NOVEMBER 7-8-9, 2024 / İSTANBUL

EMIDWORLD'24

2nd International Congress on Economics Public Finance Business & Social Sciences

PROCEEDINGS BOOK

EDITOR

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PROCEEDING BOOK

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Assoc. Prof.Dr. Adil AKINCI

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About the Congress

Dear EMIDWORLD Conference delegates,

Meeting you in İstanbul at the EMIDWORLD'24 2nd International Congress on Economics Public Finance Business & Social Sciences was a great pleasure. Altınbaş University hosted the conference, and we had the pleasure of utilizing the university's on-campus facilities and meeting students at almost all sessions of presentations.

It is my pleasure to explain that we received 156 Manuscripts from 36 countries and personally met 222 delegates on the campus. The presentations were completed on consecutive days.

We are planning to organize the next conference in Romania or Moldova and after that, it is the aim of the EMIDWORLD Association to organize the third conference in another country which will be decided next year in Romania or Moldova at the closing session of the conference.

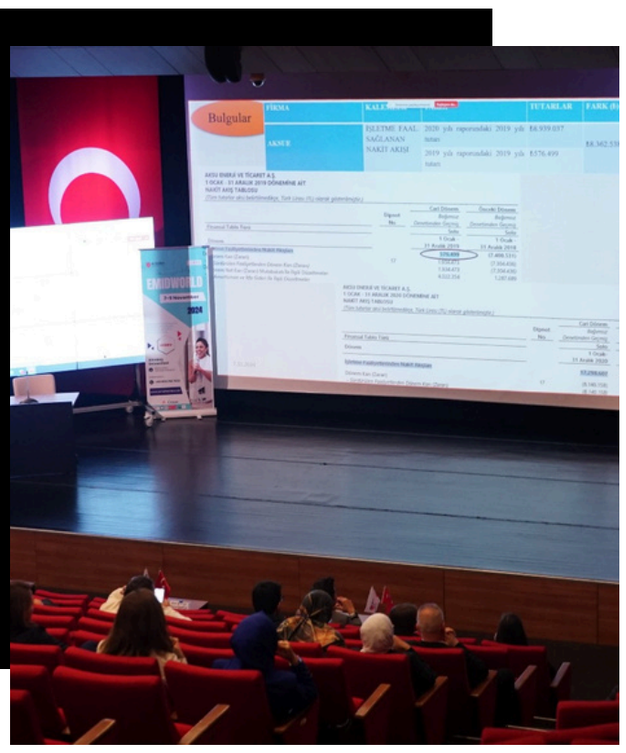
As the conference chairman, I would like to thank both Dr. Kurnaz and Dr. Akıncı and their team for working on all the steps involved in organizing this conference successfully. Special and sincere thanks to all the delegates and attendees of the conference.

On behalf of the EMIDWORLD'24 Association, I wish to see all of you at our next conference to be held in Romania or Moldova.

Yours sincerely.

Organization Committee

Photo Gallery



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SECRETARIAT
Dr. Meryem USLU

GRAPHIC - DESIGN
Assoc. Prof. Dr. Serkan ÇALIŞKAN

* The lists are written in title and surname alphabetical order.

Countries of Participants

Country	Number of Participants	Flag
Turkey	106	
Algeria	5	
England	4	
Egypt	2	
India	9	
Moldova	7	
Canada	1	
Pakistan	13	
Slovakia	2	
Morocco	5	
Malaysia	1	
Nigeria	1	
Ukraine	8	
Indonesia	1	
Croatia	1	
Albania	10	
Syria	2	
Jordan	1	
Romania	8	
Turkish Republic of Northern Cyprus	2	
United States	3	
Kosovo	1	
Tunisia	2	
Greece	2	
Czech Republic	1	
Kazakhstan	2	
Uzbekistan	1	
United Arab Emirates	4	
Kyrgyzstan	1	
North Macedonia	2	
Azerbaijan	1	
Bangladesh	2	
Portugal	1	
Russia	2	
Spain	3	
Iran	3	
Lithuania	2	
TOTAL	**223**	

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4	Prof. Dr. Mehmet Hakan SATMAN	58	Asst. Prof. Dr. Nuran Halise BELET
5	Prof. Dr. Niyazi KURNAZ	59	Asst. Prof. Dr. Özlem SAYDAR
6	Prof. Dr. Suphi ASLANOĞLU	60	Asst. Prof. Dr. Selçuk YALÇIN
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8	Prof. Dr. Ümit GÜNER	62	Asst. Prof. Dr. Turgay MÜNYAS
9	Prof.Dr. Turgay Karalinç	63	Doctorate Shehzada Ghulam ABBAS
10	Assoc. Prof. Dr. Ali KABLAN	64	Hilal Merve ALAGÖZ
11	Assoc. Prof. Dr. Ali KESTANE	65	Lec. Kadriye BEKTAŞ
12	Assoc. Prof. Dr. Bülent BALKAN	66	Lec. Nihal ÖZTOP
13	Assoc. Prof. Dr. Çiğdem TUĞAÇ	67	Lec. Pervin Ahu ÇERÇİ
14	Assoc. Prof. Dr. Dursun BOZ	68	Lec. PhD. Emine Aybike AKKUTAY
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21	Assoc. Prof. Dr. Hasan YALÇIN	75	Lec. PhD. Özlem EREN
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28	Assoc. Prof. Dr. Özüm EĞİLMEZ	82	PhD. Onur YAĞIŞ
29	Assoc. Prof. Dr. Resül YAZICI	83	PhDc. Hasan ÖZYAŞAR
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34	Assoc. Prof. Dr. Veysel KARAGÖL	88	Res.Asst. A. Emir BULUT
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36	Asst. Prof. Dr. Ali ÖZBEK	90	Res.Asst. Ümit GEZİCİ
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52	Asst. Prof. Dr. İrem ERASA AKÇA	106	Student Zehra TOPÇU
53	Asst. Prof. Dr. MEDET İĞDE	107	
54	Asst. Prof. Dr. Mehmet DİNÇASLAN	108	

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53	Asst. Prof. Dr. Nidhi AGRAWAL	111	Expert Atena Salmanpour AHMADI
54	Asst. Prof. Dr. Oumama BOUABDI	112	Expert Kostiantyn OTKALENKO
55	Asst. Prof. Dr. Parvaneh ESMAILI	113	Ibrahim N. KHATATBEH
56	Asst. Prof. Dr. Sweta BAKSHI	114	Natalia ZHUK
57	Lec. Aramish Altaf ALVI	115	Nighat RAFIQ
58	Lec. Gugulan EVGHENIA	116	Saliha THEIRI
		117	Muhammad Maher ALBOUNİ

ALTINBAŞ ÜNİVERSİTESİ

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Türkiye Ekonomik ve Mali Araştırmalar Vakfı

NOVEMBER 7-8-9, 2024 / İSTANBUL

EMIDWORLD'24

INTERNATIONAL CONGRESS ON ECONOMICS PUBLIC FINANCE BUSINESS & SOCIAL SCIENCES

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EMID Ekonomi Maliye İşletme Dergisi

MALİYE FİNANS YAZILARI

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PROGRAMME (Oral Presentations)

EMIDWORLD INTERNATIONAL CONGRESS ON ECONOMICS PUBLIC FINANCE BUSINESS & SOCIAL SCIENCES

07-09 NOVEMBER 2024 / İSTANBUL-TÜRKİYE

07 November 2024, THURSDAY	
10.00-11.00	Introduction - Registration
11.00-13.00	Opening Ceremonies
	Protocol Speeches **Prof. Dr. Ali Argun KARACABEY- Altınbaş University Vice Rector** **Tevfik ALTINOK – Honorary President of TEMAR Foundation** **Prof. Dr. M. Hasan EKEN – President of TEMAR Foundation** **Prof .Dr. Zeynep ÖZSOY - Dean, Altınbaş University School of Business** **Assoc. Prof. Dr. Hasan YALÇIN – Crowe HSY**
	Keynote Speakers: **Prof. Dr. M. Hayri KOZANOĞLU**
	Panel: **"Sustainability: Business of the Future"** **Hediye GÜRAL GÜR - Doç. Dr. Dicle YURDAKUL**

13.30-14.30 LUNCH BREAK

07 NOVEMBER 2024, THURSDAY		
SESSION CHAIR: Assoc.Prof.Dr. Ali KESTANE		
14:30 - 15.30	Session 1 Hall 1	Carbon Tunnel Vision on Sustainability Axis - Assoc.Prof.Dr. **Ali KESTANE -** Student **Nurgül ÇELİK**
		Inaccuracies in Financial Reports: Error Or Manipulation? - Asst.Prof.Dr. **Işik ALTUNAL**
		Sustainable Water Accounting: The Pinar Su Example - Prof.Dr. **Niyazi KURNAZ -** Assoc.Prof.Dr. **Ali KESTANE -** Student **Elif Şeyda ÇELİK**
		Is There a Need for Islamization in Terms of Subjects in Business Sciences: An Evaluation of the Term Accounting - Lec.PhD. **Melahat KARADAĞ**
		Relationship between Artificial Intelligence Anxiety and Demographic Characteristics of Employees: A Study on Accounting Professionals - Lec. **Şeyda YILDIZ ÇAKIR**

SESSION CHAIR: Prof.Dr. Ferda YERDELEN TATOĞLU		
14.30 - 15.30	Session 1 Hall 2	Spatial Panel Data Analysis of Determinants of Regional Unemployment in Turkey - Res.Asst. **Beyda DEMIRCI - Prof.Dr. Ferda YERDELEN TATOĞLU**
		Does Supply Chain Pressure Affect Food Prices? A Global View - Assoc.Prof.Dr. **Veysel KARAGÖL**
		Use of Blockchain Applications in Foreign Trade - Lec. **Pervin Ahu ÇERÇİ**
		Do Financial Innovations Contribute to Economic Growth in Türkiye? - Res.Asst.PhD. **Ayşegül ŞAHİN**
		The Relationship Between Economic Growth and Female Labour Participation An Empirical Analysis on BRICS-T Countries - Assoc.Prof.Dr. **Füsun ÇELEBİ BOZ**

15.30-15.45 COFFEE BREAK

SESSION CHAIR: Asst.Prof.Dr. Özlem SAYDAR		
15.45 - 16.45	Session 2 Hall 1	From Governance to Performance: How Fintech Transforms European Banking - Lec. PhD. **Nur BADRIYAH MOKHTAR -** Lec. PhD. **ASHRAFUL ALAM**
		Evaluation of the Impact of Macroeconomic Factors on Index Prices by ARDL Bounds Test - Asst.Prof.Dr. **Ayşegül ERTUĞRUL -** Res.Asst. **İlknur KÜLEKÇİ**
		Impact of Fintech on Corporate Governance and Bank Performance: Evidence from European Commercial Banks - Lec. PhD. **Nur BADRIYAH MOKHTAR**
		Real Return Analysis of Financial Instruments in Long-Term Perspective - Asst.Prof.Dr. **Özlem SAYDAR**-PhD **Turgay MÜNYAS**
		Why does CEO engage significantly in the related party transactions? An Investigation of Indonesian Manufacturing Companies - Res.Asst. **Tri DAMAYANTI -** Prof.Dr. **Suphi ASLANOĞLU**
SESSION CHAIR: Prof.Dr. Hüseyin SELİMLER		

15.45 - 16.45	Session 2 Hall 2	Evaluating the Performance of the US and EURO Economies Using Grey Relational Analysis Method: 2021-2024 - Prof.Dr. **Hüseyin SELİMLER - Prof.Dr. Süleyman KALE**
		The Use of Artificial Intelligence in the Prevention of Financial Fraud - Assoc.Prof.Dr. **Bulent BALKAN**
		Bargaining Power and Adjustment Speed of Working Capital: Insights from Turkish Companies - Asst.Prof.Dr. **Boren SARGON**
		A Research on Financial Distress Costs and Business Failure Prediction Models – Ph.D. **Aysun ATMIŞDÖRTOĞLU**
		Booms and Busts in the Turkish Housing Market - Prof. Dr. **Süleyman KALE - Assoc. Prof. Dr. Emre ÇEVİK**

16.45-17.00 COFFEE BREAK

SESSION CHAIR: Assoc.Prof.Dr. Siti Sarawati JOHAR

17.00 - 18.00	Session 3 Hall 1	The Study of Emotional Intelligence and Political Behaviour by Quasi-Experimental Method - Assoc.Prof.Dr. **Siti Sarawati JOHAR**
		Legislative Aspects on The Utilization of Abiotic Components of The Natural Environment - Lec. **Luminita DIACONU**
		Strategies and Models Used for the Reform of Public Administration in Kosova - Prof.Dr. **Afrim HOTI**
		A Simulation Study of Ageing and Pensions in the Ukraine - Assoc.Prof.Dr. **Olga TOFANIUK**

SESSION CHAIR: Prof. Dr. M. Hasan EKEN

17.00 - 18.00	Session 3 Hall 2	The Effect of Management Information Systems on Digital Transformation - Lec. **Kadriye BEKTAŞ**
		The Impact of Gender Equality and Sustainability Reporting on Financial Performance: A Study on the Blomberg Gender Equality Index - Assoc.Prof.Dr. **Neriman YALÇIN** - Asst.Prof.Dr. **Mehmet GÜNEŞ**
		Demand Capacity Prediction by using Machine Learning: An Example of NHS – Assoc. Prof. Dr. **Ezgi DEMİR** - Assoc. Prof.Dr. **Melike TORUN**
		Institutionalization and Branding in Higher Education: An Example of a Foundation University with Qualitative Techniques - Lec. **Suna TATLI**

08 NOVEMBER 2024, FRIDAY

SESSION CHAIR: Assoc. Prof. Sezer BOZKUŞ KAHYAOĞLU

11.00 - 12.00	Session 4 Hall 1	Prolonged Effects of Exchange Rate Misalignment: A Comprehensive Study on Morocco's Trade Dynamics - PhD. **Zainab AZGHOUR** - Prof.Dr. **Oumansour NOR-EDDINE**
		The Implications of the BRICS' Role on the Dominance of the US Dollar in the Global Economy:A Prospective Study - Asst.Prof.Dr. **Boutkhil GUEMIDE -** Prof.Dr. **Sahraoui ABD ALLAH**
		A Study on Sustainable Financing and the Impact of Green Bonds in the Turkish Banking Sector - Lec. PhD. **Özlem EREN**
		Effects and Solutions of the Use of Artificial Intelligence on Employees' Loose of Their Jobs - Asst.Prof.Dr. **Özgür BAŞYİĞİT**

SESSION CHAIR: Assoc. Prof.Dr. Hasan YALÇIN

11.00 - 12.00	Session 4 Hall 2	Identification of Sectors at Risk of Bankruptcy in Turkey in the Light of Ministry of Justice and Central Bank Data and Compliance Analysis with Concordat Declarations – Assoc. Prof.Dr. **Hasan YALÇIN** – Assoc. Prof.Dr. **Ali KABLAN**
		External Assurance on Sustainability Reports - Lec. **Nihal ÖZTOP**
		E-Learning Perceptions of Prospective Accountants Impact on Quality of Work Life - Asst.Prof.Dr. **Ali ÖZBEK** - Assoc.Prof.Dr. **Dursun BOZ**
		A Comparative Bibliometric Analysis on Finance and Islamic Finance in Publications Indexed in WOS under the Title of Ethics A Comparative - Lec.PhD. **Melahat KARADAĞ -** Asst.Prof.Dr. **Hamide SELÇUK**

13.30-14.30 LUNCH BREAK

SESSION CHAIR: Asst.Prof.Dr. Meryem USLU

14.30 - 15.30	Session 5 Hall 1	Analyzing the Studies on Green Collars with Visual Mapping Technique - Asst.Prof.Dr. **Meryem USLU -** Student **Hasan ÖZYAŞAR**
		Digital Detox in Organizations: Applications, Effects and Results - Lec.PhD. **Gönül Gül EKŞİ –** Assoc. Prof. Dr. **Ergun KARA**
		Evaluation of Obstacles to Green Human Resources Management Using AHP Method - Assoc.Prof.Dr. **Gözde KOCA** - Student **Şeyma Tuncay**
		Bibliometric Analysis of Organizational Agility Articles - Asst.Prof.Dr. **Sevcan FIRIN**
		AI-Powered Content Creation in Marketing - Assoc.Prof.Dr. **İbrahim Halil EFENDİOĞLU**

