabanlarında gerçekleştirilmiştir. İncelemede, ilgili kavramları kapsamak üzere İngilizce ve Türkçe anahtar kelimeler kullanılmıştır. Ana odağı veri odaklı, çevik veya inovasyon kültür olan ve dijital işletmeler bağlamını ele alan çalışmalar araştırmaya dahil edilirken teknik/teknolojik odaklı olup, örgütsel/kültürel boyutu yeterince ele almayan çalışmalar hariç tutulmuştur. Seçilen çalışmalar, kavramsal olarak ele alınmıştır. Bu kapsamda, her bir çalışmada yazar, yıl, amaç, yöntem, örneklem ve sonuçlar incelenmiştir.

Tablo 1: Veri Odaklı, Çevik ve İnovatif Kültür Çerçevesinde İncelenen Çalışmalar

Çalışma Adı, Yazarı (Yazarları), Yılı	Amacı	Veri Toplama Yöntemi	Örneklemi	Analiz Yöntemi	Sonucu
Dijital Dönüşümün Örgütsel Çevikliğe Etkisi (Doktora Tezi) Özdemir, A. (2023	Dijital dönüşüm uygulamalarının örgütlerin çeviklik düzeyi üzerindeki etkisini incelemek	Anket tekniği kullanılmıştır.	Türkiye'de faaliyet gösteren büyük ölçekli işletmeler.	Veriler, nicel analiz yöntemiyle incelenmiştir. Korelasyon analiz ve regresyon analiz ile raporlanmıştır.	Dijital dönüşüm sürecinin örgütün çevikliğini artırma potansiyeline sahip olduğunu; çevikliğin ise dijitalleşme başarısında kritik bir rol oynadığını göstermektedir.
How organizational agility promotes digital transformation: An empirical study Zhang, H., Ding, H., & Xiao, J. (2023)	Örgütsel çevikliğin dijital dönüşümü nasıl teşvik ettiğini ampirik olarak incelemek.	Anket tekniği kullanılmıştır.	Veriler Çin'de kamu sektörü kurumlarında çalışan 313 kişiden toplanmıştır.	Veri analizi için yapısal eşitlik modeli (SEM) kullanılmıştır.	Çalışma bulgularına göre, örgütsel çevikliğin (hem operasyonel ayarlama hem stratejik) dijital dönüşüm performansını anlamlı ve pozitif etkilediği bulunmuştur. özellikle kamu sektörü bağlamında çevikliğin ve dinamik kabiliyetlerin dijital dönüşüm başarısı için kritik olduğu vurgulanmıştır.
The Determinants and Role of Agility in Digital Organizations Holotiuk, F., Beimborn, D., & Jentsch, C. (2018)	Dijital çağda örgütlerin çevik olabilmesi için hangi tasarım unsurlarının önemli olduğunu belirlemek ve çevikliğin örgütsel başarıya katkısını göstermeyi amaçlamak	Anket tekniği kullanılmıştır.	Profesyonel hizmet odaklı sektörlerde çalışanların 217 geçerli yanıtı üzerinden yürütülmüştür.	Veriler istatistiksel olarak analiz edilmiştir	Çalışma bulgularına göre; örgütsel tasarımın (örneğin esneklik, düşük formalizasyon, süreçlerin modülerliği gibi) çevikliği etkilediği ve çevikliğin de örgütsel etkinlik üzerinde anlamlı bir belirleyici olduğu görülmüştür. Özellikle "detecting agility" ve "reacting agility" her ikisi de dijitalleşen ortamda organizasyonların uyum ve tepki yeteneklerini artıran önemli boyutlar olarak bulunmuştur.
İşletmelerde dijital olgunluk	Dijital olgunluk yüksek olan	Nicel anket çalışması	Türkiye'de faaliyet gösteren	Korelasyon analizi,	Büyük veri analitik yeteneği,

düzeyinin yenilik performansı üzerindeki etkisinde büyük veri analitik yeteneğinin aracı ve veri odaklı kültürün düzenleyici rolü Düzcan, A., & Fidan, Y. (2023).	işletmelerde büyük veri analitik yeteneği ve veri odaklı kültürün birlikte nasıl işlediğini ve bu sayede yenilik performansına nasıl etkide bulunduğunu" kavramsal ve ampirik olarak ortaya koymak	yöntemi kullanılmıştır. Anketler çevrimiçi yayınlanmıştır.	orta ve büyük ölçekli işletmelerin yöneticileri veya kıdemli personelleri. 411 geçerli anket üzerinden değerlendirme yapılmıştır.	regresyon ve hiyerarşik regresyon analizleri yapılmıştır.	dijital olgunluk ile yenilik performansı ilişkisi içerisinde aracı rol oynamaktadır.
Toward the development of a big data analytics capability. Gupta, M., & George, J. F. (2016)	İşletmelerde büyük veri analitiği yeteneği kavramını teorik ve yapısal olarak tanımlamak ve bu yeteneğin örgütsel performans üzerindeki etkilerini açıklayan bir çerçeve geliştirmek.	Büyük veri analitiği yeteneğini ölçmek amacıyla literatüre dayalı yeni bir ölçek geliştirilmiştir. Yapılandırılmış bir anket formu kullanılmıştır.	ABD merkezli firmalarda, pilot çalışmada 232, ana çalışmada 108 yöneticiye ulaşılmış ve toplam 340 geçerli anket değerlendirmeye alınmıştır.	İlk aşamada doğrulayıcı faktör analizi, ikinci aşamada ise yapısal eşitlik modellemesi kullanılmıştır.	Bulgular, büyük veri analitiği yeteneğinin geliştirilmesinin firma performansını anlamlı biçimde artırdığını göstermiştir. Organizasyonların, rekabet avantajı elde edebilmesi için büyük veri analitiği yeteneğini çok boyutlu bir kaynak olarak ele alması gerektiği bildirilmiştir.
Does data-driven culture impact innovation and performance of a firm? An empirical examination. Chatterjee, S., Chaudhuri, R., & Vrontis, D. (2024)	işletmelerde veri odaklı kültürün hem yenilik hem de firma performansı üzerindeki etkisini ampirik olarak incelemek	Yapılandırılmış anket tekniği kullanılmıştır.	Çalışma, farklı işletmelerde iş analitiği araçlarını kullanan çalışanlardan toplam 456 geçerli yanıt üzerine yürütülmüştür.	Yapısal eşitlik modeli ve regresyon temelli analiz teknikleri kullanılmıştır.	Veri-odaklı kültür, hem ürün yeniliğini hem de süreç yeniliğini pozitif ve anlamlı biçimde artırmaktadır. Ürün yeniliği ve süreç yeniliği ise firma performansını olumlu yönde etkilemektedir; dolayısıyla veri-odaklı kültürün firma performansı üzerindeki dolaylı etkisi yenilik aracılığıyla gerçekleşmektedir.
How smart, connected products are transforming companies Porter, M. E., & Heppelmann, J. E. (2015)	Dijitalleşme çağında şirketlerin organizasyonel yapısını, yetkinlik gereksinimle-ni ve rekabet avantajı kaynaklarını nasıl yeniden şekillendirmesi gerektiğini	Akıllı, bağlantılı ürünler geliştiren firmalardan elde edilen kurumsal raporlar, sektörel analizler ve yönetici görüşmelerine dayanmakta-	Örneklem, "akıllı ve bağlantılı ürünler" geliştiren ve IoT ekosistemine yatırım yapan imalat, teknoloji ve endüstriyel üretim firmalarından oluşmaktadır.	Nitel-kavramsal analiz yaklaşımıyla hazırlanmış-tır.	Dijital dönüşümün sadece teknolojik değil, aynı zamanda stratejik ve örgütsel bir devrim olduğunu; çeviklik, veri temelli karar alma ve sürekli öğrenme kültürünün bu dönüşümün merkezinde yer