SESSION CHAIR: Asst.Prof.Dr. Nuran Halise BELET

14.30 - 15.30	Session 5 Hall 2	From Political Economy to Neo-Classical Economics: Fundamental Differences and Transformations - Lec. **Yelda ALTUNAL GÜRGEN**
		In accordance with the Temettuat Registers, the Tilkili (Petralona) neighborhood, affiliated with the Gelmeriye Nahiyah (subdistrict) within the Selanik Central District, in the year 1844 - Asst.Prof.Dr. **Ertuğrul ÇAM**
		Women Empowerment: Analysis of Determinants of Gender-Based Labor Force Participation in Turkey and Pakistan - Asst.Prof.Dr. **Nuran Halise BELET-** Doctorate **Shehzada Ghulam ABBAS**
		Hannah Arendt: The Depths of Politics and the Redefinition of Concepts - Student **Eda Nur DOĞAN** - Asst.Prof.Dr. **Çağdaş ZARPLI**
		An Evaluation of the Presidential Systems of Two Turkic States: Türkiye and Kazakhstan - Asst.Prof.Dr. **Çağdaş ZARPLI -** Student **Elif Gökçe DEMEZ**

Crowe HSY Special Session

15.30-16.30 **HALL I**	**"Inflation Accounting: Implications for Financial Statements and Capital Structure"** Assoc. Prof. Dr. Hasan YALÇIN & Assoc. Prof. Dr. Ali KABLAN & Özkan CENGİZ – Crowe HSY Partner

16.30-16.45	COFFEE BREAK

SESSION CHAIR: Assoc.Prof.Dr. Aura Marcela PREDA		
16.45 - 17.45	Session 6 Hall 1	Scientific Trends in Humanitarian Logistics: A Bibliometric Analysis - Res.Asst. **Ümit GEZİCİ**
		Analysis of Long-Term Relationship between Return and Volatility of Bitcoin and Ethereum and International Stock Indices; ARDL Approach - Student **Muhammad Maher ALBOUNI -** Res.Asst. **Ece Kepenek**
		Regulations and Recommendation for the Prevention of the Secondary Victimization (Special Focus On The Mendez` Principles) - Assoc.Prof.Dr. **Aura Marcela PREDA**
		Assessment of OECD Countries' Water Resources Use Performance Using the ARAS Method - Assoc.Prof.Dr. **Gözde KOCA -** Prof.Dr. **Mehmet Hakan SATMAN -** Assoc.Prof.Dr. **Özüm EĞILMEZ -** Student **Pakize Merve MARTTIN**

SESSION CHAIR: Lec. Luminita DIACONU		
16.45 - 17.45	Session 6 Hall 2	Granger Causality Test for Public Revenues and Public Expenditures Hypothesis: Türkiye Example - Student **Seher AÇIKGÖZ** - Assoc.Prof.Dr. **Semra ALTINGÖZ ZARPLI**
		Sustainability of Budget Deficits in Türkiye: Empirical Evidence – Asst. Prof. Dr. **İrem ERASA AKÇA**
		A Perspective on Customs Duties within the Framework of Constitutional Taxation Principles - Lec.PhD. **Neslihan KIZILER**
		General Considerations on The Legal Framework Governing Aquatic Resources - Lec. **Luminita DIACONU** - Prof.Dr. **Trofimov IGOR**
		The Impact of Fintech Credit on China's Growth in Capital Expenditure - Prof.Dr. **Osamah ALKHAZALI**
		Examining the Effect of Tax Amnesty on Tax Compliance - Student **Esranur Betül BAKIR** - Assoc.Prof.Dr. **Şebnem EKERYILMAZ**

CLOSING SESSION		
17.45-18.30	Closing Session HALL 1	Prof. Dr. M. Hasan EKEN- Tevfik ALTINOK-Assoc. Prof. Adil AKINCI Next EMIDWORLD for 2025

ALTINBAŞ ÜNİVERSİTESİ

TEMAR
Türkiye Ekonomik ve Mali Araştırmalar Vakfı

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EMIDWORLD INTERNATIONAL CONGRESS ON ECONOMICS PUBLIC FINANCE BUSINESS & SOCIAL SCIENCES

07-09 NOVEMBER 2024 / İSTANBUL-TÜRKİYE

07 NOVEMBER 2024, THURSDAY

		SESSION CHAIR: Assoc.Prof.Dr. Resül YAZICI
13:00 - 14.00	Online Session 1	The Validity of Gibson Paradox in Türkiye: An Analysis on the Housing Sector - Asst.Prof.Dr. **Ali Rauf KARATAŞ**
		Central Bank Digital Currency and Financial Stability - Lec.PhD. **Emine Aybike AKKUTAY**
		The Relationship between High-Technology Product Exports and Economic Growth: The Case of APEC Countries - Lec.PhD. **Fatih AKIN**
		A Solution Proposal for Unemployment and Lack of Qualified Personnel in Turkey in the Industry 5.0 Process: Career Planning - Assoc.Prof.Dr. **Resül YAZICI**
		The Validity of Gibson Paradox in the Trade Sector: An Analysis on Türkiye - Asst.Prof.Dr. **Ali Rauf KARATAŞ**
		The Relationship between Information and Communication Technologies and Economic Growth: The Case of G-8 Countries - Lec.PhD. **Selin DİNÇER**

		SESSION CHAIR: Assoc.Prof.Dr. Selim TÜZÜNTÜRK
14.00 - 15.00	Online Session 2	Estimation of Türkiye's Cement Export Demand with Artificial Neural Networks - Assoc.Prof.Dr. **Selim TÜZÜNTÜRK -** Asst.Prof.Dr. **Fatma SERT ETEMAN**
		Transmission of Monetary Policy in Developing Countries in Conditions of Global Inflation Growth - The Case of North Macedonia and Serbia - Assoc.Prof.Dr. **Vlatko PACESKOSKI -** Prof.Dr. **Filip TASKOVSKI**
		Determinants of Inflation in Conditions of Global Changes and Conflicts - The Case of North Macedonia - Student **Filip TASKOVSKI -** Assoc.Prof.Dr. **Vlatko PACESKOSKI**
		A Study of an Awareness of Banking Related Knowledge and Utility Among Selected Community Groups in Yemen - Student **Ramzi Abdullah Ahmed HASSAN**
		Survival Analysis of Breast Cancer Patients in Adamawa State, Nigeria: A Comparative Study of Parametric Regression Models - Student **Tsacha AMINUWA**

		SESSION CHAIR: Prof.Dr. Himrane MOHAMMED
15.00 - 16.00	Online Session 3	Piketty' Income Inequality Framework in Pakistan - Lec. **Aramish Altaf ALVI**
		Bidirectional Link Between FDI and Industrialization: A Study of Asian Economies - Lec. **Mubasher ALI**
		Procuring Pareto Efficiency in Ecological Economics: The Mediating Roles of Industry 5.0 and Human Behavior - Student **Mahvish MUZAFFAR**
		Critics on the Application of Ordinal Utility Theory Givenby Prof. J.R. Hicks And Rgd Allen in Case of Decimal Point Combinations of the Goods X And Y - Asst.Prof.Dr. **Nidhi AGRAWAL**
		Food Security Stakes in Algeria in Light of International Crises, What Role Does Agricultural Insurance Play? - Asst.Prof.Dr. **Fatima MEKHLOUF** - Prof.Dr. **Himrane MOHAMMED -** Prof.Dr. **Hassani HOCINE**
		Influence of The Russia–Ukraine War And Covid-19 Pandemic on Geopolitical Risk Uncertainty, Time-Varying Beta And Investor's Fear: Evidence From Nifity Financial Services Sector - Asst.Prof.Dr. **Raneem Ghazi ALDEKI –** PhD. **Ibrahim KHATATBEH**

		SESSION CHAIR: Asst.Prof.Dr. Ayyüce MEMİŞ KARATAŞ
16.00 - 17.00	Online Session 4	Stock Price Forecast with Multiple Regressation Method - Asst.Prof.Dr. **Eda AYVACIK -** Asst.Prof.Dr. **Selçuk YALÇIN**
		How Safe are Safe Haven Currencies? The Case of Recent Türkiye Crises - Lec.PhD. **Erhan DAŞTAN**
		Chaotic Dynamics in Cryptocurrency Pricing: Nonlinear Modelling with N-Beats for Enhanced Forecasting - Assoc.Prof.Dr. **Eyyüp Ensari ŞAHİN -** Asst.Prof.Dr. **Ayyüce MEMİŞ KARATAŞ**
		System Dynamics of Electricity Distribution Network Productivity - Prof.Dr. **Saeed RASEKHI -** Expert **Atena Salmanpour AHMADI**
		Prioritisation of Labor Demand of Industrial Enterprises by Entropy and TOPSIS Method - Student **Zehra TOPÇU** - Asst.Prof.Dr. **Esra ULUKÖK**
		The Determinants of Bank Profitability: Case of Europe - Asst.Prof.Dr. **Ardita BYLO -** Student **Sosina MEÇAJ**
		The Effect of Culture on International Trade - Prof.Dr. **Saeed RASEKHI -** Expert **Aida RASEKHI**

SESSION CHAIR: Prof.Dr. GANİTE KURT		
17.00 - 18.00	Online Session 5	Company Types and Independent Audit Relationship in Turkey - Assoc.Prof.Dr. **Murat KARAHAN -** Student **EDİP İĞDE**
		Accounting Ethics Training in Secondary Accounting Programs: Requirements and Practices - **HakaN YILMAZ - Prof.Dr. GANİTE KURT**
		The Impact of Key Audit Matterso on Independent Audit Reports: Borsa Istanbul Analysis - Student **Edip İĞDE -** Asst.Prof.Dr. **Medet İĞDE**
		What is the Role of the Internal Control System in Corporate Social Responsibility Practices? - Assoc.Prof.Dr. **İlknur ESKİN**
		Examining the Criteria for Determining Patients' Doctor Choices: Evidence from Gümüşhane - Assoc.Prof.Dr. **Yıldırım Beyazıt ÇİÇEN**
		Relationship between Independent Auditing and Sustainability - Student **Nihat ÇELİK - Assoc.Prof.Dr. Ş. Gül REİS -** Asst.Prof.Dr. **Medet İĞDE**
		Analyzing Non-Financial Performance with LOPCOW and ARAS Methods: A Study on Privately-Owned Deposit Banks for the Period 2022-2023 - Asst.Prof.Dr. **Ibrahim YAVUZ**

SESSION CHAIR:		
18.00 - 19.00	Online Session 6	Financial Development, Globalization, and Structural Transformation in Developing Countries - Asst.Prof.Dr. **Komla AVOUMATSODO**
		Carbon Risk and Earnings Management - Prof.Dr. **Wiem DRIDI**
		Eurasian Space States Strategies: Focast and Scenario - Prof.Dr. **Alena POSAZHENNIKOVA**
		Analysis of the Impact of Human Capital and Renewable Energy Use on Economic Growth in Turkey and the EU Using ARDL and Toda-Yamamoto Tests - Asst.Prof.Dr. **Havva Nesrin TİRYAKİ -** Student **Eyüphan GÜNDOĞDU**
		Bank Profitability and Covid-19 Pandemic in Turkish Banking Sector: A SUR Analysis - Prof.Dr. **Ümit GÜNER** - Res.Asst. **A. Emir BULUT**
		Sustainable Finance Strategies for Driving Green Investment in the Era of Climate Change - **Bakir Illahi DAR - Shweta JAISWAL**
		China's Foreign Relations and Their Global Impact Analytical Study - Prof.Dr. **Rasha El BAZ**
		The Impact of Tax Holidays on Foreign Direct Investment Attraction in North Africa: An Empirical Analysis - Lec.PhD. **Somia GHRARA**
		Estimating of the Third Country Effect to promote FDI in North Africa - Asst.Prof.Dr. **Oumama BOUABDI**

08 NOVEMBER 2024, FRIDAY

SESSION CHAIR: Asst.Prof.Dr. Maryam ISHAQ		
10.00 - 11.00	Online Session 7	Energy Efficiency Gains and the Rebound Effect: Investigating the European Household for Electricity Consumption through Stochastic Frontier Modeling - Asst.Prof.Dr. **Maryam ISHAQ**
		The Economy of Trust: A Global Exploration of Macroeconomic Drivers and Interpersonal Dynamics - Lec. **Minza MUDASSAR**
		Poor Health, Poor Women: How do positive and negative health outcomes affect the earnings of Female Home-based workers? - Prof.Dr. **Aribah ASLAM**
		Macroeconomic Determinants of Corruption in Public and Private Institutions: A Systematic Literature Review - Student **Georgios TAVELLARIS –** Assoc. Prof. Dr. **Vlachos VASILEIOS**
		Synergizing Circular Economy and H2H Marketing: A Sustainable Approach to Human-Centric Business - Student Md. **Mustaqim Roshid -** Assoc.Prof.Dr. **Rejaul KARIM -** Student **Abdul WAAJE**

SESSION CHAIR: Prof. Dr. Svitlana ZHUKEVYCH		
Esraea	Online Session 8	Comprehensive Approach to Business Process Management: Traditional Methods and Digital Innovations - Student **Sergii LYSENKO** - Prof.Dr. **Oksana MAKOVOZ**
		Peculiarities of Personnel Management in a Banking Institution under Martial Law - Prof.Dr. **Vadym SHVED** - Prof.Dr. **Hanna DAVYDENKO** - Expert **Kostiantyn OTKALENKO** - Lec. **Olena OMELCHENKO**
		A Dynamic Approach to Practical Wisdom in Rural Companies in Las Palmas De Gran Canaria - Student **Jorge CEGARRA-SÁNCHEZ** - Prof.Dr. **Juan-Gabriel CEGARRA-NAVARRO** - Prof.Dr. **Agustin SÁNCHEZ-MEDINA** - Prof.Dr. **Constantin BRATIANU**
		Theoretical Basics of Diagnostic Business Activity as an Indicator of the Financial State of the Enterprise – Prof. Dr. **Svitlana ZHUKEVYCH - Natalia ZHUK**
		The Cultural Tourism Potential of Albania: An Essential Driver for Growth - Res.Asst.PhD. **Mishela RAPO** - Prof.Dr. **Drita KRUJA**
		Impact of World Ecological Footprint, Tourism & GDP on Climate Crisis with Persistence of Shocks: Evidence from Eurasian Countries - Student **Sonia HASSAN**

SESSION CHAIR: Prof.Dr. Ouardia TOUICHER		
12.00 - 13.00	Online Session 9	Determinants of Sustainability Communication and Effects on Stock Returns - Assoc.Prof.Dr. **Oğuzhan BAHADIR -** Res.Asst. **Sergen AKARSU -** Expert **Hilal Merve ALAGÖZ**
		Management Control Practices in Construction SMEs: An Empirical Study of Frequency of Use in the Marrakech-Safi Region - Prof.Dr. **Ouardia TOUICHER**
		The Impact of Financial Technology on Sustainable Economic and Environmental Development in the European Union - Student **Ieva TURSKYTĖ -** Prof.Dr. **Alfreda ŠAPKAUSKIENĖ**
		Unveiling the Link between Political Turbulence and the Stock Market Dynamics: Evidence From Psx Indices - Student **Nimra WASEEM -** Student **Nimra ANSAR -** Asst.Prof.Dr. **Farah AMIR**
		Exploring Financial Literacy in the Gig Economy: Insights into Knowledge, Awareness, and AI Integration - Student **Veera SALMAN - Asst.Prof.Dr. Farah NAZ**

SESSION CHAIR: Prof.Dr. Turgay KARALINÇ		
13.00 - 14.00	Online Session 10	Generation Z and Social Media Use: A Research in the Context of Socio-Demographic Variables - Assoc.Prof.Dr. **Özüm EĞILMEZ** - Other **Zaim AKBULUT**
		Artificial Intelligence in Health Management: Perception Management in Marketing with Digital Transformation and Preparing for New Approaches - Asst.Prof.Dr. **Murat BAŞAL** - Prof.Dr. **Turgay KARALINÇ**
		The Impact of Advertising and Sociocultural Factors on E-cigarette Use Among Albanian University Students - Prof.Dr. **Drita KRUJA** - Student **Joana HOXHA** - Lec. **Iris KRUJA**
		Artificial Intelligence Offers more Time to Spend with Family Which Enhances the Value of a Happy Family Life - Expert PhD. **Sahgal OMDIC**
		Applicability of the "Polluter Pays" Principle in Environmental Law Relationships - **Mihaela COJOCARU (BEJENARI)**
		The Use of Chatgpt in Human Resources Management: Potentials, Challenges, and Implementation Recommendations - Asst. Prof. Dr. **Fatma Zehra YILDIZ**
		Reassessing the Effectiveness of Western Intervention in the Balkans: Reflections on the Kosovo Question - Asst.Prof.Dr. **Idlir LİKA**

SESSION CHAIR: Assoc.Prof.Dr. Trofimov IGOR		
14.00 - 15.00	Online Session 11	Procedural Issues in the Contravention Process Applying the Presumption of Guilt Principle and the Objective Nature of Responsibility for Environmental (Ecological) Offenses According to the Legislation of the Republic of Moldova - Lec. **Gugulan EVGHENIA** - Assoc.Prof.Dr. **Trofimov IGOR**
		The Mainstream of Georgia's Foreign Policy Behavior: A Constructivist Perspective - Prof.Dr. **Irakli JAVAKHISHVILI**
		Trust Influencing Consumers of Digital and Non-Digital News Media – Framework & Literature Review - Student **Sumit SINGH** - Prof.Dr. **Sanjeev BANSAL** - Prof.Dr. **Sandeep KUMAR**
		Mapping Turkey's Demography: Regional Evidence and Implications for Pro-Natalist Policies - Student **Tiago SANTOS**
		Between The Embrace And The Boot: Analyzing Pakistan's Deportation of Afghans In Light Of Geopolitics And Ethnicity - Student **Sahar SADIQ**
		Industry 6.0 as an Emerging Field of Research: A Systematic and Bibliometric Analysis - Student **Md. Mustaqim ROSHID** - Student **Abdul WAAJE** - Assoc.Prof.Dr. **Rejaul KARIM**

SESSION CHAIR: Prof.Dr. Rejaul KARIM		
15.00 - 16.00	Online Session 12	Modeling Repayment Capacity under Inflationary Pressures: Insights from applying the DSTI Gap as an Analytical Tool within an Agent-Based Framework - Expert PhD. **Alexandru MONAHOV** - Prof.Dr. **Mikhail OET** - Other **Deepthi JAKKI**
		Assessing the Impact of Innovation, Digitalization, and Sustainability on Stock Price Volatility: A PVAR Analysis of 27 European Countries - PhD. **Aura GIRLOVAN** - Prof.Dr. **Cristiana TUDOR** - Student **Gabriel Robert SAIU** - Student **Daniel Dumitru GUSE** - PhD. **Onur YAĞIŞ**
		Does the Firm Size Matter for Financial Performance? — Evidence from the Financial Sector of a South Asian Emerging Economy - Prof.Dr. **Rejaul KARIM**
		Psychological Empowerment and Organizational Identification Expands Employee Openness to Change and Wellness: The Role of Charismatic Executive Leadership Communication - Assoc.Prof.Dr. **Hafiz Ghufran Ali KHAN**
		Ecotourism Activity - Student **Shahin SAMADZADA**
		Optimizing Capital Structure for Profitability: Insights from the Software Industry - PhD. **Jona PUCI** - Student **Anisa SKRAQI** - Student **Martina KODRA**

SESSION CHAIR: Assoc.Prof.Dr. Çiğdem TUĞAÇ		
16.00 - 17.00	Online Session 13	A Review of Textbook Economics from the Post-Autistic Economics Perspective - Asst.Prof.Dr. **Mehmet DINÇASLAN**
		Transitional Entrepreneurship, Decision Making and Cognitive Flexibility: A Study on Women Entrepreneurs - PhD. **Almula Umay KARAMANLIOĞLU** - Lec.PhD. **İper İNCEKARA**
		Increasing the Sustainability of Geo-Economic Development of the Modern Eurasian Space States: Scenario and Forecasts Increasing - Prof.Dr. **Roman VLASOV**
		Waste Management in Turkey: The Role and Effects of Nudge Policies - Asst.Prof.Dr. **Hilal MOLA**
		Universal Basic Income: Theoretical Approaches, Practical Examples And Impacts - PhD. **Ubeydullah ŞENER**
		The Economic, Environmental and Political Significance of the Rio Trio in the Context of Climate-Resilient Development - Assoc.Prof.Dr. **Çiğdem TUĞAÇ**
		The Influence of Blockchain Technology on Improving the Transparency of Meat Supply Chains in Kazakhstan - Lec. **Rauan YERGALIYEV** - Prof.Dr. **Zhanarys RAIMBEKOV**

SESSION CHAIR: PhD. Igor SOROCEANU		
17.00 - 18.00	Online Session 14	Procuring Pareto Efficiency in Ecological Economics: The Mediating Roles of Industry 5.0 and Human Behavior - Student **Mahvish MUZAFFAR**
		Specific Clauses in the Franchise Contract - A Variety of Contracts for Placing the Products of Others on the Market - Lec.PhD. **Evghenia GUGULAN** - **Lec.PhD. Ana-Maria GHERMAN-GRIMAILO**
		A Comparative Analysis of the Success of Conservative Political Parties in Democratic Processes: A Case Study of Türkiye and Pakistan – Student **Daniel SHOUKAT**
		A Qualitative Study on the Decision to Employ a Transgender Employee in a Muslim-Populated Country - Assoc.Prof.Dr. **H. Eda AKDURU**
		Financing the activities of the Initiative Groups and the Electoral Company - PhD. **Igor SOROCEANU**
		Assessing the Impact of the Corporate Sustainability Due Diligence Directive on European Entrepreneurship, Innovation, and Ecosystems - Asst.Prof.Dr. **Juan M. DEMPERE** - Asst.Prof.Dr. **Eseroghene UDJO** - Lec.PhD. **Paulo MATTOS**

SESSION CHAIR: Prof.Dr. Sandeep KUMAR		
18.00 - 19.00	Online Session 15	Claim Internal Reporting in Insurance Companies in Croatia - Assoc.Prof.Dr. **Sanja Broz TOMINAC**
		The Effect of Fiscal Decentralization on Environmental Quality in OECD Countries - Res.Asst.PhD. **Manar MOHAMED**
		The Implications of the BRICS' Role on the Dominance of the US Dollar in the Global Economy - Asst.Prof.Dr. **Boutkhil GUEMIDE** - **Prof.Dr. Abd Allah SAHRAOUI**
		Nationalism in Western Balkan Political Parties: A Quantitative Analysis - Lec.PhD. **Juljan MYFTARI**
		Social Media in Brand Building and Customer Engagement - Prof.Dr. **Sandeep KUMAR** - Asst.Prof.Dr. **Sweta BAKSHI**
		Dynamics of Entrepreneurship in Challenging Contexts - Asst.Prof.Dr. **Sweta BAKSHI** - Prof.Dr. **Sandeep KUMAR**
		The Key Factors in Evolving the Rol of Internal Audit in Textile Sectors in Pakistan – Expert **Raazia SANAM** – Expert **Nighat RAFIQ**
		Exploring Social Diensions and Literary Perspectives on Women's Inclusion and Equity: A European Outlook – Prof. Dr. **Ramona MIHAILA**
		Ecological Crimes in The Context of The Criminal Provisions – **Mikaela-Corina BUCUR**
		Public Finances in Times of Crisis – A Lesson in Reality - Assoc.Prof.Dr. **Lukas CIBIK** - Assoc.Prof.Dr. **Martin SVIKRUHA**
		Impact of Digital and Social Media Marketing - Assoc.Prof.Dr. **Bhoopendra BHARTI**

DIGITAL DETOX IN ORGANIZATIONS: APPLICATIONS, EFFECTS AND RESULTS	1
PUBLIC FINANCES IN TIMES OF CRISIS – A LESSON IN REALITY	9
THE STUDY OF EMOTIONAL INTELLIGENCE AND POLITICAL BEHAVIOUR BY QUASI-EXPERIMENTAL METHOD	19
DOES SUPPLY CHAIN PRESSURE AFFECT FOOD PRICES? A GLOBAL VIEW	25
HASTALARIN DOKTOR TERCIHINI BELIRLEYEN KRITERLERIN İNCELENMESI: GÜMÜŞHANE'DEN BULGULAR	31
NATIONALISM IN WESTERN BALKAN POLITICAL PARTIES: A QUANTITATIVE ANALYSIS	39
HOW SAFE ARE SAFE HAVEN CURRENCIES? THE CASE OF RECENT TÜRKİYE CRISES	47
REASSESSING THE EFFECTIVENESS OF WESTERN INTERVENTION IN THE BALKANS: REFLECTIONS ON THE KOSOVO QUESTION	57
THE IMPLICATIONS OF THE BRICS' ROLE ON THE DOMINANCE OF THE US DOLLAR IN THE GLOBAL ECONOMY: A PROSPECTIVE STUDY	63
INFLUENCE OF THE RUSSIA–UKRAINE WAR AND COVID-19 PANDEMIC ON GEOPOLITICAL RISK UNCERTAINTY, TIME-VARYING BETA AND INVESTOR'S FEAR: EVIDENCE FROM NIFITY FINANCIAL SERVICES SECTOR	85
MAKRO EKONOMİK FAKTÖRLERİN ENDEKS FIYATLARI ÜZERİNDEKİ ETKİSİNİN ARDL SINIR TESTİ ILE DEĞERLENDİRİLMESİ	99
DO FINANCIAL INNOVATIONS CONTRIBUTE TO ECONOMIC GROWTH IN TÜRKİYE?	109
WASTE MANAGEMENT IN TURKEY: THE ROLE AND IMPACTS OF NUDGE POLICIES	119
THE CULTURAL TOURISM POTENTIAL OF ALBANIA: AN ESSENTIAL DRIVER FOR GROWTH	125
ENDÜSTRI 5.0 SÜRECİNDE TÜRKİYE'DE İŞSİZLİK VE NİTELİKLİ ELEMAN EKSİKLİĞİNE ÇÖZÜM ÖNERİSİ: KARİYER PLANLAMASI	141
POLİTİK EKONOMİ'DEN NEO-KLASİK İKTİSATA: TEMEL FARKLILIKLAR VE DÖNÜŞÜMLER	151
PECULIARITIES OF PERSONNEL MANAGEMENT OF A BANKING INSTITUTION UNDER MARTIAL LAW	161
A PERSPECTIVE ON CUSTOMS DUTIES WITHIN THE FRAMEWORK OF CONSTITUTIONAL TAXATION PRINCIPLES	169
MACROECONOMIC DETERMINANTS OF CORRUPTION IN PUBLIC AND PRIVATE INSTITUTIONS: A SYSTEMATIC LITERATURE REVIEW	175
İKLİM DİRENÇLİ KALKINMA BAĞLAMINDA RİO ÜÇLÜSÜ'NÜN EKONOMİK, ÇEVRESEL VE POLİTİK ÖNEMİ	197
EVALUATION OF OBSTACLES TO GREEN HUMAN RESOURCES MANAGEMENT USING AHP METHOD	213
THE IMPACT OF ADVERTISING AND SOCIOCULTURAL FACTORS ON E-CIGARETTE USE AMONG ALBANIAN UNIVERSITY STUDENTS	225
THE IMPACT OF BLOCKCHAIN TECHNOLOGY ON IMPROVING TRANSPARENCY OF MEAT SUPPLY CHAINS IN KAZAKHSTAN	237
TEMETTÜAT DEFTERİNE GÖRE SELANİK MERKEZ KAZASI, GELMERİYE NAHİYESİ'NE BAĞLI TİLKİLİ (PETRALONA) MAHALLESİ (1844)	245
PROCURING PARETO EFFICIENCY IN ECOLOGICAL ECONOMICS: THE MEDIATING ROLES OF INDUSTRY 5.0 AND HUMAN BEHAVIOR	259
BİLGİ İLETİŞİM TEKNOLOJİLERİ VE EKONOMİK BÜYÜME İLİŞKİSİ: G-8 ÜLKELERİ ÖRNEĞİ	285
DETERMINANTS OF INFLATION IN CONDITIONS OF GLOBAL CHANGES AND CONFLICTS- THE CASE OF NORTH MACEDONIA	293
TRANSMISSION OF MONETARY POLICY IN DEVELOPING COUNTRIES IN CONDITIONS OF GLOBAL INFLATION GROWTH- THE CASE OF NORTH MACEDONIA AND SERBIA	299
YÜKSEK TEKNOLOJİ ÜRÜN İHRACATI VE EKONOMİK BÜYÜME İLİŞKİSİ: APEC ÜLKELERİ ÖRNEĞİ	305

KİLİT DENETİM KONULARININ BAĞIMSIZ DENETİM RAPORLARINA ETKİSİ: BORSA İSTANBUL ANALİZİ	315
BAĞIMSIZ DENETİM VE SÜRDÜRÜLEBİLİRLİK İLİŞKİSİ: BAĞIMSIZ DENETIMIN ÖNEMİ	329
TÜRKİYEDE ŞİRKET TÜRLERİ VE BAĞIMSIZ DENETİM İLİŞKİSİ	335
A RESEARCH ON FINANCIAL DISTRESS COSTS AND BUSINESS FAILURE PREDICTION MODELS	341
MANAGEMENT CONTROL PRACTICES IN CONSTRUCTION SMES: AN EMPIRICAL STUDY OF FREQUENCY OF USE IN THE MARRAKECH-SAFI REGION	353
THE DETERMINANTS OF BANK PROFITABILITY: CASE OF EUROPE	361
MAPPING TURKEY'S DEMOGRAPHY: REGIONAL EVIDENCY AND INPLICATIONS FOR PRO-NATALIST POLICIES	377
A DYNAMIC APPROACH TO PRACTICAL WISDOM IN RURAL COMPANIES IN LAS PALMAS DE GRAN CANARIA	383
TURKİYE ve AVRUPA BİRLİĞİ'NDE YENİLENEBİLİR ENERJİ KULLANIMI VE BEŞERî SERMAYENİN EKONOMİK BÜYÜMEYE ETKİLERİNİN ARDL VE TODA-YAMAMOTO TESTLERİ İLE ANALİZİ	397
BETWEEN THE EMBRACE AND THE BOOT: ANALYSING PAKISTAN'S DEPORTATION OF AFGHANS IN LIGHT OF GEOPOLITICS AND ETHNICITY	411
HANNAH ARENDT: POLİTİKANIN DERİNLİKLERİ VE KAVRAMLARIN YENİDEN TANIMLANMASI	415
KAMU GELİRLERİ VE KAMU HARCAMALARI HİPOTEZİ GRANGER NEDENSELLİK TESTİ: TÜRKİYE ÖRNEĞİ	423
TÜRKİYE'DE GIBSON PARADAOKSUNUN GEÇERLİLİĞİ: KONUT SEKTÖRÜ ÜZERİNE BİR ANALİZ	429
TİCARET SEKTÖRÜNDE GIBSON PARADOKSUNUN GEÇERLİLİĞİ: TÜRKİYE ÜZERİNE BİR ANALİZ	437
VERGİ AFFININ VERGİ UYUMUNA ETKİSİNİN İNCELENMESİ	447
İNSAN KAYNAKLARI YÖNETİMİNDE CHATGPT KULLANIMI: POTANSİYELLER, ZORLUKLAR VE UYGULAMA ÖNERİLERİ	453
DOES THE FIRM SIZE MATTER FOR FINANCIAL PERFORMANCE? — EVIDENCE FROM THE FINANCIAL SECTOR OF A SOUTH ASIAN EMERGING ECONOMY	461
İÇ KONTROL SİSTEMİNİN KURUMSAL SOSYAL SORUMLULUK UYGULAMALARI ÜZERİNDEKİ ROLÜ NEDİR?	475
ÇOKLU REGRESYON YÖNTEMİYLE HİSSE SENEDİ FİYAT TAHMİNİ	485
AI-POWERED CONTENT CREATION IN MARKETING	499
Z KUSAĞI ve SOSYAL MEDYA KULLANIMI: SOSYO-DEMOGRAFİK DEĞİŞKENLER BAĞLAMINDA BİR ARAŞTIRMA	521
INACCURACIES IN FINANCIAL REPORTS: ERROR OR MANIPULATION?	531
ÖRGÜTSEL ÇEVİKLİK MAKALELERİNİN BİBLİYOMETRİK ANALİZİ	537
FROM GOVERNANCE TO PERFORMANCE: HOW FINTECH TRANSFORMS EUROPEAN BANKING	553
DOES FISCAL DECENTRALIZATION IMPROVE ENVIRONMENTAL QUALITY IN OECD COUNTRIES? EMPIRICAL EVIDENCE	567
A STUDY OF AN AWARENESS OF BANKING RELATED KNOWLEDGE AND UTILITY AMONG SELECTED COMMUNITY GROUPS IN YEMEN	583
GENERAL CONSIDERATIONS ON THE LEGAL FRAMEWORK GOVERNING AQUATIC RESOURCES	597
PSYCHOLOGICAL EMPOWERMENT AND ORGANIZATIONAL IDENTIFICATION EXPANDS EMPLOYEE OPENNESS TO CHANGE AND WELLNESS: THE ROLE OF CHARISMATIC EXECUTIVE LEADERSHIP	607