	tartışmak.	dır.			aldığını vurgulamaktadır.
The case for digital reinvention Bughin, J., LaBerge, L., & Mellbye, A. (2017)	Dijital dönüşümün yalnızca teknolojik bir değişim olmadığını, işletmelerin kültürünü, stratejisini ve organizasyon yapısını kapsayan bütüncül bir yeniden icat süreci olduğunu vurgulamak	Küresel düzeyde anket ve sektör verisi analizi kullanılmıştır.	60'tan fazla ülkede'de 1500'den fazla işletmelerin dijital dönüşüm direktörü gibi üst düzey yöneticilerinden oluşmaktadır.	Betimsel istatistik, korelasyon ve kümeleme analizi yöntemleri birlikte kullanılmıştır.	Dijital dönüşümde yalnızca teknoloji yatırımı yapan firmaların kalıcı başarı sağlayamadığını; kurum kültüründe inovasyonu teşvik eden bir zihniyet dönüşümünün asıl fark yaratan unsur olduğu bildirilmektedir.
Understanding digital transformation: A review and a research agenda Vial, G. (2021)	dijital dönüşümün tanımı, bileşenleri, etkileri ve örgütsel sonuçlarıyla ilgili literatürdeki kavramsal dağınıklığı gidererek bütüncül bir çerçeve oluşturmak	2000-2020 arasında yayımlanan akademik yayınların literatür taraması yapılmıştır. İkincil veri analiziyle hazırlanmıştır.	Örneklem, seçilen literatürdeki 100'den fazla nitel ve nicel makaleden oluşmaktadır.	Çalışmada içerik analizi (content analysis) ve tematik sentez (thematic synthesis) yöntemleri uygulanmıştır.	İnovasyon kültürünü oluşturan "deneme-yanılma", "veriye ve teknolojiye açıklık", "süreç ve yapıların yeniden yapılandırılması" gibi unsurlar, çalışmada kültürel dönüşümün bir parçası olarak yer almaktadır.

Bu çalışmalar bütüncül olarak değerlendiğinde, işletmelerin başarısının, teknolojik alt yapıdan çok kültürel alt yapıya dayandığı söylenebilir. Çalışmalar, işletmelerin kararlarını veriye dayalı almasının inovasyon ve performansı artırdığını gösterirken (Gupta & George 2016; Chatterjee vd., 2024), Düzcan & Fidan (2023) ise veri odaklı kültürün bu etkiyi düzenlediğini sunmuştur. Bughin vd. (2017) ve Vial (2021), dijital dönüşümün bir yeniden icat süreci olduğunu, bunun yalnızca teknolojik değil, zihinsel ve kültürel bir yeniden yapılanma olduğunu vurgulamaktadır. İnovasyon burada hem bir zihniyet dönüşümü, hem de dijitalleşmenin sürdürülebilirliğini sağlayan kültürel bir kavram olarak bildirilmektedir. Zhang vd. (2023), Holotiuk vd. (2018) ve Özdemir (2023), çevikliğin dijital dönüşümün etkinliğini artıran kültürel unsur olduğunu gösterirken çevikliğin, yalnızca hızlı tepki verme yetisi değil, aynı zamanda öğrenme, uyum sağlama ve değer yaratma kapasitesi olduğunu vurgulamaktadır.

Sonuç

Bu çalışmanın amacı, işletmelerde veri odaklı, inovatif ve çevik kültürü kavramsal çerçevede incelemek ve aralarındaki ilişkiyi ortaya koymaktır. İncelenen çalışmalar, bu üç kavramın birbirinden bağımsız olmadığını göstermektedir. Veri odaklı kültür, işletmelerin veriye dayalı karar almasını sağlayarak değişimlere daha hızlı ve doğru karar vermesine zemin hazırlayabilir. Dolayısıyla veri odaklı kültürün çevikliği güçlendirdiği söylenebilir. Çeviklik ise örgüt içinde yenilik fikirlerinin daha hızlı ortaya çıkmasını ve uygulanmasını kolaylaştırır. Böylelikle, örgütlerin hızlı karar alabilmesi, deneme-yanılmaya açık bir ortamın oluşmasını sağlayarak inovasyon kültürünü de oluşturabilir. Sonuç olarak, veri odaklılığın çevikliği beslediğini, çevikliğin, inovasyonu hızlandırdığını ve bu döğünün de işetmelerin dijital ortamda sürdürülebilir rekabet avantajı elde edebileceği söylenebilir.