LEGISLATIVE ASPECTS ON THE UTILIZATION OF ABIOTIC COMPONENTS OF THE NATURAL ENVIRONMENT	616
COMPREHENSIVE APPROACH TO BUSINESS PROCESS MANAGEMENT: TRADITIONAL METHODS AND DIGITAL INNOVATIONS	627
SPECIFIC CLAUSES IN THE FRANCHISE CONTRACT- A VARIETY OF CONTRACTS FOR PLACING ANOTHER'S PRODUCTS ON THE MARKET	659
REGULATIONS AND RECOMMENDATION FOR THE PREVENTION OF THE SECONDARY VICTIMIZATION (SPECIAL FOCUS ON THE MENDEZ` PRINCIPLES)	663
PROCEDURAL ISSUES IN THE CONTRAVENTION PROCESS APPLYING THE PRESUMPTION OF GUILT PRINCIPLE AND THE OBJECTIVE NATURE OF RESPONSIBILITY FOR ENVIRONMENTAL (ECOLOGICAL) OFFENSES ACCORDING TO THE LEGISLATION OF THE REPUBLIC OF MOLDOVA	670
THE IMPACT OF FINTECH CREDIT ON CHINA'S GROWTH IN CAPITAL EXPENDITURE	679
ECOTOURISM ACTIVITY	691
TRUST INFLUENCING CONSUMERS OF DIGITAL AND NON-DIGITAL NEWS MEDIA – FRAMEWORK & LITERATURE REVIEW	695
ENERGY EFFICIENCY GAINS AND THE REBOUND EFFECT: INVESTIGATING THE EUROPEAN HOUSEHOLD FOR ELECTRICITY CONSUMPTION THROUGH STOCHASTIC FRONTIER MODELING	703
INCREASING THE SUSTAINABILITY OF GEO-ECONOMIC DEVELOPMENT OF THE MODERN EURASIAN SPACE STATES: SCENARIO AND FORECASTS	719
EURASIAN SPACE STATES STRATEGIES: FOCAST AND SCENARIO	723
SYSTEM DYNAMICS OF ELECTRICITY DISTRIBUTION NETWORK	729
THE EFFECT OF CULTURE ON INTERNATIONAL TRADE	735
BANK PROFITABILITY AND COVID-19 PANDEMIC IN TURKISH BANKING SECTOR: A SUR ANALYSIS	741
APPLICABILITY OF THE" POLLUTER PAYS" PRINCIPLE IN ENVIRONMENTAL LAW RELATIONSHIPS	751
DETERMINANTS OF SUSTAINABILITY COMMUNICATION AND EFFECTS ON STOCK RETURNS	755
ADALET BAKANLIĞI VE MERKEZ BANKASI VERILERI IŞIĞINDA TÜRKIYE'DE İFLAS RISKI ALTINDAKI SEKTÖRLERIN TESPITI VE KONKORDATO İLANLARI ILE UYUM ANALIZI	763
SYNERGIZING CIRCULAR ECONOMY AND H2H MARKETING: A SUSTAINABLE APPROACH TO HUMAN-CENTRIC BUSINESS	767
INDUSTRY 6.0 AS AN EMERGING RESEARCH FIELD: A SYSTEMATIC AND BIBLIOMETRIC ANALYSIS	784

DIGITAL DETOX IN ORGANIZATIONS: APPLICATIONS, EFFECTS AND RESULTS

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ABTRACT

Digital detox means that individuals consciously move away from digital devices and the internet and restrict their consumption of digital content for a certain period of time. In an organizational context, digital detox involves practices that encourage employees to limit their use of digital devices and the internet. Various detox applications are used in practice. These are: Digital use policies that set rules that limit employees' use of digital devices during working hours, digital detox weeks that include implementing programs that encourage employees to work without using digital devices during certain periods, technology-free meetings that prohibit the use of digital devices during meetings, and employees' work hours outside of working hours. These are some practices that consist of separating work and rest periods, which can be implemented by restricting access to e-mails and digital tasks. When looking at the effects and results of digital detox, employee productivity comes first. Digital detox applications can increase employees' attention and focus levels. This can positively affect productivity. While constant use of digital devices causes distraction and waste of time, digital detox can reduce these negative effects. In terms of motivation and job satisfaction, Digital detox can increase employees' job satisfaction and motivation. Excessive use of digital devices can reduce motivation by increasing the feeling of workload, while detox practices can help employees feel more motivated and satisfied. In terms of stress and mental health, digital detox can reduce employees' stress levels and improve their mental health. While constant digital connection can increase stress and anxiety levels in employees, a digital detox can reduce these negative effects. Additionally, digital detox can improve employees' work-life balance. While excessive use of digital devices can negatively affect employees' private lives, digital detox practices can help them restore this balance. Finally, since it also has benefits in terms of creativity and innovation, digital detox can increase employees' creativity and innovation abilities. Being away from digital devices can allow employees to think more creatively and develop new ideas.

Key words: Digital Detox, Digital Addiction, Digitalization

INTRODUCTION

It is argued that digital technologies, which are rapidly and intensively integrated into daily life, have both positive and negative effects. Recent studies show that the integration of digital transformation and social media use into the work environment positively affects collaborative learning and engagement behavior (Nisar, Prabhakar, & Strakova, 2019). In terms of shopping and e-commerce, internet and mobile technologies provide consumers with personalized services and solutions for their needs (Marinkovic & Kalinic, 2017). In the field of education, it has been determined that university students' use of internet technologies contributes positively to their academic success (Henderson, Selwyn, & Aston, 2017). In the field of health, healthy eating support groups created through smartphones have been found to increase people's motivation and lead to positive behavioral changes (Inauen, Borger, Shrout et al., 2017). In addition, the positive effects of mobile technologies on health monitoring are also emphasized (Schneider, Pansera, Martinasek et al., 2016). Studies examining the effects of the Internet on social relationships suggest that the Internet increases individuals' happiness and well-being by expanding their social horizons (Sum, Mathews, Pourghasem et al., 2008).

LITERATURE

It is argued that with the increase in technology addiction, individuals become lonely by breaking away from their social lives and social relationships provided by face-to-face communication, and their performance in work and education life decreases (Rosen, Lim, Felt, & Carrier, 2011). As a result of the widespread discussion of the

negative effects of communication technologies on individuals, the level of awareness on the subject has increased and approaches and practices to limit the use of technology have gained importance. In this framework, digital detox behavior, which is characterized by limiting and reducing the duration of use of digital technology tools, has emerged. There is limited research on digital detox behavior, which has become popular especially among young adults.

Many studies suggest that the effects of technology on social interaction and face-to-face communication have changed, especially in the 2000s with the rise in the use of smartphones and social media (Drago, 2015, p. 14). The year 2007, considered as one of the important turning points in the history of smartphones, played an important role in crystallizing these effects. That year, the first iPhone model was launched under the leadership of Apple founder Steve Jobs. This device distinguished itself from other cell phones by combining the large, touchscreen iPod with the Internet. In the following months, brands such as Samsung, Nokia and LG entered the market by producing similar phones (Ertuğrul, 2020). These developments accelerated the use of the internet and mobile devices, and in 2019, the number of internet users worldwide reached 7.676 billion and the number of mobile device users reached 5.112 billion (Datareportal, 2019a). Therefore, these technology products, which have millions of users worldwide and in our country, bring negative aspects along with their advantages.

As of 2019, 98 percent of the adult population in Turkey uses a mobile phone, and 77 percent of these users own a smartphone. Moreover, 48 percent of the adult population use desktop computers or laptops, while 25 percent use tablets. In terms of internet usage rates, there are 59.36 million internet users, constituting 72 percent of Turkey's population, 52 million people, constituting 63 percent of the population, are active social media users and 44 million people, constituting 53 percent of the population, are active mobile social media users (Datareportal, 2019b). This data show that daily life and life practices are rapidly digitalizing.

The concept of digital detox was born out of the need to reduce the negative effects of excessive use of digital devices in modern societies and to help individuals cope with digital addiction. Demirci, Akgönül, and Akpınar (2015) state that digital detox can improve sleep quality and reduce depression and anxiety levels. In this context, digital detox is seen as an important strategy to increase the overall well-being of individuals.

Digital detox was born out of "the need to reduce the negative effects of overuse of digital devices in modern societies and to help individuals cope with digital addiction". Digital detox can improve sleep quality and reduce levels of depression and anxiety (Demirci, Akgönül, & Akpınar, 2015).

Digital detox also provides significant mental health benefits. Constant digital connectivity can lead to distraction and information fatigue. Mark, Gudith, and Klocke (2008) state that the constant use of digital devices causes mental fatigue and increased stress in employees. By reducing these negative effects, digital detox practices can help individuals achieve mental relaxation and renewal.

Digital detox also provides significant benefits in terms of mental health. Constant digital connectivity can lead to distraction and information fatigue. The constant use of digital devices can lead to mental fatigue and increased stress in employees (Mark, Gudith, & Klocke, 2008).

Digitalization has radically changed the functioning of organizations in the modern business world. However, along with the benefits of digitalization, negative effects on employees such as stress, distraction and loss of productivity have also been observed. To cope with these negative effects, digital detox practices are becoming increasingly important. In this article, the implementation, effects and outcomes of digital detox in organizations will be examined.

WHAT IS DIGITAL DETOX?

Digital detox is defined as a process in which individuals aim to improve their mental and physical health by abstaining from digital devices and the internet for certain periods of time. This process aims to reduce the negative effects caused by the constant use of digital devices, such as distraction, stress, sleep disorders and social isolation. Gazzaley and Rosen (2016) state that digital detox helps individuals regain their attention and focus capacity by distancing themselves from the digital world. Digital detox is "a process in which individuals aim to improve their mental and physical health by abstaining from digital devices and the internet for periods of time". This process aims to reduce the negative effects caused by the constant use of digital devices, such as distraction, stress, sleep disturbances and social isolation (Gazzaley & Rosen, 2016).

Digital detox refers to individuals and organizations detoxing from the digital world by stepping away from digital devices for a certain period of time. In this process, it is aimed to consciously avoid e-mail, social media and other

digital platforms. The aim of digital detox is to reduce digital addiction, improve mental and physical health, and increase productivity (Gökçek, 2019).

Digital detox in organizations is a strategic approach that aims to restrict employees' use of digital devices and internet for a certain period of time and to avoid digital content (Gazzaley & Rosen, 2016). This practice aims to improve work performance and general well-being by increasing employees' attention (Mark, Gudith, & Klocke, 2008).

Digital Detox Practices in Organizations

Digital detox refers to the process of detoxing from the digital world by stepping away from digital devices for a certain period of time. This practice aims to consciously stay away from e-mail, social media and other digital platforms. In organizations, digital detox is applied to improve employees' mental and physical health, reduce distractions and increase work productivity. Practices such as digital detox days and digital detox zones encourage employees to stay away from digital devices on specific days and in specific areas. On digital detox days, employees are asked not to use e-mail, not to access social media accounts and to engage in non-work activities. Digital detox areas, on the other hand, are special zones in the office where the use of digital devices is prohibited and designed for activities such as relaxation and meditation (Kaya, 2020).

These apps help employees achieve mental relaxation and reduce stress levels. Excessive use of digital devices can lead to physical health problems such as eye strain, neck and back pain. A digital detox reduces these problems and protects employees' physical health. In addition, digital detox reduces distractions, allowing employees to focus better on their work and improve their work performance (Doğan, 2018). Education and awareness programs are also an important part of digital detox. These programs help employees adopt digital hygiene practices by providing information about the harms of digital addiction and digital detox methods. Digital detox practices in organizations increase employee satisfaction, improve work-life balance and positively affect organizational culture (Acar, 2019).

Digital Detox Days

Organizations organize digital detox days on certain days to encourage employees to stay away from digital devices. On these special days, employees are asked not to use email, not to access social media accounts and, if possible, to engage in non-work activities. The aim is to get employees out of the constant online state and away from the distractions of the digital world. Digital detox days are an important step towards protecting both the mental and physical health of employees. By staying away from digital devices on these days, employees can spend more time with themselves and their loved ones. This process reduces stress levels and creates a more positive atmosphere in the workplace. At the same time, digital detox days encourage employees to take up hobbies, play sports or spend time in nature outside of work, improving their overall quality of life. Digital detox practices play an important role in organizations' goal of increasing the happiness and satisfaction of their employees (Kaya, 2020).

Digital Detox Areas

Creating digital detox areas in the office is an effective way for employees to get away from their digital devices and find the opportunity to relax and rejuvenate. In these areas, employees are strictly prohibited from using their digital devices such as phones, tablets and computers. Digital detox spaces are often specifically designed for mental and physical healing activities such as relaxation and meditation. These areas are designed to provide natural light, plants, comfortable seating and a quiet environment. Such environments allow employees to get away from work stress and relax mentally. In addition, programs such as yoga sessions, meditation sessions or breathing exercises can be organized in digital detox spaces. Such activities improve employees' physical and mental health, reduce stress and improve overall quality of life. Another advantage of digital detox spaces is that they encourage face-to-face communication and social interaction between employees. In these spaces, employees spend more time with each other and exchange ideas, which strengthens organizational commitment and team spirit (Demir, 2021; Acar, 2019; Yılmaz, 2020).

Training and Awareness Programs

Training programs are organized to explain the importance and benefits of digital detox to employees. These programs provide employees with comprehensive information on the dangers of digital addiction, the effects of excessive use of digital devices on mental and physical health, and digital detox methods. Training programs can be organized as interactive sessions, seminars and workshops. Such programs enable employees to learn how they

can lead a more balanced and healthy life away from the digital world. In addition, the effects of digital detox on work productivity are also emphasized, thus encouraging employees to adopt these practices in both their personal and professional lives (Gökçek, Bozdağ, & Demirbağ, 2019; Kara, 2019; Roberts & David, 2020).

Effects of Digital Detox

Digital detox is a process that aims to improve the mental and physical health of individuals by keeping away from digital devices and the internet for certain periods of time. This process aims to reduce the negative effects of constant digital connectivity, such as distraction, stress, sleep disorders and social isolation (Gazzaley & Rosen, 2016). Digital detox practices encourage individuals to engage in more face-to-face communication, achieve better sleep quality, and lead an overall healthier life (Demirci, Akgönül, & Akpinar, 2015). Furthermore, digital detox can enhance individuals' creativity and positively affect their work performance (Csikszentmihalyi, 1997). Such practices that limit the use of digital devices can help employees maintain their overall well-being and work-life balance, especially in the modern business world (Harter, Schmidt, & Keyes, 2003).

The Effects of Digital Detox on Employees' Mental Health and Its Link to Organizational Psychology

Digital detox has a positive impact on employees' mental health. Staying away from digital devices reduces stress levels and provides mental relaxation. This contributes to employees being happier and more motivated (Doğan, 2018). Digital detox is a practice that positively affects employees' mental health. Staying away from digital devices reduces stress levels and provides mental relaxation. This contributes to employees being happier and more motivated (Doğan, 2018). The constant use of digital devices can lead to distraction, information fatigue and chronic stress (Gazzaley & Rosen, 2016). Digital detox can reduce these negative effects and increase employees' mental and emotional well-being.

Digital Detox in terms of Health

In terms of physical health effects, overuse of digital devices can lead to physical health problems such as eye strain, neck and back pain. Digital detox helps reduce these problems and protects employees' physical health (Erdoğan, 2020).

- Stress Reduction: Digital detox significantly reduces employee stress levels. Constant use of digital devices can increase stress levels by increasing the feeling of workload and information fatigue. Digital detox practices allow employees to rest and reduce their stress (Derks, van Mierlo, & Schmitz, 2014).
- Mental Relaxation: A digital detox provides mental relaxation and rejuvenation. Time away from digital devices can help employees to mentally rest and re-energize (Mark, Gudith, & Klocke, 2008). This process improves employees' mental health and increases their overall well-being (Harter, Schmidt, & Keyes, 2003).
- Improving Sleep Quality: Digital detox can improve sleep quality. The use of digital devices at night can lead to sleep disturbances and reduce sleep quality. Digital detox practices allow employees to rest better by improving their sleep patterns (Demirci, Akgönül, & Akpınar, 2015).
- Emotional Wellbeing: Digital detox can increase emotional well-being. The constant use of digital devices can lead to social isolation and emotional fatigue. Digital detox practices improve the emotional health of employees and contribute to them being happier (Rosen et al., 2011).

Organizational Psychology and Digital Detox

Organizational psychology is a discipline that studies employee behavior, emotional reactions and overall job performance. From an organizational psychology perspective, digital detox can positively impact employees' experiences and performance at work.

- Job Satisfaction and Motivation: Digital detox can increase job satisfaction and motivation. When employees are away from digital devices, they can focus more on their work and have a more satisfying work experience (Mazmanian, Orlikowski, & Yates, 2013). This increases work motivation and overall job performance (Csikszentmihalyi, 1997).
- Work-Life Balance: Digital detox improves work-life balance. When employees stop using digital devices outside of work hours, they can spend more time with family and friends. This helps them maintain work-life balance and makes them more balanced and happier at work (Harter et al., 2003).
- Communication and Collaboration: A digital detox can increase face-to-face communication and collaboration at work. Excessive use of digital devices can reduce face-to-face communication and

negatively affect collaboration. A digital detox encourages employees to communicate more face-to-face and strengthens collaboration (Sander, 2012). Creativity and Innovation: Digital detox can boost creativity and innovation. Staying away from digital devices allows employees to think more creatively and develop innovative ideas (Csikszentmihalyi, 1997). This increases the overall success and competitiveness of the organization (Grant, 1996).

Consequences of Digital Detox

When we look at the effects of digital detox on productivity, it increases the productivity of employees by reducing distraction. Staying away from digital devices allows employees to focus better on their work and positively affects their work performance (Yılmaz, 2020).

• Increased Employee Satisfaction

- Digital detox applications increase employee satisfaction. Employees experience less stress and focus more on their work when they are away from digital devices. This increases overall job satisfaction (Çelik, 2022).

• Improved Work-Life Balance

- Digital detox helps employees achieve balance between their work and private lives. Staying away from digital devices allows employees to spend more time with their families and social circles (Kara, 2019).

• Strengthened Organizational Culture

- Digital detox positively affects organizational culture. It increases communication and collaboration between employees. Digital detox applications encourage employees to communicate more face-to-face with each other (Gürbüz, 2021).

CONCLUSION AND RECOMMENDATIONS

Digital detox is an important application that protects organizations and employees from the negative effects of digital devices in the modern business world. Digital detox protects the mental and physical health of employees, increases their productivity and increases overall job satisfaction. Organizations can create a healthier and more productive work environment by adopting digital detox applications.

Digital detox applications in organizations have the potential to increase overall job performance by improving the mental and physical health of employees. Studies in the literature show that digital detox can reduce stress levels, prevent distraction and information fatigue (Gazzaley & Rosen, 2016). Digital detox strategies implemented in organizations can help employees improve their work-life balance by increasing job satisfaction and motivation (Mazmanian, Orlikowski, & Yates, 2013).

As a result, digital detox applications can positively affect the health and job performance of employees in organizations. The success of these applications is possible if organizations implement these strategies correctly and continuously improve them. As a suggestion, it is important for organizations to support digital detox applications with training programs for their employees. These programs can raise awareness about the negative effects of excessive use of digital devices and facilitate employees' adaptation to digital detox processes (Derks, van Mierlo, & Schmitz, 2014). In addition, regular feedback mechanisms should be established to monitor and evaluate the effectiveness of digital detox applications. These mechanisms monitor the effects of the applications on employees and allow necessary improvements to be made (Harter, Schmidt, & Keyes, 2003).

Digital detox applications can increase employees' sleep quality, help them rest better, and be more productive at work (Demirci, Akgönül, & Akpinar, 2015). In addition, staying away from digital devices can improve employees' creativity and innovation capacities (Csikszentmihalyi, 1997). Organizations can implement these practices with strategies such as digital detox weeks, technology-free meetings, and digital usage policies (Davis, 2019).

- Employee Productivity: Digital detox practices can increase employees' attention and focus levels, which can positively affect productivity. While constant use of digital devices leads to distraction and loss of time, digital detox can reduce these negative effects (Mark et al., 2008).

- Motivation and Job Satisfaction: Digital detox can increase employees' job satisfaction and motivation. While excessive use of digital devices can increase the feeling of workload and decrease motivation, detox practices can help employees feel more motivated and satisfied (Mazmanian et al., 2013).
- Stress and Mental Health: Digital detox can reduce employees' stress levels and improve their mental health. While constant digital connection can increase stress and anxiety levels in employees, digital detox can reduce these negative effects (Derks et al., 2014).
- Work-Life Balance: Digital detox can improve employees' work-life balance. While excessive use of digital devices can negatively impact employees' personal lives, digital detox practices can help restore this balance (Harter, Schmidt, & Keyes, 2003).
- Creativity and Innovation: Digital detox can increase employees' creativity and innovation abilities. Staying away from digital devices can allow employees to think more creatively and develop new ideas (Csikszentmihalyi, 1997).

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PUBLIC FINANCES IN TIMES OF CRISIS – A LESSON IN REALITY

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Abstract

The COVID-19 pandemic has posed significant challenges for the global economy and public finances. In the European Union (EU), it was necessary to respond flexibly to this external shock through fiscal measures aimed at stabilizing the economy and mitigating the negative social impacts. This article analyzes the development of public finances in the context of the crisis, focusing on public revenues, expenditures, and public debt, which are key variables for maintaining the stability of state budgets. The aim of this article is to quantify the impact of the crisis on the public finances of EU countries and provide an analysis of trends that may serve as important lessons for future crises. The results indicate significant differences in the responses of EU countries to the pandemic, as well as the need for stronger fiscal coordination at the union level.

Keywords: COVID-19 pandemic, European Union, Fiscal policy, Public finances

INTRODUCTION

The COVID-19 pandemic represented an unprecedented shock to the global economy and public finances. This external shock caused a sharp increase in public expenditures and a decrease in public revenues, leading to significant deficits and an increase in public debt across the member states of the European Union (EU). Given the nature of this crisis, it was essential for governments to respond with extensive fiscal measures aimed at stabilizing the economy. Research on the pandemic's impact on public finances has therefore become crucial for understanding the mechanisms that led to fiscal imbalances and identifying ways to address such situations in the future.

The increased pressure on public finances manifested in three key indicators: public revenues, public expenditures, and public debt. While public revenues in the EU showed stable growth in the years before the pandemic, the pandemic led to a significant decline, as many sectors of the economy, including hospitality, tourism, and retail, faced complete closures or restrictions. Public expenditures, on the other hand, reached record levels in many cases, primarily due to measures supporting healthcare, maintaining employment, and protecting the most vulnerable sectors of the economy.

A significant resource for research on the crisis's impact on public finances is the work by Stiglitz and Rosengard (2015), which addresses how governments can intervene in the economy to mitigate the effects of economic shocks, including those caused by the pandemic. Other authors, such as Andrew (2008) and Igan et al. (2010), emphasize that public finances are a key tool for stabilizing the economy during a crisis, and their development is closely linked to the effectiveness of government interventions. In the context of the COVID-19 pandemic, government measures were primarily focused on fiscal stimuli aimed at preserving employment and supporting the hardest-hit sectors.

Studies by Gros (2021) and Cohen et al. (2021) focused on the impact of the pandemic on public revenues and expenditures in EU countries. Gros highlights that the fiscal policies introduced during the pandemic were not only aimed at mitigating the immediate economic consequences but also at laying the groundwork for economic recovery. Despite the necessity of these measures, they brought about an increase in public debt, which will have long-term consequences for the fiscal stability of many countries.

The study by Quaglia and Verdun (2023) focuses on the uneven impact of the crisis on different countries and sectors, emphasizing that countries with more diversified economies and better access to digital technologies managed to handle the decline in public revenues more effectively.

Fernández-Villaverde and Jones (2021) and Fernández-Portillo et al. (2020) point out that the fiscal measures adopted during the pandemic led to an increase in disparities in indebtedness among eurozone countries. Public debt increased in almost all countries, with the most significant rise observed in those with lower fiscal capacity and higher pre-existing debt levels.

Based on these studies and research, we can conclude that the COVID-19 pandemic led to a significant increase in public debt across most EU countries, while the fiscal measures introduced to mitigate the crisis directly impacted the growth of public expenditures. The long-term impact of these measures on public finances will inevitably depend on the ability of countries to implement fiscal consolidation and ensure the sustainability of their budgets in the future.

MATERIALS AND METHODS

The aim of this article is to quantify the impact of the crisis on the public finances of EU countries and provide an analysis of trends that may serve as important lessons for future crisis periods. The methodology of this research is strictly focused on the analysis of three main components of public finances: public revenues, public expenditures, and public debt. The research concentrates on the year-over-year changes of these variables, characterizing them as flow variables, representing financial flows over a given time period. This approach allows tracking the dynamics of public finance development and provides a comprehensive picture of how public budgets responded during the crisis.

The research sample includes all 27 member states of the European Union. The selection was based on the availability of uniform and comparable data from official statistical sources such as Eurostat. This selection allows for comparisons of the differing fiscal policies and responses of individual countries to the crisis caused by the COVID-19 pandemic.

The research period spans from 2009 to 2020, with a primary focus on 2020, the year that marks the onset of the COVID-19 pandemic and a significant external shock to public finances. This time series allows the tracking of long-term trends and changes before and during the crisis, providing a comprehensive view of the dynamics of public finances during this period. For each year, we track year-over-year changes in public revenues, expenditures, and debt.

The research focuses on the analysis of relative public finance indicators, specifically public revenues, public expenditures, and public debt, expressed as a percentage of GDP. This approach allows for more accurate comparisons between countries with different-sized economies, ensuring more objective results and the identification of trends.

Public revenues include all state revenues, primarily tax revenues, social contributions, and other non-tax sources. The research focuses on year-over-year changes in public revenue flows, observing how revenues developed in each year during the study period.

Public expenditures represent state spending on public services, transfers, investments, and debt servicing. The research monitors year-over-year changes in public expenditures, with an emphasis on how the pandemic affected the volume and structure of public spending.

Public debt: This represents the total amount of state debt accumulated through budget deficits. We focus on the year-over-year increase or decrease in public debt and its dependence on the level of public revenues and expenditures.

The first step in the research process was data collection on public finances from harmonized statistical sources, such as the Eurostat database. For each country, annual data on public revenues, expenditures, and public debt as a percentage of GDP were tracked, allowing the evaluation of the development and dynamics of these variables during the study period from 2009 to 2020. Emphasis was placed on year-over-year changes in these indicators, especially in the crisis year 2020, which brought significant changes to the management of EU countries' public finances due to the COVID-19 pandemic. In total, our work and research operated with approximately 2,000 data points and values (primarily averages from secondary data).

Following data collection, an analysis of year-over-year changes was conducted, serving as the main tool for identifying the fiscal responses of EU countries to the pandemic. Year-over-year changes in public revenues, expenditures, and public debt as a percentage of GDP allow for the tracking of flow variables over time, capturing dynamic shifts across the years. This approach highlights how individual countries were able to adapt to economic challenges and what fiscal measures they implemented to mitigate the crisis's impacts.

Another key methodological component was a comparative analysis. This analysis enabled a comparison of the development of public finances in various EU countries, taking into account their relative abilities to respond to the crisis. Countries that experienced significant increases in public expenditures or public debt as a percentage of GDP were compared with those that maintained more conservative fiscal policies. This approach provides insight into the range of differences in responses to the pandemic crisis and reveals fiscal variability within the EU.

The differences between the long-term average (the year-over-year change between 2009-2019) and the situation of a given public finance variable in 2020 provide the basis for creating a ranking. Each country is assigned a specific number of points based on a comparison of its long-term average (2009-2019) and the year 2020. The number of points allocated characterizes the difference between the long-term value of each of the observed variables and its value in 2020 for all EU member states. The baseline value of 0 points in determining the point scale is represented by the long-term average value, set separately for each country and variable. The percentage difference between long-term trends and the value in 2020 can be either positive or negative, and the number of points depends on the size of the percentage difference, as detailed in the table.

Table 1: Interval scale and scale of points

Number of points	**PublicExpenditures Public Debt**		**Public Revenues**	
	From (%)	To (%)	From (%)	To (%)
11	10	∞	-5	-∞
10	9	10	-4,5	-5
9	8	9	-4	-4,5
8	7	8	-3,5	-4
7	6	7	-3	-3,5
6	5	6	-2,5	-3
5	4	5	-2	-2,5
4	3	4	-1,5	-2
3	2	3	-1	-1,5
2	1	2	-0,5	-1
1	0,1	1	-0,01	-0,5
0	**-0,09**	**0,09**	**-0,09**	**0,09**
-1	-0,1	-0,99	0,01	0,5
-2	-1	-2	0,5	1
-3	-2	-3	1	1,5
-4	-3	-4	1,5	2
-5	-4	-5	2	2,5
-6	-5	-6	2,5	3
-7	-6	-7	3	3,5
-8	-7	-8	3,5	4
-9	-8	-9	4	4,5
-10	-9	-10	4,5	5
-11	-10	- ∞	5	∞

The final phase was data visualization, where the analysis results were presented through graphs and tables showing year-over-year changes in public revenues, expenditures, and debt as a percentage of GDP. These visualizations help to clearly display trends and differences between countries. The graphs clearly indicated which countries showed the most significant fiscal expansions and which were able to maintain more stable fiscal parameters.

FINDINGS

Overall, the research was based on a rigorous analysis of relative public finance indicators and year-over-year changes in these variables, allowing for a clear and objective comparison of the responses of EU countries to the

pandemic crisis in the context of their public finances. This approach provides valuable insights for fiscal policy-making and public finance management during crisis events.

Table 2: Year-over-year changes in public finance variables as a % of GDP

Indicator / Country	**Public Revenues**			**Public Expenditures**			**Public Debt**		
	LTA	2020	**2020- LTA**	LTA	2020	**2020- LTA**	LTA	2020	**2020- LTA**
EU (27)	0,15	0,4	0,25	-0,4	6,8	7,20	0,18	12,6	12,42
Belgium	0,10	0,4	0,30	-0,26	7,9	8,16	-0,21	14,7	14,91
Bulgaria	0,33	1,0	0,67	-0,3	6,6	6,90	0,65	4,5	3,85
Czechia	0,28	-0,4	-0,68	-0,3	6,1	6,40	-0,31	7,4	7,71
Denmark	-0,07	-0,2	-0,13	-0,73	4,8	5,53	-0,69	8,8	9,49
Germany	0,17	0,2	0,03	-0,3	5,9	6,20	-1,35	9,0	10,35
Estonia	-0,44	1,2	1,64	-0,67	6,2	6,87	0,12	10,6	10,48
Ireland	-0,82	-1,7	-0,88	-2,25	3,8	6,05	-0,43	1,0	1,43
Greece	1,01	2,0	0,99	-0,62	12,8	13,42	5,38	25,8	20,42
Spain	0,42	2,1	1,68	-0,41	10,2	10,61	4,22	24,5	20,28
France	0,23	0,6	0,37	-0,18	6,7	6,88	1,46	17,4	15,94
Croatia	0,44	0,5	0,06	-0,21	8,2	8,41	2,41	14,5	12,09
Italy	0,11	0,7	0,59	-0,25	8,7	8,95	1,80	21,0	19,20
Cyprus	0,45	-0,6	-1,05	-0,24	6,6	6,84	3,97	21,3	17,33
Latvia	0,21	1,3	1,09	-0,68	5,2	5,88	0,02	6,2	6,18
Lithuania	-0,07	1,0	1,07	-1,04	8,9	9,94	0,79	10,7	9,91
Luxembourg	-0,02	-1,0	-0,98	-0,28	5,5	5,78	0,59	2,8	2,21
Hungary	-0,23	-0,1	0,13	-0,5	5,9	6,40	-1,27	14,6	15,87
Malta	-0,08	-0,7	-0,62	-0,43	9,8	10,23	-2,43	11,4	13,83
Netherlands	0,12	0,2	0,08	-0,57	6,1	6,67	-0,81	5,6	6,41
Austria	0,04	-0,2	-0,24	-0,55	9,3	9,85	-0,94	12,7	13,64
Poland	0,33	0,6	0,27	-0,32	6,9	7,22	-0,42	11,8	12,22
Portugal	0,22	0,2	-0,02	-0,77	5,9	6,67	2,90	18,4	15,5
Romania	0,15	1,3	1,15	-0,32	6,2	6,52	1,35	12,1	10,75
Slovenia	0,02	-0,1	-0,12	-0,61	8,7	9,31	3,11	14,2	11,09
Slovakia	0,51	0,4	-0,11	-0,17	5,3	5,47	1,18	11,5	10,32
Finland	0,06	-1,0	-1,06	-0,09	3,5	3,59	1,80	10,0	8,20
Sweden	-0,16	0,0	0,16	-0,30	3,6	3,90	-0,57	4,7	5,27

Legend: LTA – long-term average (2009-2019)

Between 2010 and 2019, public revenues within the EU exhibited stable growth, with an average year-over-year change (LTA) of 0.15% of GDP. This indicates that the revenues of EU countries were increasing during this period, marking a positive trend. Greece achieved the highest long-term average year-over-year change in public revenues, at +1.01%, reflecting its successful efforts to improve public finances after its previous debt crisis. In contrast, Ireland had the lowest LTA of public revenues at -0.82%, indicating a decline in revenues during this period. In 2020, public revenues in the EU increased to 0.4% of GDP, representing a rise of 0.25% over the long-term average. This increase is a positive signal that some countries were able to boost revenues despite the challenges posed by the pandemic. Greece showed a revenue increase of 0.99% above the long-term average, while Latvia experienced a similar positive development with a 1.09% increase over the LTA. On the other hand, countries such as Luxembourg (-0.98%) and Ireland (-0.88%) had public revenues lower than their long-term average in 2020, signaling the negative impact of the pandemic on their ability to generate sufficient revenues.