Bu çalışmada veri odaklı, inovatif ve çevik kültür kavramları kavramsal düzeyde ele alınmıştır. Ancak bu üç kültür, henüz gelişmekte olan kavramlardır. Bu nedenle gelecekte yapılacak nicel araştırmaların, bu kavramlar arasındaki ilişikiyi ortaya çıkarmada önemli olacaktır. Özellikle farklı sektörlerde yürütülecek çalışmalar, veri odaklılık, çeviklik ve inovasyon kültürlerinin sektörlere göre nasıl farklılaştığını ya da birbirini nasıl etkilediğini ortaya koyabilir.

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KÜRESEL ISINMA MI KÜRESEL SOĞUMA MI, ÜLKELER BU SÜREÇTE NASIL HAZIRLANMALI?

Ahmet OĞUZ

Prof. Dr., Kütahya Dumlupınar University
E-mail: ahmet.oguz@dpu.edu.tr
ORCID ID: 0000-0001-5291-2819

Gülçin GÜREŞÇİ

Assoc. Prof. Dr., Dokuz Eylül University
E-mail: gulcin.guresci@deu.edu.tr
ORCID ID: 0000-0002-3761-8547

Öz

Küresel ısınmanın, insan kaynaklı olmasının sonucunun Dünyadaki ortalama yüzey sıcaklığının uzun süreli artışının olduğunu ve bu artışın sanayi öncesindeki sıcaklıkların yaklaşık 1,1°C üzerinde artırdığını vurgulamaktadır. Bu durum, iklim sisteminin dengesizleştirebileceği bir durumu getirebilecek bir tehdit olarak görülmektedir. Öte yandan 1970'lerde başlayan literatürdeki bir dizinin aerosollerin etkisi nedeniyle küresel soğumanın yaşanacağı iddiasında yer aldığı görülmektedir. Bu, her iki görüşmede de salgınları değerlendirilerek, iklim koşullarının değişime karşı direncinin yüksek değişimi için neler yapılması gerektiği konusunda eğilmektedir. Mevcut iklimlere ve önde gelen uluslararası ekonomi ve iklim iklimlerinin projeksiyonlarına dayanarak, küresel ekonomilerin şu etkileri üzerinde beklemeliyiz: Azalan verimlilik ve büyüme, tedarik zincirinde aksama ve varlıklar için fiziksel risklerde artış. Ancak diğer yandan ülkelere açıdan yeni fırsatlar ortaya çıkıyor. Yeşil sanayi devrimi diyebileceğimiz bir süreç yaşanmakta, küresel güce sahip fosil yakıtlara sahip ülkeler aleyhine jeopolitik güç dengeleri değişmeye başlamaktadır. Yeşil krediler ve sürdürülebilir piyasa finansları ile ilgili çok hızlı bir dönüşüm yaşanmaktadır. Uzun vadeli ekonomik gidişat, büyük ölçüde bugün yapılan politika tercihlerine bağlıdır. Hataların gecikmeli ve ardından ani değiştirilmiş bir geçiş, ekonomik açıdan en yıkıcı geçiş olacaktır. Önemli miktarda ön yatırım gerektirse de, proaktif ve düzenli bir geçişin, kontrolsüz iklim sıcaklıklarının yol açtığı zararlardan çok daha az iyileşmenin ve daha birleştirilmiş, dayanıklı ve dirençli bir ekonomik esnek giden yolun açılması öngörülmektedir.

Anahtar Kelimeler: Küresel Isınma, Küresel Soğuma, Dünya

GLOBAL WARMING? GLOBAL COOLING? HOW SHOULD COUNTRIES PREPARE FOR THIS PROCESS?

Abstract

The paper emphasizes that the human-caused nature of global warming results in a long-term increase in the average surface temperature of the Earth, approximately 1.1°C above pre-industrial levels. This situation seen as a threat that could lead to a situation where the climate system becomes unstable. On the other hand, a series of claims in the literature, beginning in the 1970s, suggest that global cooling will occur due to the effects of aerosols. This, along with the assessment of pandemics in both discussions, focuses on what needs to increase the resilience of climate conditions to change. Based on current climates and projections from leading international economic and climate agencies, we should expect the following impacts on global economies: decreased productivity and growth, disruptions in supply chains, and increased physical risks to assets. However, new opportunities are emerging for countries. A process that we can call a green industrial revolution is underway, and geopolitical power balances are beginning to shift against fossil fuel-rich countries with global power. A very rapid transformation is taking place regarding green credits and sustainable market finances. The long-term economic trajectory largely depends on the policy choices made today. A delayed and then abruptly altered transition due to

mistakes would be the most economically devastating. While requiring significant upfront investment, a proactive and orderly transition projected to yield far less recovery from the damage caused by uncontrolled climate temperatures and pave the way for a more unified, resilient, and economically flexible path forward.

Keywords: Global Warming, Global Cooling, Earth

GİRİŞ

İklim değişikliği günümüzde artık sadece çevre problemi değil, aynı zamanda ulusal güvenlik, ekonomi, enerji stratejileri ve sosyal yaşam üzerinde etkileri olan karmaşık bir durumdur. Bu nedenle, ülkelerin iklim değişikliği ile ilgili hazırlık aşamalarını değerlendirirken "küresel ısınma mı yoksa soğuma mı olacak?" sorusu büyük bir önem taşımaktadır (IPCC, 2021: 3). Son yüzyılda yapılan bir dizi çalışma sıcaklık artışının belirgin bir şekilde hızlandığına işaret ederken, bazı çalışmalar ise güneş döngüleri ve volkanik etkinlik gibi doğal unsurların gelecekte soğuma senaryolarını oluşturabileceğine dikkat çekmektedir (Lockwood, 2010: 206).