Between 2010 and 2019, public expenditures in EU countries declined, with a long-term average year-over-year change of -0.4% of GDP, signaling a positive trend toward lower public spending. Ireland experienced the most significant long-term reduction in expenditures (-2.25%), reflecting strong fiscal consolidation following the financial crisis. In contrast, Greece showed an increase in public expenditures, with an LTA of +0.62%, indicating persistent spending needs during the observed period. In 2020, the EU saw a sharp rise in public expenditures, with the year-over-year change reaching 6.8% of GDP, a 7.2% increase over the long-term average. This rise was driven by extensive fiscal measures implemented to manage the COVID-19 pandemic. Greece saw the largest increase in expenditures above the long-term average (+13.42%), followed by Spain (+10.61%). These countries

had to spend substantial amounts to support their economies during the pandemic. In contrast, Denmark (+5.53%) and Finland (+0.09%) recorded relatively moderate increases in expenditures compared to their long-term averages, indicating better control over public finances even during the crisis.

Year-over-year changes in public debt between 2010 and 2019 were relatively stable across EU countries, with a long-term average of 0.18% of GDP. Greece (+5.38%) and Spain (+4.22%) recorded the highest long-term increases in public debt, reflecting persistent issues with high deficits and indebtedness. On the other hand, Ireland (-0.43%) and Hungary (-1.27%) achieved reductions in public debt, signaling successful efforts to consolidate public finances. The pandemic in 2020 caused a significant surge in public debt, with the average year-over-year change in debt across the EU rising to 12.6% of GDP, a 12.42% increase over the long-term average. Greece (+20.42%) and Spain (+20.28%) saw the largest increases in public debt above their long-term averages, indicating massive borrowing to manage the pandemic crisis. In contrast, countries like Latvia (+0.02%) and Luxembourg (+0.59%) recorded only slight increases in public debt, reflecting better control over public finances even during the pandemic.

DISCUSSION

Based on the results from the table comparing the difference between the long-term average (LTA) and the situation in 2020, points were assigned to individual countries. These points reflect the development of public finances—public revenues, expenditures, and public debt. The results were then summarized into a total score index, which represents the sum of the points earned for each variable. The higher the number of points, the more favorable the situation in a country's public finances. Countries with lower points faced negative developments in public finances, indicating a deterioration in fiscal stability.

Based on the results from the table comparing the difference between the long-term average (LTA) and the 2020 situation, points were assigned to individual countries. These points reflect the development of public finances—public revenues, expenditures, and public debt. The results were then summarized into a total point index, representing the sum of points earned across all variables. The higher the number of points, the more favorable the public finance situation for the given country. Countries with lower point totals faced negative developments in public finances, indicating a deterioration in fiscal stability.

Table 3: Point Index

Indicator / Country	Public Revenues	Public Expenditures	Public Debt	Total Point Index	Ranking
EU (27)	1	-8	-11	**-18**	
Belgium	1	-9	-11	**-19**	21
Bulgaria	2	-7	-4	**-9**	1-2
Czechia	-2	-7	-8	**-17**	10-14
Denmark	-1	-6	-10	**-17**	10-14
Germany	0	-7	-11	**-18**	15-20
Estonia	4	-7	-11	**-14**	6-7
Ireland	-2	-7	-2	**-11**	4-5
Greece	2	-11	-11	**-20**	22-23
Spain	4	-11	-11	**-18**	15-20
France	1	-7	-11	**-17**	10-14
Croatia	0	-9	-11	**-20**	22-23
Italy	2	-9	-11	**-18**	15-20
Cyprus	-3	-7	-11	**-21**	24
Latvia	3	-6	-7	**-10**	3
Lithuania	3	-10	-10	**-17**	10-14
Luxembourg	-2	-6	-3	**-11**	4-5
Hungary	1	-7	-11	**-17**	10-14
Malta	-2	-11	-11	**-24**	27
Netherlands	0	-7	-7	**-14**	6-7
Austria	-1	-10	-11	**-22**	25-26
Poland	1	-8	-11	**-18**	15-20
Portugal	0	-7	-11	**-18**	15-20
Romania	3	-7	-11	**-15**	8
Slovenia	-1	-10	-11	**-22**	25-26
Slovakia	-1	-6	-11	**-18**	15-20
Finland	-3	-4	-9	**-16**	9
Sweden	1	-4	-6	**-9**	1-2

Source: Own calculations

Between 2010 and 2019, public revenues in EU countries experienced year-over-year growth, with the long-term average (LTA) year-over-year change being 0.15% of GDP. This stable revenue growth was a positive indicator for countries aiming to consolidate their public finances following the financial crisis. In 2020, public revenues across the EU increased to 0.4% of GDP, a 0.25% increase over the long-term average. The most successful countries in terms of public revenues were Estonia and Spain, each receiving 4 points, reflecting a significant improvement in public revenues in 2020 compared to the long-term average. Latvia (3 points) and Lithuania (3 points) also showed positive developments in this area. Conversely, Cyprus (-3 points) and Finland (-3 points) faced revenue declines, earning negative scores. On average, the EU scored 1 point for public revenues, reflecting an improvement in revenues across most countries.

From 2010 to 2019, public expenditures in EU countries decreased, with a long-term average year-over-year change of -0.4% of GDP. This decrease was a positive sign, indicating improved fiscal discipline and more efficient use of public resources. However, in 2020, public expenditures sharply increased due to pandemic-related measures. The average year-over-year change in expenditures in the EU rose to 6.8% of GDP, a 7.2% increase over the long-term average. The most significant increases in public expenditures over the long-term average were seen in Greece and Spain, both of which scored -11 points, reflecting high spending tied to economic support during the pandemic. In contrast, Sweden and Finland, which each received -4 points, managed to better control the rise in public expenditures. The EU average in this category was -8 points, indicating that most countries faced substantial increases in public expenditures in 2020.

Public debt in EU countries was stable between 2010 and 2019, with a long-term average year-over-year change of 0.18% of GDP. However, in 2020, public debt across the EU surged to 12.6% of GDP, a 12.42% increase over the long-term average, as countries had to finance large stimulus packages and pandemic measures. Greece and Spain recorded the highest increases in public debt over the long-term average, both scoring -11 points. This sharp

rise in public debt indicates that these countries had to borrow heavily to cover crisis-related expenses. On the other hand, Luxembourg and Ireland showed relatively modest increases in public debt, earning better scores (-3 points for Luxembourg and -2 points for Ireland). The EU average in this category was -11 points, reflecting a widespread rise in public debt across most EU countries.

Based on the point scores in individual categories—public revenues, expenditures, and debt—a total point index was calculated. This index reflects the overall fiscal situation of individual countries in 2020 compared to their long-term trends. The best-rated countries, with the highest total point index, were Bulgaria and Sweden, each with a total score of -9. These countries managed to maintain control over expenditures and debt while their public revenues increased. Latvia ranked third with a score of -10, largely benefiting from an improvement in public revenues. On the other hand, Malta received the lowest score of -24, indicating significant issues with public finances in 2020, primarily due to revenue declines and a sharp increase in debt. Greece and Croatia ranked at the bottom with a score of -20, driven by significant increases in public expenditures and debt. The EU average for the total point index was -18, reflecting the fact that most countries experienced a significant deterioration in their fiscal situation due to the pandemic.

The analysis of public finances in 2020, compared to long-term averages, revealed that the fiscal situation in most EU countries deteriorated due to the pandemic. Public revenues increased, which was a positive signal, but the sharp rise in public expenditures and debt led to increased fiscal pressure. Countries such as Bulgaria, Sweden, and Latvia coped best with the situation, while countries like Malta, Greece, and Croatia faced the greatest challenges.

The unprecedented impact on the fiscal situation in EU member states was driven by the implementation of extensive fiscal measures in response to the COVID-19 pandemic, resulting in significant changes in public finances. The responses of EU member states were characterized mainly by the synergy of fiscal and budgetary stabilization tools on both the revenue and expenditure sides (Haroutunian, Osterloh, and Sławińska, 2021).

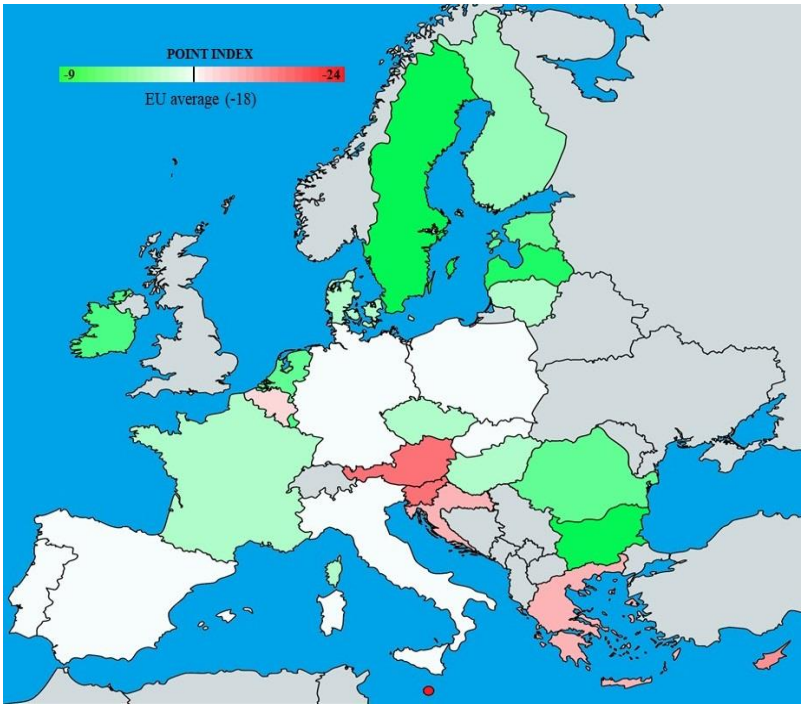

Figure 1: Geographical distribution of the point index

The decline in public revenues in 2020 was influenced by several factors, particularly the reduction in economic activity caused by lockdowns and quarantine measures, leading to lower tax collections and a general decrease in public budget revenues. Discretionary measures taken by governments, such as temporary VAT reductions or tax reliefs to stimulate consumption, contributed to this decline. For instance, in countries like Germany and Ireland, VAT reductions were a key measure to boost consumption, but persistent restrictions and changes in consumer behavior limited the full impact of this stimulus. These measures did not reduce the overall tax liability but deferred

tax payments, which had a smaller impact on the resulting deficit, though they caused short-term revenue losses. Most EU countries, including Slovakia and Luxembourg, implemented such deferrals, representing approximately 0.5% to 2% of GDP. Despite these measures, public revenues stagnated or slightly declined in many EU countries.

Public expenditures across the EU surged due to emergency fiscal measures aimed at supporting the economy during the pandemic. These expenditures focused on labor market stabilization, support for businesses, healthcare, and social systems (e.g., Cardani et al., 2021; Hürtgen, 2020; Zahariev et al., 2021; Haroutunian, Osterloh, and Sławińska, 2021). Discretionary measures, such as short-time work programs introduced by countries like Germany and France, significantly contributed to employment stabilization. These programs accounted for more than 25% of stabilization measures and aimed to prevent mass layoffs, thereby helping the labor market recover more quickly. Another key factor in the rise of public expenditure was loan guarantees and other forms of financial assistance to liquidity-constrained companies. Such guarantees helped firms secure necessary liquidity, but they could represent future fiscal liabilities if the firms are unable to repay their loans. Overall, there was a sharp increase in public expenditures across all EU countries, which was necessary to mitigate the economic impacts of the pandemic, but at the same time, it caused greater fiscal pressure on public finances.

Public debt in EU countries saw the largest increase, with the average rising by 12.6% of GDP. The main reason for this increase was the massive discretionary fiscal measures implemented by governments to support the economy during the pandemic. These measures included direct financial injections, guarantees, and other forms of fiscal expansion, which immediately increased public debt. An example is Italy, where public debt reached dramatic levels due to a large fiscal stimulus package totaling 48.7% of GDP (Anderson et al., 2020). Similarly, Greece and Spain experienced sharp increases in public debt, driven by a combination of increased public expenditures and slow economic recovery. On the other hand, countries like Germany and France implemented measures that increased public debt but are expected to maintain fiscal discipline, helping stabilize this debt in the future.

The development of public finance indicators, such as public revenues, expenditures, and public debt, is directly tied to the development of GDP, to which these indicators are related. Since these indicators are expressed as a percentage of GDP, their interpretation can be affected by significant changes in GDP itself. In 2020, many EU countries experienced a drop in GDP due to the pandemic, which caused public finance indicators like public debt and expenditures to appear more pronounced than they would be under more stable GDP growth. This fact may distort the reality because, even if public revenues or expenditures did not change significantly in absolute terms, their share of GDP changed due to declining economic activity. Consequently, the increase in debt or expenditures may be expressed as a higher percentage, which does not accurately reflect the real increase in absolute values but rather the change relative to the shrinking GDP.

CONCLUSION

The COVID-19 pandemic caused a significant disruption to public finances across the European Union (EU), resulting in dramatic changes in key fiscal indicators such as public revenues, public expenditures, and public debt. The analysis revealed notable differences in the ability of member states to respond to the crisis and adapt their fiscal policies to new challenges.

Public revenues in most EU countries either slightly declined or stagnated in 2020, primarily due to the economic downturn caused by lockdowns and restrictions in key sectors such as hospitality, tourism, and retail. Discretionary measures, such as tax cuts and tax reliefs aimed at stimulating consumption and supporting businesses, also contributed to the decline in tax revenues. However, some countries, such as the Baltic states, experienced an increase in revenues in the first year of the COVID-19 pandemic. On the other hand, countries like Greece faced more substantial revenue declines.

Public expenditures surged across the EU, as governments had to respond swiftly and massively to the economic consequences of the pandemic. Extensive fiscal stimulus packages included employment support (e.g., short-time work programs), assistance to struggling businesses, expansion of healthcare capacity, and other measures to support vulnerable sectors of the economy. The highest increase in public expenditures was seen in countries such as Greece and Spain, which had to allocate significant financial resources to support their economies. Conversely, Nordic countries like Sweden and Finland managed to better control their spending, resulting in a relatively smaller increase in public expenditures.

The most significant challenges for public finances emerged in the area of public debt, which in some countries soared well above long-term averages. The average debt increases in the EU reached 12.6% of GDP, with Greece,

Spain, Italy, and Cyprus experiencing the most pronounced rises of over 20% of GDP. These countries had to incur substantial debt to finance measures, which will have long-term implications for their fiscal stability. Countries like Estonia and Bulgaria recorded only modest increases in public debt, reflecting better fiscal positions and responsibility even before the crisis.

These findings highlight the substantial differences in EU countries' responses to the pandemic, as well as the need for stronger fiscal coordination at the union level. However, when interpreting the results, it is important to consider certain limitations, particularly regarding the interpretation of relative indicators as a percentage of GDP. The decline in GDP itself may have skewed the perceived increases in public expenditures and debt. Similarly, the development of public revenues may exhibit some inertia or lag over time.

In conclusion, the crisis exposed gaps in preparedness for such a shock and underscored the need for future reforms to strengthen fiscal resilience. The long-term sustainability of public finances will depend on countries' ability to implement consolidation measures, and future studies should focus on assessing the effectiveness of the measures taken.

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THE STUDY OF EMOTIONAL INTELLIGENCE AND POLITICAL BEHAVIOUR BY QUASI-EXPERIMENTAL METHOD

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Abstract

This experimental study focuses on the role of emotional intelligence in molding the political behavior of university youth students. The specific goal of this study is to investigate the effects of emotional intelligence competency on political behavior among university students by comparing the significance of differences between the treatment and control groups using an emotional intelligence module. 608 university students were chosen as responses from Malaysia's four public institutions. The Emotional Intelligence Self-Description Inventory (EISDI) and Political Behavior Questionnaire (PBQ) were employed as assessment instruments. In this study, multiple regression analysis was used to determine the effect of variables on treatment group. The results of the study showed that there was a significant effect in the post-test for the treatment group because there was a difference before and after the treatment. The value of the findings shows that the treatment group has a changing impact on political behavior with the implementation of emotional intelligence competence in the teaching module.

Keywords: Emotional Intelligence, political, behavior, quasi-experimental

INTRODUCTION

The youth group plays a major role in the progressive development of the country from various aspects such as education, development and the struggle to defend national sovereignty. The great influence of youth in this aspect of the struggle can be seen when the country was not yet independent. The strength of motivated and purposeful youth is capable of blowing some political thought and behavior to develop a country physically, emotionally and mentally. Thus, it shows that the leadership of a nation also lies in intellectual education rather than a philosophical outburst led by emotional intelligence. The formation of the country through the voting process is based on the understanding and thinking of the community which is also very dominant with the influence of the thought wave of the youth. Even now everyone can see that various ideological trends have influenced the way of thinking and colored the way the youth act in matters of nation building. However, there are also young people who are found to be turning to a more radical and aggressive approach to an alarming level because of a deep sense of dissatisfaction with the country's system. Research to measure political behavior should be carried out to see its relationship with the level of psychological aspects like emotional intelligence, especially among the youth. With that, this research effort allows researchers to produce a model of emotional intelligence skills to help in forming a more focused, mature and rational political atmosphere to strengthen the value of continued emotionally and mentally well-being in achieving a peaceful and safe survival accompanied by the diversity of beliefs and races in country.

PROBLEM STATEMENT

One thing that cannot be denied is that youth political movements can be threaten social well-being, mental health, rational behavior, and security of life if not directed in a more significant way for the security of the people and the country (Mohd Fuad et al., 2012). A study on political awareness and behavior among university students at 11 Public Universities in Malaysia (UA) was conducted by Mohd Fuad et. al (2012). The youth's political activism for the national election can be detected through the way and style they are involved in campaigning, their enthusiasm in expressing their support and their aggressiveness in mobilizing the political party machinery. The trend of youth voting is said to be very significant in helping a political party win.

Teh Fui Khim (2001) in his study explained that there is an increase in youth misbehavior in statistics which show that they are weak in controlling their emotions and heart desires in a more positive direction. In fact, Sinar Harian newspaper (9 August 2013) also discussed how youth voice their views on national politics by demonstrating, rioting or swearing on social media is not a mature act, but instead makes the youth irresponsible to the point of losing manners and ethics. Quite clearly, there needs to be stability in emotions so that today's youth problems can be solved in a more prudent, wise and knowledgeable way. Previous research has largely focused on the origins of politically significant emotions and the ways in which such emotions influence political action in various

settings. Prior academics have also drawn attention to the ways in which members of the elite class attempt to sway public opinion to further their political goals (Gadarian & Brader, 2023).

Uncertainty in selection shoots national leadership based on to series decision election general Malaysians agree by development physical state. Physical development too rapidly without offset by development personality and spirituality regularly no realized will mutilate effort success youth for to be excellent leader. Elements necessary importance built in teak self-excellent is intellect intelligence and emotional intelligence. Healthy and positive emotions can be factoring determinant to style of leadership in mature politics. Implementation approach model mechanism from skills intelligence emotions in help control and manage self-emotions and others really is required in effort develop teak self.

RESEARCH OBJECTIVE

To identify the significant impact of emotional intelligence competency on the political behavior of youths.

RESEARCH QUESTION

What is the significant impact of emotional intelligence competency on the political behavior of youths?

RESEARCH HYPOTHESIS

There is a significant impact of the emotional intelligence competency on the political behavior of youths.

METHODOLOGY

RESEARCH DESIGN

This study is quantitative with a quasi-experimental research design. A quasi-experimental design is usually used to evaluate the effectiveness of a program when the study respondents cannot be randomly distributed in addition to the natural characteristics of the respondents being a priority (Chua 2006). In the context of this design there are two groups of respondents, one as a treatment group and the other as a control group. These groups were given a questionnaire twice, namely during the pre-test and post-test. This method can see the difference between the groups that receive treatment and those that do not receive treatment. The requirements of this study are also descriptive and hypothesis testing. Hypothesis testing has an approach to the interpretation of independent variables in two or more factors in each situation (McIntyre, 2005).

LOCATION

The study was conducted in four public universities as representative public universities in Malaysia. It is divided into four zones namely North Zone, South Zone, East Zone and West Zone. This study only focuses on public universities, and this also means that other existing universities such as private universities and university colleges are not involved.

SAMPLING

The sampling method used in this study is purposive sampling. Purposive sampling in this study is used to obtain a group of respondents who have certain characteristics according to the researcher's wishes (Chua, 2006). Sampling involves several of these public universities with a sample of 350 respondents who are university students who take courses in Statehood and Advanced Development of Malaysia at selected universities. Respondents are studying for a bachelor's degree in the age range of 19 to 25 years, and a sample size of 100 to 150 is referred to as a relatively large size to obtain a normal distribution.

INSTRUMENTS

This study was conducted based on quantitative methods. Therefore, to obtain data, a questionnaire was used. The Questionnaire of Emotional Intelligence Self-Description Inventory (EISDI; Groves et al., 2006) was used in this study to measure the emotional intelligence competence of youths. The reliability of this instrument is .876. While the Political Behavior Questionnaire (PBQ; Siti Sarawati., 2017) is to measure the political behavior of youths. The reliability of this instrument is .681. The reliability of these two surveys has a relatively high reliability value and can be trusted to be used to obtain quality research results. Construct validity was analyzed using Kaiser-Meyer-Oldin (KMO) factor analysis. The total KMO for the EISDI is .624, while the KMO for the PBQ is .681. Factor analysis should be evidenced by a KMO greater than 0.60. For this study, all these studies have KMO values greater than 0.60.

FINDINGS

To test the impact of emotional intelligence competency on political behavior, the test of regression analysis carried out to see as far as which influencing effect political behavior youth based on all four-competency of emotional intelligence. The result clearly shows that there is a significant impact of the emotional intelligence competency on the political behavior of youths.

Table 1: Effect of the Emotional Intelligence Competency Dimension on Political Behaviour (in Treatment Group Pre-test)

Variables	Sig.	R	R2
Emotional Intelligence on Political Behavior	.001	.175	.031
Emotional Perception (EQ1)	.002	.158	.025
Emotional Facilitation (EQ2)	.026	.115	.013
Understanding Emotions (EQ3)	.005	.145	.021
Emotional Regulation (EQ4)	.009	.136	.018

The table above shows the results of the study on the effect of the emotional intelligence competency dimension on political behavior in the Treatment Group Pre-Test. The results of the multiple regression analysis that has been carried out show that only two dimensions of emotional intelligence, namely emotional perception (sig= .002, R= .158) and understanding emotion (sig = .005, R = .145) have a significant effect on political behavior. With that, researchers need to reject the EQ2 which is emotional facilitation and EQ4 which is emotional regulation and instead accept the EQ1 and EQ3 because only these two dimensions have a significant effect on political behavior in the Treatment Group Pre-Test. Based on decision analysis this, get it specified that dimensions emotional perception and understanding emotions is possible factors affecting behavior politics.

Table 2: Effect of the Emotional Intelligence Competency Dimension on Political Behaviour (in Treatment Group Post-test)

Variables	Sig.	R	R2
Emotional Intelligence on Political Behavior	.000	.307	.094
Emotional Perception (EQ1)	.000	.276	.076
Emotional Facilitation (EQ2)	.000	.284	.081
Understanding Emotions (EQ3)	.000	.214	.046
Emotional Regulation (EQ4)	.000	.274	.075

The table above shows the result of the existing impact by the dimensions of emotional intelligence competency to above political behavior in Treatment Group Post-test. Findings analysis clearly show that the multi-regression that has been carried out all of the emotional intelligence domains that is perception emotions (sig = .000, R= .276), facilitate emotions (sig = .000, R = .284), understanding emotion (sig = .000, R= .214), regulation emotions (sig = .000, R = 274) with whole reading (sig = .000, R = .307). Therefore, all of them dimensions give effect significant against behavior politics. By that, researchers no need reject any because of all dimensions this give effect significant to above behavior politics in Treatment Group Post-test. Based on decision analysis this, all dimensions intelligence emotions are factors that can affecting behavior politics.

Test	Result
Treatment Group Pre-test	Emotional Perception and Understanding Emotions = Significant
Treatment Group Post-test	All = Significant

DISCUSSION AND CONCLUSION

This research was produced for test impact and influence Emotional Intelligence vs Political Behavior Youth. Youth become assets and hopes to development of developed countries. Hence, preparation build teak self are also one effort for mobilizing national development and efforts that should done among them is by evaluate Emotional Intelligence that will to be action in various situation national development in particular in choose harness leadership and governance. A capable youth competitor is the one who has continuous Emotional Intelligence by Mature Political Behavior, no trigger provocations negative to the public and care values and ethics as a person leader.

Variables Emotional Intelligence like Emotional Perception, Emotional Facilitation, Understanding Emotions and Emotional Regulation become wood measure against Politics Youth ie Liberalism, Conservatism and Nationalism. Research shows the influence of Emotional Intelligence is not so noticeable in parts Group Control Test Pre and

Post. Test Pre-Control Group show no influence from Emotional Intelligence to Political Behavior that is by reading (Sig = > 0.6). The same is true of the Control Group Post-test, only one only intelligence emotion that give effect that is dimensions Understanding Emotions with reading (sig =.000, R=.203).

While in Treatment Group Pre-test show two influences and effects against Political Behavior that is Emotional Perception and Understanding Emotions with reading respectively (sig =.002, R= .158 and sig=.005, R=.145). temporary for Treatment Group Post-test show significant effect to all of them Political Behavior that is Emotion Perception (sig=.000, R =.307), Facilitating Emotions (sig=.000, R=.284), Understanding Emotions (sig=.000, R=.214), Regulation of Emotions (sig=.000, R=.274). Results show that the test have significant effect and influencing on Emotional Intelligence upward Political Behavior of youth.

This research concluded that intelligence emotions have effect to above behavior practice politics of youths. How to be political youth decide progress healthy leadership for a country is the same there is it will process by the powers that be Intellectual and Spiritual good or Intellectual and Spiritual who are not so good in leading task leadership Malaysian. Through results decision research researchers, the Emotional Intelligence Model is necessary implemented by bring new mechanisms in apply Emotional Intelligence in Politics. The Emotional Intelligence Model already for sure gives value add in forming mind Youth in our beloved country this.

There was a difference between the pre-test and the post-test in the control group. Therefore, with the existence of differences it can be concluded that there is an effect from the module conducted on the youth as respondents. Through the results of this study, the model of emotional intelligence needs to be implemented by highlighting relevant mechanisms, through the implementation of emotional intelligence competencies among youths to achieve authentic and transformative political behavior in line with the demands of the country.

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DOES SUPPLY CHAIN PRESSURE AFFECT FOOD PRICES? A GLOBAL VIEW

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Abstract

The global supply chain disruptions have begun to strain the economy globally, especially with the COVID-19 pandemic. Natural disasters, political conflicts, and wars also pressure the global supply chain. It is also possible that the general level of prices, and more specifically food prices, will be affected by the global supply chain pressure, which has the potential to cause damage to the entire economy. Such pressures can lead to delays in the processes from production to distribution, cost increases, and decreased product supply. Therefore, logistical difficulties, increases in energy prices, and problems accessing raw materials may cause food prices to rise. This study aims to analyze time-varying relationships between global supply chain pressure and global food inflation, using monthly data for 1998:01-2024:06. A time-varying Granger causality test based on three algorithms discusses the dynamic properties between variables. The findings show that the global supply chain pressures impacted global food inflation from 2014, when it left its relatively stable course and started to increase, until early 2022, when it began to decrease. More precisely, the global supply chain pressure, which showed a severe increasing trend between approximately 2014 and 2022, triggered global food inflation. In order to alleviate the effects of global supply chain pressure on global food prices, all economic units, from households to policymakers, have essential duties, including measures such as reducing food waste and supporting local production, supply chain diversification, and ensuring logistics and infrastructure investments.

Keywords: Supply Chain Pressure, Food Prices, Time-varying Causality

INTRODUCTION

The rapid spread of globalization has led countries to become increasingly integrated economically and in many other aspects. The fact that production processes have become more complex and dependent on global supply chains is also a result of rapid globalization. Developing technologies, trade agreements, and logistics innovations is vital in facilitating trade between countries and organizing companies' global activities more efficiently. However, despite such benefits of international integration, it is also clear that global supply chains are susceptible to external shocks (Ivanov and Dolgui, 2020). Unexpected events such as climate change, wars, political tensions, and pandemics create disruptions in the supply chain, negatively affecting total supply and leading to price fluctuations.

Many internal and external supply or demand-side factors can also affect food prices. Many factors, such as climate conditions, input costs, energy prices, economic policies, supply-demand balance, and money supply, have potential effects on food prices. One of the supply-side factors affecting food prices is supply chain pressure. Toledo and Duncan (2024) argue that the global supply chain pressure is essential for predicting food inflation, especially in low- and middle-income countries. In addition, during some significant events, such as the COVID-19 pandemic and large-scale economic crises, such as the Global Financial Crisis, the impact performance of global supply chain pressure on food prices increases. Adjemian et al. (2023) also stated that supply-side factors explain a significant portion of the changes in food prices. Adjemian et al. (2023) and Andriantomanga et al. (2023) have presented findings that a one-standard-deviation shock in supply chain pressure affects food prices with a lag. Andriantomanga et al. (2023) also have underlined the high sensitivity of food prices to global supply chain pressure. Malakhail et al. (2023) and Asadollah et al. (2024) have reported that increases in global supply chain pressure cause increases in food inflation. According to Asadollah et al. (2024), the impact of the standard deviation of a shock in global supply chain pressure increases as it moves from the short term to the long term. That is, the effect of global supply chain pressure on food prices is stronger in the long run. Malakhail et al. (2023) have expressed that the positive relationship between the variables disappeared after 2022. This could be due to other global developments, especially the Russia-Ukraine War, which is becoming more influential on food inflation. In contrast, Platitas and Ocampo (2024) have reported that global supply chain pressure does not significantly affect food inflation and that the relationship between these variables is weak.