İklim sisteminin karmaşık yapısı, atmosfer, okyanuslar, buzullar ve güneş etkinlikleri gibi pek çok bileşenin birbiriyle ilişkili olmasından dolayı, tek bir açıdan açıklama getirilmesini zorlaştırmaktadır. Bazı araştırmalar, son bir asırda görülen ortalama sıcaklık artışlarının küresel ısınmanın ana eğilimi olduğunu göstermekteyken (NASA, 2020: 12), diğer bazı çalışmalar belirli dönemlerde bölgesel soğuma eğilimlerinin, doğal döngülerin ya da okyanus akıntılarının sıcaklık artışının hızını yavaşlatabileceğine dair bulgular sunmaktadır (Soon ve Yaskell, 2003: 272). Bu durum, farklı yöntemler ve zaman ölçekleri kullanıldığında tartışmaların yönünün değişebileceğini ortaya koymaktadır. Bu nedenle mesele tek boyutlu bir eğilimle sınırlı tutulmamalıdır; hem ısınma hem de soğuma olasılıklarının birlikte ele alındığı daha geniş bir bakış açısı benimsenmelidir.

KÜRESEL ISINMA EĞİLİMİ VE BULGULAR

Son yüz yıl içerisinde dünya genelindeki ortalama sıcaklık yaklaşık 1,1°C artış göstermiştir (IPCC, 2021: 5). Atmosfere salınan sera gazlarının, özellikle karbondioksit (CO_2) ve metan (CH_4), bu gelişmenin temel etkenleri olduğu bilimsel verilerle kanıtlanmıştır (NASA, 2020: 3). Okyanus sıcaklığı, kutupsal buzulların durumu ve deniz seviyesindeki değişiklikler de küresel ısınmanın fiziksel belirtileri arasında sayılmaktadır. Okyanuslar, atmosferdeki ısının yaklaşık %90'ını emmektedir. 1993 yılından itibaren ortalama deniz seviyesi her yıl 3,3 mm artış göstermiştir (NOAA, 2019: 15). Bu bilgiler, küresel ısınmanın sadece sıcaklık artışlarıyla sınırlı olmadığını ve sistematik bir ısınma modeli sergilediğini ortaya koymaktadır. Bu eğilim, birçok bölgede sıcak hava dalgaları, kuraklıklar, aşırı yağışlar ve orman yangınlarının daha sık ve şiddetli hale gelmesine yol açmıştır. Grönland ve Antarktika'nın buz alanlarında önemli bir erime meydana gelmektedir; yıllık kayıplar 20. yüzyılın ortalama seviyelerinin oldukça üzerindedir (IPCC, 2021: 17-8). Bunun neticesinde:

- Arktik deniz buzları hızla azalmakta,
- Kutup ekosistemleri etkilenmekte,
- Okyanus akıntılarında değişiklik olasılığı artmaktadır.

Bu sonuçlar, küresel ısınmanın sistematik olarak doğrulanmış bir bilimsel gerçeklik olduğunu göstermektedir.

3. KÜRESEL SOĞUMA OLASILIĞI VE DOĞAL DÖNGÜLERİN ROLÜ

İklim sistemi, sadece insan kaynaklı etkenlerden değil, aynı zamanda doğal olaylardan da etkilenmektedir. Güneş lekesi döngüleri, Dünya'nın yörünge değişiklikleri ve büyük ölçekli volkanik patlamalar, daha serin dönemlerin yaşanmasına yol açabilir (Lean ve Rind, 2008: 1104). Küresel soğuma ihtimali, iklim sisteminin doğal döngülerin etkisi altında şekillenen yapısı göz önünde bulundurularak incelenmelidir. Dünya üzerindeki uzun vadeli iklim değişiklikleri, Milankovitch döngüleri olarak adlandırılan yörünge değişiklikleri ile yakından ilişkilidir; bu döngüler, buzul dönemleri ve sıcak fazların başlıca belirleyicileridir. Benzer şekilde, güneş aktivitesindeki azalma dönemleri — örneğin

Maunder Minimum — tarihi verilerle bağlantılı olan bölgesel soğuma eğilimlerinin sebebi olarak değerlendirilmektedir (Eddy, 1976: 1183).

Orta ve kısa vadede okyanus döngüleri de sıcaklık değişimlerinde etkili olabilir. PDO ve AMO'nun soğuk dönemlerinin 20. yüzyılda küresel sıcaklık artışını yavaşlattığı birçok çalışma ile kanıtlanmıştır (Trenberth ve Hurrell, 1994: 263). Güneş'in her on bir yılda bir tekrarlayan döngüleri, Dünyaya ulaşan radyasyon miktarını etkileyebilir. 2008 ile 2010 yılları arasındaki "minimum güneş aktivitesi" durumu gibi, azalmış güneş lekesi dönemleri geçici soğuma etkileri yaratabilir (Lockwood, 2010: 209). Büyük volkanik patlamalar, havaya yayılan sülfat aerosolleri dolayısıyla geçici soğuma etkileri meydana getirebilir. Örneğin: Tambora (1815) volkanik patlamasından sonra 1816 yılı "yazsız yıl" olarak tarihe geçmiştir (Crowley, 2000: 274).

Tarihsel belgelerde yer alan Küçük Buz Çağı (Little Ice Age, 1450–1850), belirli zaman dilimlerinde doğal süreçlerin küresel soğuma etkisi yaratabileceğini gösteren önemli bir örnek teşkil etmektedir (Mann, 2002: 758). Bu bağlamda, bazı araştırmacılar kısa süreli veya bölgesel soğuma eğilimlerinin hâlâ mümkün olabileceğini belirtmektedir (Lockwood, 2010: 205).

ÜLKELERİN HAZIRLIK İHTİYACI

Bu araştırmanın kapsamı gereği, ülkelerin hangi iklim yönüne doğru hareket edildiğini belirlemekten ziyade, ısınma veya soğuma fark etmeksizin nasıl hazırlanması gerektiğini incelemek önemlidir.

Küresel iklim sisteminin doğal döngüleri, insan kaynaklı etkileri ve yerel geri bildirimler yüzünden giderek daha belirsiz hale gelmesi, ülkelerin kapsamlı bir iklim hazırlık yeteneği oluşturmasını zorunlu kılmaktadır. Bu hazırlık, öncelikle iklim değişikliğinin çeşitli etkilerini (enerji temininde güvenlik, tarım verimliliği, su sıkıntısı, altyapı dayanıklılığı, sağlık tehditleri ve ekonomik kırılganlıklar) dikkate alan kapsamlı bir ulusal uyum yapısını gerektirir.

Özellikle iklim risk analizi, erken uyarı sistemleri, uluslararası veri paylaşımı, iklimle ilgili felaketlere dayanıklı altyapı planlamaları, enerji dönüşüm planları ve iklim finansman yöntemleri, ülkelerin dayanıklılığını belirleyen anahtar unsurlarıdır. IPCC verilerine göre, iklim değişikliği etkilerine karşı savunmasız durumda olan ülkeler, sadece fiziksel olarak değil, ekonomik ve yönetimsel olarak da risk altındadır; bu nedenle hazırlık, teknik uyumluluğun yanı sıra kurumsal kapasiteyi de kapsamalıdır (IPCC, 2022: 12–15).

Ayrıca şu politikalar izlenerek de ülkeler hazırlıklı olabilir:

Yeşil Sanayi Devrimi: Düşük karbonlu bir ekonomiye geçiş, devasa yeni pazarlar ve yatırım fırsatları yaratır. Bunlara yenilenebilir enerji (güneş, rüzgar, hidrojen), elektrikli araçlar, enerji depolama, yeşil binalar ve döngüsel ekonomi teknolojileri dahildir.

Jeopolitik Değişimler: Enerji dönüşümü, küresel güç dinamiklerini yeniden şekillendirecektir. Yenilenebilir enerji ve piller için kritik mineraller (örneğin lityum, kobalt, nadir toprak elementleri) açısından zengin ülkeler stratejik önem kazanırken, geleneksel fosil yakıt ihracatçıları ekonomilerini çeşitlendirme ihtiyacıyla karşı karşıya kalacaktır.

Riskin Yeniden Fiyatlandırılması ve Yeni Finansal Araçlar: Yeşil tahviller, sürdürülebilirliğe bağlı krediler ve karbon piyasaları dahil olmak üzere sürdürülebilir finans alanında hızlı bir büyüme yaşanmaktadır. Merkez bankaları ve finansal düzenleyiciler, iklim riskini stres testlerine ve denetim çerçevelerine giderek daha fazla dahil edilmelidirler.

Kısa ve orta vadede, iklim değişikliğinin maliyetleri (artan afet müdahalesi, altyapı hasarı, tarımsal kayıplar) küresel ekonomik büyümeyi yavaşlatacak ve enflasyonu artıracaktır. Uzun vadede ise ekonomik gidişat, büyük ölçüde bugün yapılan politika tercihlerine bağlıdır. Politika eylemlerinin gecikmeli ve ardından ani olduğu düzensiz bir geçiş, ekonomik açıdan en yıkıcı geçiş olacaktır. Önemli miktarda ön yatırım gerektirse de, proaktif ve düzenli bir geçişin, kontrolsüz iklim değişikliğinin yol

açtığı zararlardan çok daha az maliyetli olacağı ve daha istikrarlı, sürdürülebilir ve dirençli bir ekonomik geleceğe giden yolu açacağı öngörülmektedir.

Küresel ısınma durumunda olası problemler:

- Tarımda ürün azalması,
- Su kaynaklarının azalması,
- Enerji ihtiyacında yükseliş gibi etkiler meydana getirmesi.

Küresel ısınma durumunda olası problemler:

- Tarım sezonlarının kısalması,
- Isınmak için enerji talebinde artış,
- Taşımacılık ve ulaştırma işlerinin güçleşmesi.

Beklenen temel sorunlar olacaktır ve gerekli hazırlıkların yapılması şarttır. Her iki durumun da değişik ama önemli etkileri olabileceğinden, ülkelerin iklim değişikliğinden kaynaklanan belirsizlikleri dikkate alan detaylı bir uyum stratejisine ihtiyaç duyduğu anlaşılmaktadır (UNFCCC, 2015: 22):

Her iki durumda da:

- Dayanıklı altyapı,
- Aşırı hava olaylarına yönelik hazırlık,
- Kıyı alanlarında koruyucu tedbirler,
- Enerji tedarik güvenliği gerekmektedir

Belirsizlikleri azaltmak adına ülkelerin:

- İklime dair uzun dönemli verileri takip etmesi,
- Modellemeleri yenilemesi,
- Bilimsel kuruluşlarla işbirliği içinde çalışması çok önemlidir.

Ayrıca, eğer bir bölgesel soğuma, aşırı hava koşulları ya da iklim düzeninde bir değişiklik olursa, ülkelerin tarım, enerji kullanımı, gıda bulundurma planları, su altyapıları ve acil durum hazırlıkları gibi alanları sürekli güncellemeleri gerekecek. Bu bağlamda, iklim tahminlerinin sürekli takibi, bilimsel kurumlarla iş birliği yapılması ve çeşitli sektörleri kapsayan uyum politikalarının hayata geçirilmesi, ulusal dayanıklılığın temel unsurlarıdır.

SONUÇ VE DEĞERLENDİRME

Küresel ısınma veya küresel soğuma üzerine yapılan tartışma, çağdaş iklim bilimlerinin önemli yöntemsel problemlerini de gözler önüne sermektedir. Tartışmanın odak noktası, atmosfer ve okyanus sistemlerinin uzun vadeli davranışlarını açıklamaya yönelik veriler, modeller ve yorumlar arasındaki farklılıklardır. Bu yüzden mesele yalnızca sıcaklık dalgalarının tespit edilmesiyle sınırlı kalmamaktadır; ayrıca hangi indislerin daha etkili olduğu, hangi zaman diliminin iklim eğilimi için temel alınacağı ve kullanılan modellerin ne derece güvenilir olduğu gibi konular da tartışmanın ayrılmaz bir parçasını oluşturmaktadır.

Bilim dünyasında son yüzyıldaki eğilimler genel olarak dünya genelindeki sıcaklıkların yükseldiğine işaret etse de, iklimin doğal döngüler, güneşin etkileri, volkanik etkinlikler, okyanus akıntıları ve atmosfer bileşenleri gibi pek çok farklı faktörden etkilendiği kabul edilmektedir. Bu yüzden bazı araştırmalar, bazı dönemlerde sıcaklık artış hızının azaldığını veya bazı dönemlerdeyse bölgesel soğuma işaretlerinin güçlendiğini göstermektedir. Bu durum, tartışmaların yalnızca "ısınma" ve "soğuma" üzerine kurgulanmasının yetersiz olduğunu ortaya koymaktadır.

Ayrıca, iklim sistemi oldukça karmaşık olduğundan, çeşitli veri setlerinin analizi ve modellere eklenen değişkenlerin çeşitliliği araştırmacılar arasında farklı sonuçların ortaya çıkmasına neden olmaktadır.

Örneğin, buz çekirdekleri, ağaç halkaları ve tortul kayıtlar gibi paleoiklim verileri uzun dönemli döngüsel değişimleri ortaya koyarken, güncel ölçümler daha kısa zaman dilimindeki eğilimlere odaklanmaktadır. Bu durum, hangi zaman diliminin "temel eğilim" olarak kabul edileceği konusunda farklı bakış açılarına yol açar.

Bu bağlamda, tartışma bile iklim araştırmalarının dinamik yapısını, veri yorumlamanın çok katmanlı biçimini ve bilimsel toplulukta yer alan metodolojik çeşitliliği göstermektedir. Ne küresel ısınma ne de küresel soğuma tek başına bir veri seti ile açıklanabilecek bir durumda değildir; bunun yerine, iklim sisteminin etkileşim halindeki bileşenleri hakkında geniş bir bilimsel çalışma alanını temsil eder. Bu nedenle, konu tek bir sonuca dayanmaz; aksine, çok boyutlu bir bilimsel sürecin anlaşılması gereklidir.

Sonuç olarak, gelecekte küresel sıcaklık eğilimlerinin nasıl şekilleneceği sadece mevcut verilere değil, bu verilerin nasıl değerlendirildiğine, hangi parametrelerin modellere dahil edildiğine ve hangi zaman dilimlerinin iklim tanımı için seçildiğine bağlı olarak ortaya çıkmaktadır. Bu nedenlerle tartışma, iklim sisteminin karmaşıklığı dikkate alındığında, bilimsel topluluk içinde sürekli olarak açık bir araştırma alanı olarak devam etmektedir.

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ÖZEL GEREKSİNİMLİ BİREYLERİN AFETLERE DİRENÇLİLİĞİNİN ARTIRILMASININ İNSANİ AÇIDAN VE EKONOMİK AÇIDAN DEĞERLENDİRİLMESİ

Gülçin GÜREŞÇİ

Assoc. Prof. Dr., Dokuz Eylül University
E-mail: gulcin.guresci@deu.edu.tr
ORCID ID: 0000-0002-3761-8547

Ahmet OĞUZ

Prof. Dr., Kütahya Dumlupınar University
E-mail: ahmet.oguz@dpu.edu.tr
ORCID ID: 0000-0001-5291-2819

Öz

Özel gereksinimli bireylerin doğal veya insan kaynaklı felaket ve afetlere karşı dirençliliğini artırmak için uygulanacak olan politikalar sadece insan hakları açısından değil aynı zamanda da stratejik bir ekonomik karar olması açısından önem arz etmektedir. Özel gereksinimli bireyler ile ilgili, afetler öncesi alınması gereken tedbirler alınıp gerekli düzenlemeler yapılmaması durumunda hem afet kaynaklı ölüm oranları yükselmekte hem de ekonomik kayıplar ve sağlık sistemi üzerine binen yük artmaktadır. Özel gereksinimli bireylerin acil durumlara dirençliliğini artırmak için yapılan yatırımlar ise daha düşük acil durum mübadele maliyetleri, sağlık sistemi üzerindeki yükün azaltılması, insan sermayesinin korunması ve afet sonrası daha hızlı ekonomik toparlanmanın sağlanması gibi temel etkiler yaratır. Ayrıca özel gereksinimli bireylerin ihtiyaç duyacağı taşınabilir güç kaynakları, erişilebilir iletişim cihazları gibi teknolojilerin acil durumlara özel olarak tasarlanacak olması teknolojik gelişmeyi hızlandıracak bir unsur olarak karşımıza çıkmaktadır. Bu sayede Ar-Ge yatırımları ve dolayısıyla teknolojik ilerleme sağlanmasına olumlu katkısı olacaktır. Bu da büyüyen bir pazar yaratarak yeni iş ve ihracat imkanları doğuracaktır. Ayrıca acil durum uyarıları, ulaşım ağlarının ve toplanma alanlarının düzenlenmesi herkes için tasarım ilkesi temel alınarak yapılacağı için bu sayede tüm toplum için daha iyi hizmetlerin oluşması sağlanacaktır.

Anahtar Kelimeler: Afet, Özel Gereksinimli Bireyler, Ekonomi

HUMANITARIAN AND ECONOMIC ASPECTS OF ENHANCING THE RESILIENCE OF INDIVIDUALS WITH SPECIAL NEEDS TO DISASTERS

Abstract

Policies aimed at increasing the resilience of individuals with special needs to natural or man-made disasters and calamities are important not only from a human rights perspective but also as a strategic economic decision. Failure to take necessary precautions and make the required arrangements before disasters affecting individuals with special needs leads to increased mortality rates, economic losses, and a greater burden on the healthcare system. Investments in increasing the resilience of individuals with special needs to emergencies have key effects such as lower emergency response costs, reduced burden on the healthcare system, protection of human capital, and faster economic recovery after disasters. Furthermore, the design of technologies such as portable power sources and accessible communication devices specifically for emergencies will accelerate technological development. This will positively contribute to R&D investments and consequently technological progress, creating a growing market and generating new jobs and export opportunities. Furthermore, emergency alerts,

transportation networks, and assembly areas designed based on the principle of design for all, thus ensuring better services for the entire community.

Keywords: Disasters, Individuals with Special Needs, Economic

GIRIŞ

Literatürde farklı sınıflamaları olmakla birlikte özel gereksinimli bireyler şu şekilde tanımlanır:

"Özel gereksinimli birey; doğum öncesi, doğum sırası ve doğum sonrasında, gelişim sürecinde oluşan çeşitli nedenlere bağlı olarak; bilişsel, dil, hareket, fizik, sosyal ve duygusal gelişimlerinde ölçme araçlarıyla ölçülebilen düzeyde yetersizlik, yavaşlama, gerileme veya ileride olma sonucunda yaşıtlarına göre farklı özellikler gösteren ve normal eğitim programlarından yararlanamayan, kısmen yararlanan veya yararlandığı halde destek programları ile eğitimlerini devam ettirebilen bireylerdir" (Baykoç, 2015:20).

Özel gereksinimli bireyler afetler sırasında önemli zorluklarla karşılaşırlar. Bu zorluklara karşılıklı hazırlıklı olunması büyük önem taşımaktadır. Bu sadece özel gereksinimli bireyler ve ailelerinin değil aynı zamanda devletin sorumluluğundadır. Bu zorluklar en temel şekilde (United Nations, 2015):

Hareketlilik Sorunları: Yardım olmadan tahliye zorluğu.

Duyusal Aşırı Yüklenme: Kalabalık, gürültülü ve hijyen bakımından sıkıntılı sığınaklar otizm veya travma sonrası stres bozukluğu olanlar için dayanması çok zor olabilir.

İletişim Engelleri: Standart uyarılar işitme engelli, işitme güçlüğü çeken veya görme engelli kişiler için erişilemezdir.

Tıbbi Bağımlılık: Elektrik kesintileri yaşam destek ekipmanlarını devre dışı bırakabilir; ilaç veya tıbbi malzeme olmadan tahliye hayati tehlike oluşturabilir (FEMA, 2010).

Anlama Engelleri: Standart talimatlar zihinsel engelli kişiler, down sendromlular veya otizmliler tarafından anlaşılamayabilir.

Özel gereksinimli bireylerin koşullarını nasıl iyileştirebiliriz? Bu sorunun cevabını verebilmek için atılması gereken politikalar hem insan hakları açısından hem de makroekonomik dengeler açısından önem arz etmektedir (Jensen ve Chavet, 2014). Bu politikalar şu şekilde özetlenebilir:

İyileştirme, afet yönetiminin tüm aşamalarına entegre edilmelidir (United Nations, 2025). Acil durum planlarının oluşturulmasında özel gereksinimli bireyler ve onlarla ilgili çalışan kuruluşlar dahil edilmelidir. Çünkü yaşadıkları deneyimler ve temel ihtiyaçlarını bilmek önemlidir. Tahliye sırasında yardıma ihtiyaç duyabilecek kişileri belirlemek için yerel acil servislerle gönüllü kayıtlar oluşturulmasını teşvik edilmelidir (Dynes, 1994). "Acil Durum Çantaları": (Ek ilaçlar, tıbbi cihaz pilleri (güç bankası ile), reçete kopyaları, duyusal araçlar ve iletişim kartları içeren acil durum kitleri) mutlaka hazırlanmalıdır. Erişilebilir kamu uyarı sistemleri oluşturulmalı, uyarıların herkese ulaşmasını sağlamak için birden fazla kanal kullanılmalıdır. Metin uyarıları, görsel sirenler, sözlü mesajlar ve sosyal medya.

Afet sırası ve sonrası için yapılacaklar ise şu şekilde özetlenebilir: Tahliye araçlarının tekerlekli sandalyeleri taşıyabilecek kapasitede olduğundan emin olunmalı. Fiziksel olarak erişilebilir barınaklar belirlenmelidir. Engellilik farkındalığı konusunda eğitimli personel yetiştirilmelidir. Duyusal hassasiyeti olan bireyler için sessiz bölgeler yaratılmalı, tıbbi cihazları şarj etmek için yedek güç sağlayıcıları hazır bulundurulmalı, erişilebilir tuvaletler ve yıkama tesisleri yapılmalıdır. Acil durum personeli, çok çeşitli engellere sahip insanlarla saygılı ve etkili bir şekilde iletişim kurma ve onlara yardımcı olma becerileriyle donatılmalıdır. Gıda, su ve malzeme dağıtım noktalarının fiziksel olarak erişilebilir olduğundan ve personelin çeşitli ihtiyaçları olan insanlara yardımcı olabileceğinden emin olunmalıdır. Zihinsel veya psikososyal engelli kişilere erişilebilir travma odaklı danışmanlık hizmeti sağlanmalıdır.

Özel gereksinimli bireyleri de kapsayan, afetlere karşı dayanıklılık politikalarını bir maliyet olarak görmek, dar görüşlü bir yaklaşımdır. Gerçekte dayanıklılığı artıran yatırımların getirisi oldukça yüksektir. İzleyen bölümde bunun nedenler açıklanmaktadır. Çünkü temelde, bir ülkenin insan sermayesini korumakta, gelecekteki mali yükümlülükleri en aza indirmekte, yenilikçi pazarları teşvik etmekte ve dayanıklı bir ekonominin temelini oluşturan sosyal güveni inşa etmektedir (Kreps ve Drabek, 1996). En savunmasız kesimlerin korunmasını sağlayarak, bir ulus nihayetinde tüm ekonomik temelini güvence altına almaktadır.

VERIMLILIĞIN VE EKONOMIK KATILIMIN ARTIRILMASI İÇIN DAYANIKLI TOPLUMLARIN İNŞASININ ÖNEMI

Dayanıklılık politikaları, afet sonrası daha hızlı ekonomik iyileşme sağlamaktadır (Gillespie, 1991). Hızlı bir şekilde tahliye ve iyileşme sağlayabilen topluluklar, ekonomik faaliyetlerine daha hızlı bir şekilde geri dönerler. Engelli çalışanlar veya bakıcıları bir felaket nedeniyle iş göremez hale gelmezlerse, daha erken işe dönebilir ve verimliliği koruyabilirler.

Özel gereksinimli bireyler için yapılması gereken bir diğer politika ise bu kişilere bakım sağlayan kişiler ile ilgilidir. Özel gereksinimleri olan birçok kişinin bakıcıları (aile üyeleri veya profesyoneller) vardır. Dayanıklı bir destek sistemi, bu bakıcıların acil bakım sağlamak için uzun süre işgücünden uzaklaştırılmasını önleyerek ekonomik katkı yapmaya devam etmelerini sağlamış olur.

Erişilebilirliği zorunlu kılmak ve buna yatırım yapmak, inovasyonu teşvik eder ve ticari fırsatlar yaratır (Kouzmin, vd., 1995). Özellikle taşınabilir güç kaynaklarına, erişilebilir iletişim cihazlarına ve acil durumlar için uyarlanabilir ekipmanlara olan talep, teknoloji şirketleri için büyüyen bir pazar oluşturarak iş imkanları ve ihracat potansiyeli yaratacaktır.

Acil durum uyarılarından, ulaşım ve barınaklara uygulanan "herkes için tasarım" ilkesi, genellikle herkes için daha iyi olan ürün ve hizmetlere yol açar. Yani aslında özel gereksinimli bireyler için tasarlanmış olan ürünler tüm toplum için kolaylaştırıcı hizmetleri beraberinde getiri. Bu inovasyon diğer sektörlere de yayılabilir ve rekabet gücünü artırabilir.

Ekonomik refah, sosyal istikrar temeli üzerine kuruludur. Bir hükümet tüm vatandaşlarına değer verdiğini gösterdiğinde güveni güçlendirir (May ve Williams, 1986). Bu güven, acil durum direktiflerine uyum için çok önemlidir ve uzun vadeli yatırım ve ekonomik büyüme için kilit bir unsur olan daha istikrarlı ve işbirlikçi bir toplumu teşvik eder. Ayrıca eşitsiz afet müdahalesi, sosyal bölünmeleri şiddetlendirir ve huzursuzluğa yol açabilir. Herkese adil muamele sağlayan kapsayıcı politikalar, bu riski en aza indirir ve ekonomik faaliyet için gerekli olan sosyal düzeni korur.

Küresel finans sistemleri, iklim ve afet riskini giderek daha fazla fiyatlandırmaktadır. Sağlam, kapsayıcı afet risk azaltma planlarına sahip ülkeler ve belediyeler genellikle daha düşük riske sahip görülür ve bu da afet sigortası ve yeniden yapılanma borçlanmasının maliyetini potansiyel olarak düşürür. Çevresel, sosyal ve yönetişim kriterleri, sosyal kapsayıcılık ve dayanıklılığa büyük önem vermektedir. Hassas nüfus gruplarını korumaya yönelik bir taahhüt göstermek, bir ülkeyi yabancı doğrudan yatırımlar için daha çekici hale getirir.

SONUÇ VE DEĞERLENDIRME

Özel gereksinimli bireyler için afetler gerçekleşmeden yapılan tüm düzenlemeler ve alınan önlemler birçok olumlu etkiyi beraberinde getirir. Bu etkiler aşağıdaki şekilde özetlenebilir:

Daha Düşük Acil Durum Müdahale Maliyetleri: Yönetilen kayıtlar ve erişilebilir tahliye planları gibi etkili ön planlama, son dakika, yüksek riskli ve pahalı acil kurtarma operasyonlarına olan ihtiyacı azaltır.

Azaltılmış Sağlık Hizmeti Yükü: Bir afet sırasında yaralanmaları, travmaları ve kronik rahatsızlıkların kötüleşmesini önlemek, kamu sağlık sistemleri üzerindeki uzun vadeli yükü

hafifletir. Bu, acil tıbbi bakım, rehabilitasyon ve uzun vadeli desteğe harcanacak önemli miktarda kamu fonundan tasarruf sağlar.

İnsan Sermayesinin Korunması: Engelli bireyler, iş gücünün, tüketicilerin ve vergi mükelleflerinin bir parçasıdır. Onları koruyan politikalar, bu nüfus kesiminin sosyal güvenlik ağına daha fazla maliyet getirmek yerine ekonomik olarak katkıda bulunmaya devam etmesini sağlar.

Daha hızlı ekonomik toparlanma: Dayanıklılığı artırılmış bir toplumda afet sonrası hızla bireyler ekonomik faaliyetlere geri dönebilmektedir.

Yeni teknolojilerin gelişimini zorunlu kılma: Özel gereksinimli bireyler için belirli yasal standartları zorunlu kılarak erişilebilirliği artırıcı politikalar uygulamak firmaları teknoloji geliştirmeye iter. Yeni iş ve pazar imkanları yaratır.

Sosyal uyum ve dayanışmada artış: Tüm halkın özel gereksinimli bireyler hakkında bilinçlendirilmesi ve dayanıklılık politikalarının bir parçası olarak düşünülmesi toplumda uyum ve dayanışmanın artmasına neden olur.

Toplumda güven inşası: Devletin uyguladığı kapsayıcı politikalar ülke içinde eşitsizlikleri azaltarak güveni artırır.

Uluslararası risk puanının düşmesi: Dayanıklı toplumlar daha az finansal riske sahiptir. Özetlenen tüm bu etkiler değerlendirildiğinde özel gereksinimli bireyler için geliştirilen politikaların sadece onların güvenliği için değil toplumun tüm kesimleri için önemli olduğu göstermektedir. Bu başlıklar tek tek değerlendirilerek her biri için gerekli politikalar geliştirilmelidir.

Afetler sırasında ve sonrasında özel gereksinimleri olan kişileri korumak ayrı bir faaliyet değil, tüm acil durum planlaması ve müdahalesinin dokusuna entegre edilmesi gereken bir konudur. Bu, proaktif iş birliğini, erişilebilir iletişimi ve gerçekten hiç kimseyi geride bırakmamaya yönelik sarsılmaz bir bağlılığı gerektirir.

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Contact Information

+90-555-703 703 2

info@emidworld.com

www.emidworld.com