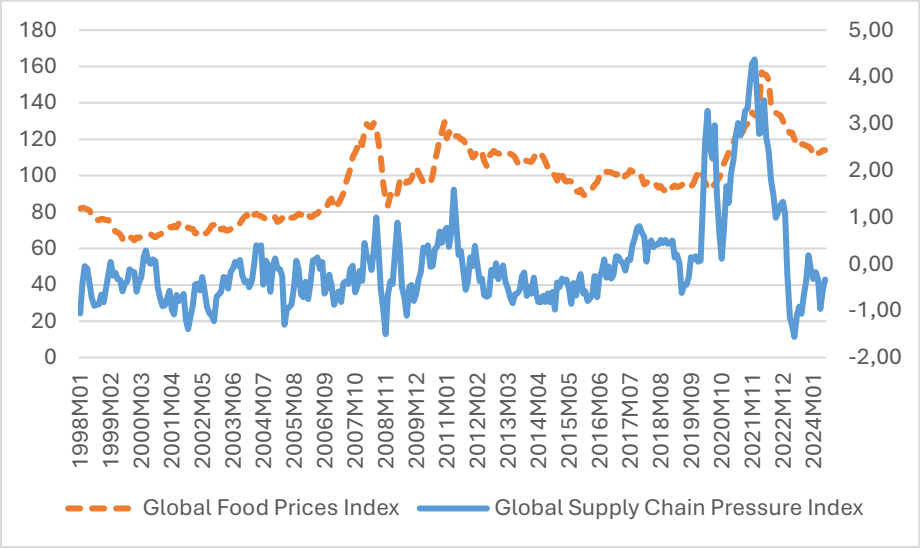

Figure 1: Global Supply Chain Pressure and Global Food Prices

Global supply chain pressure is an index calculated by Benigno et al. (2022) to measure the pressures considering the different dimensions to which supply chain factors can constrain the global production network. This index is an important indicator that measures bottlenecks and disruptions in international trade and logistics and is frequently used in academic research (Akinci et al., 2023; Kim et al., 2023; Liu and Nguyen, 2023; Zhong et al., 2024). The time series presentations of the global supply chain pressure index and the global food price index published by the Food and Agriculture Organization of the United Nations are given in Figure 1. While supply chain pressure and food prices increase during global crisis periods, the most significant of these increases occurred during the COVID-19 pandemic. The values of the variables, which increased together, have started to decrease simultaneously since the beginning of 2022. The first interpretation derived from the time series graphs of the variables before the analysis is that there is a positive relationship between global supply chain pressure and global food prices. In addition, the correlation coefficient between the variables is 0.5053. These first observations support empirical studies in the literature.

The increasing adverse effects such as climate change, natural disasters, drought, global health problems such as the COVID-19 Pandemic, and the economic crises frequently experienced by the capitalist system have made understanding the impact of global supply chain pressure on food prices a critical issue in terms of ensuring economic stability and controlling inflation. The need for nutrition, one of the most basic needs, makes it valuable to investigate the fluctuations in food prices and their reasons. Since food expenditures constitute a large part of the total expenditure for people experiencing poverty, fluctuations in food prices have profound effects, primarily on low-income households. With the motivation provided by all these reasons, this study aims to investigate the effect of global supply chain pressure on global food inflation. The inconstant characteristics of time series and the breaks in economic series caused by the crises experienced frequently in recent years have been decisive in selecting the analysis method. Therefore, the time-varying relationships between variables are examined with time-varying causality tests based on three algorithms developed by studies such as Shi et al. (2018) and Shi et al. (2020). The narrow literature investigating the relationship between global supply chain pressure and food prices and the use of this method, which can be considered new, is expected to contribute significantly to the literature.

The rest of the study is organized as follows: First, the Methodology section, which examines the infrastructure of the time-varying causality test, is included. Then, the data definition, preliminary tests, and findings are discussed in the Data and Findings section. The study is concluded with the Conclusion section, which includes general evaluation and policy recommendations.

METHODOLOGY

Granger's (1969) causality test, which was developed to test the ability of one variable to predict another, has been developed with new approaches to detect more complex and dynamic relationships, especially in time series analyses. One of these approaches investigates whether the relationship between variables changes over time. In this method, called time-varying causality tests, causality changes in different periods are monitored using

windows moving throughout the sample. Shi et al. (2018) and Shi et al. (2020) examine the time-varying relationships between variables with three separate algorithms, namely forward expanding window (FE), rolling window (RO), and recursive evolving window (RE). Of these, RE is derived as an alternative to the other two existing approaches. This new approach represents a particular case that encompasses the processes of the other two approaches.

The test procedure that allows y_t to be the k-vector time series that the following model can generate is shown in Equation 1, and the process that follows the VAR(p) model is shown in Equation 2 (Hammoudeh vd., 2020):

$$y_t = \alpha_0 + \alpha_{1t} + u_t \qquad (1)$$

$$u_t = \beta_1 u_{t-1} + \cdots + \beta_p u_{t-p} + \varepsilon_t \qquad (2)$$

ε_t is the error term and $u_t = y_t - (\alpha_0 + \alpha_{1t})$ is obtained by substituting from Equation 2 into Equation 1. Toda and Yamamoto (1995) suggest testing the existence of a causal relationship by estimating a VAR model with extra lags. Therefore, the VAR model in Equation 3 should be estimated to test the null hypothesis.

$$y_t = \delta + \sum_{i=1}^{k+d_{max}} \beta_i y_{t-i} + \varepsilon_t \; t = 1,2,3 \ldots, T \qquad (3)$$

y_t is the k-vector of endogenous variables; k is the optimum lag length, and d_{max} is the maximum degree of integration of the variables. The null hypothesis of the absence of causality of the right-hand side variable concerning the left-hand side variable in Equation 3 can be examined by testing the first k coefficients of the right-hand side variable using a standard Wald statistic (Yilanci et al., 2023).

Shi et al. (2018) and Shi et al. (2020) have developed an alternative real-time causality test based on supremum Wald statistics sequences using forward expanding window (Thoma, 1994), rolling window (Swanson, 1998), and recursive evolving window (Phillips et al., 2015) algorithms (Hammoudeh et al., 2020). Supremum Wald statistics can be expressed as in Equation 4:

$$SW_f(f_0) = \sup_{f_2 = f, f_1 \epsilon [0, f_2 - f_0]} W_{f_1}^{f_2} \qquad (4)$$

In Equation 4, f_1 and f_2 are the starting and ending points of the regression, respectively. $W_{f_1}^{f_2}$ is the Wald statistic obtained for each subsample regression on $[f_1, f_2]$ and the sample size is $f_w = f_2 - f_1$. The supremum Wald statistics calculated for each of the subsamples being above and below the critical value means that the causality relationship starts and ends, respectively. Shi et al. (2018) and Shi et al. (2020) show that the experimental performance of three algorithms based on different simulation experiments gives the best results in the recursive evolving window procedure.

DATA AND FINDINGS

In this study, the time-varying relationships between global supply chain pressure and global food inflation are investigated using monthly data for the period 1998:01-2024:06. Global supply chain pressure (*GSCPI*) and global food inflation (*GFPI*) data are obtained from the websites of the Federal Reserve Bank of New York and the Food and Agriculture Organization of the United Nations, respectively. *GFPI* represents the global food price index expressed as the rate of change. Traditional Augmented Dickey-Fuller (ADF) (1979) and structural break unit root tests (Perron, 1989; Perron and Vogelsang, 1992) are used to test the presence of unit roots in the time series.

Table 1: Unit Root Test Results

	Traditional Unit Root Test (ADF)		**Breakpoint Unit Root Test**		
Variables	**Test Statistic**	**Probability**	**Test Statistic**	**Probability**	**Breakpoint date**
GSCPI	-3.7547**	0.0202	-4.8249*	0.0554	2022:10
ΔGSCPI	-16.295***	0.0000	-16.926***	<0.01	2020:03
GFPI	-12.476***	0.0000	-13.553***	<0.01	2022:03

***, **, * represent statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 1 contains the findings of the unit root tests. These tests indicate that the *GFPI* and *GSCPI* are stationary at the level and first difference, respectively. Therefore, based on these findings, the maximum integration degree in

the time-varying causality analysis is 1. The time-varying causality analysis is applied unidirectionally from *GSCPI* to *GFPI*, and the findings are presented in Figures 2 and 3.

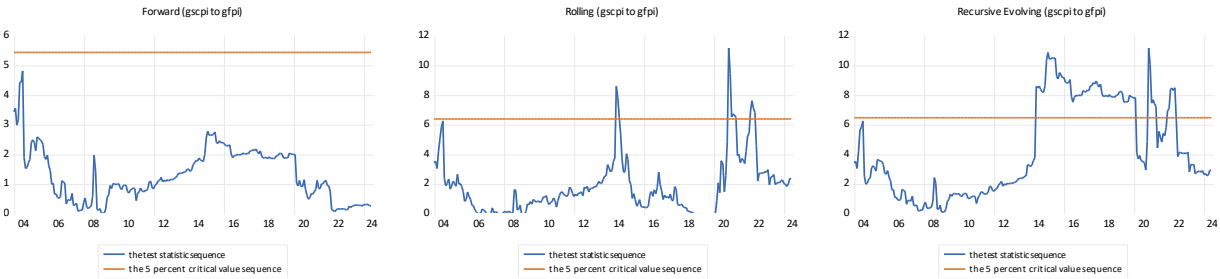

Figure 2: Time-varying Causality Relationships from GSCPI to GFPI (72-Window Size)

Figure 2 shows the findings of the 72-window causality analysis conducted with FE, RO, and RE, respectively, from *GSCPI* to *GFPI*. It is clearly seen that there is no significant Granger causality relationship between global supply chain pressure and global food inflation during the relevant period in the FE test. However, in the RO test, significant causality relationships are found from *GSCPI* to *GFPI* in mid-2014 and in some periods in 2020-2022, immediately after the COVID-19 pandemic. The RE test results provide evidence of a causality relationship spreading over a more comprehensive period. Accordingly, there is a significant time-varying causality relationship from 2014 to early 2022.

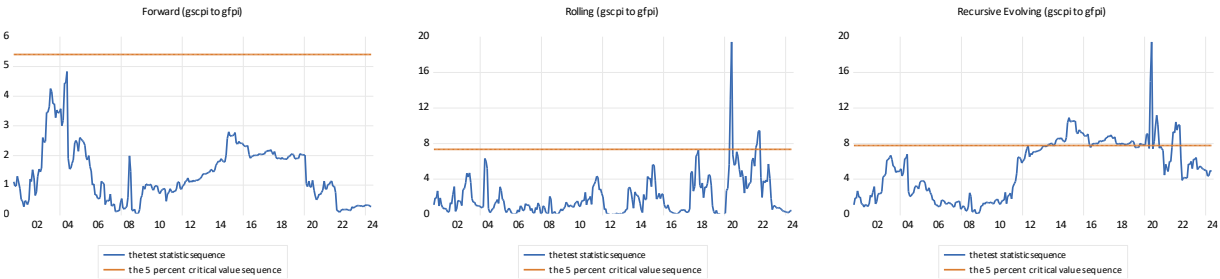

Figure 3: Time-varying Causality Relationships from GSCPI to GFPI (36-Window Size)

Figure 3 shows the findings of the 36-window causality analysis conducted with FE, RO, and RE, respectively, from *GSCPI* to *GFPI*. In the FE test, as in the 72-window analysis, there is no significant Granger causality relationship between the variables. The RO test determines time-varying causality relationships from *GSCPI* to *GFPI* immediately after the COVID-19 pandemic and early 2022. Finally, a time-varying causality relationship covering a long period from late 2013 to early 2022 is determined in the RE test.

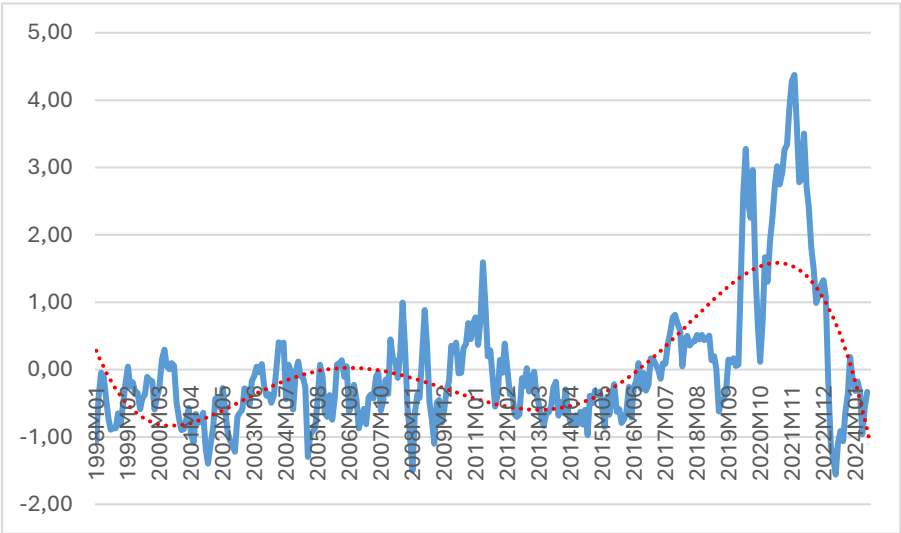

Figure 4: The Trend of Global Supply Chain Pressure

The time-varying causality analysis's findings provide evidence for causality from global supply chain pressure to global food inflation, which started in 2013-2014, increased in strength in 2020, and continued until early 2022. A major part of the answer to the reason for the significant causality in this period is hidden in the course of global supply chain pressure over time (Figure 4). The dashed line in Figure 4 shows a 5th-degree polynomial trend. The most important part of the variable's course is its high increase trend, especially from 2014 to 2022. During this period, tensions between Europe and Russia that started with Russia's annexation of Crimea, changes in China's economic structure, fluctuations in raw material prices, disasters caused by climate change, protectionist trade policies initiated by the USA, and finally, the COVID-19 pandemic increased the pressure on the global supply chain. It is also very likely that this increasing pressure has affected global food prices.

The study's findings include evidence that overlaps with studies such as Malakhail et al. (2023) and Toledo and Duncan (2024).

CONCLUSION

This study analyzes the effects of global supply chain pressure on global food inflation for 1998:01-2024:06 using time-varying Granger causality tests based on three algorithms. The findings show that the increasing pressure in the global supply chain, mainly since 2014, significantly affects global food inflation. The findings also reveal that this pressure is further intensified during global crises such as the COVID-19 pandemic, and supply chain disruptions significantly affect food inflation. However, after the global supply chain pressure begins to ease as of 2022, food prices decrease, but no causality relationship is detected during this period. That is, an increase in global supply chain pressure causes food inflation, while a decrease does not cause food inflation. As a result, the hypothesis that supply chain pressures, which are one of the supply-side problems, affect food inflation, albeit for a certain period, is supported by the empirical findings. These results prove policymakers must reduce supply chain vulnerabilities to control food inflation and ensure household food security. In this context, policy recommendations include diversifying the supply chain, supporting local production, especially agriculture, strengthening the logistics infrastructure, ensuring diversity and durability in production, effective stock management, international collaborations, and reducing waste. These measures can mitigate the possible future effects of supply chain pressures and contribute to controlling fluctuations in global food prices caused by supply chain pressures.

The study's limitation is that it only provides an analysis that can be interpreted globally and, therefore, in general. It does not produce country-specific results. Countries' underdeveloped, developing, and developed structures offer their characteristics. For example, it would be wrong to expect disruptions in the global supply chain to affect every economic structure at the same level. Therefore, future studies can provide more detailed analyses with local criteria that consider the specific characteristics of countries.

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HASTALARIN DOKTOR TERCIHINI BELIRLEYEN KRITERLERIN İNCELENMESI: GÜMÜŞHANE'DEN BULGULAR

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Özet

Sağlık, insanların iktisadi yaşamının verimli bir şekilde sürdürülebilmesi için bir ön şarttır. Bu çalışmada Gümüşhane il merkezinde yaşayan insanların doktor tercihlerini nasıl yaptıkları oyun teorisi kuramı ve işlem maliyeti kavramı da kullanılarak incelenmiş ve analiz edilmiştir. Çalışma, anketler üzerinden yürütülmüştür ve 108 kişi anketi cevaplamıştır. Ankette hastaların doktor tercihini ve memnuniyet düzeyini doğru teşhis etmek için çoktan seçmeli, şıklı ve açık uçlu sorular sorulmuştur. Elde edilen bulgulara göre hastaların %39,8'i daha önce bildiği ve muayene olduğu doktoru tercih etmektedir. Ayrıca %20,4'ü randevusu müsait olan bir doktora giderken, %17,6'sı doktor tercihini çevresine danışarak yapmaktadır. Diğer yandan cevap verenlerin %22,2'si Gümüşhane'de muayene olmak yerine Trabzon'da kamu ya da özel bir hastaneye gitmeyi tercih etmektedir. Trabzon'a giden hastaların çoğu uzmanlık ve bilgi birikimi sebebiyle oradaki doktorları tercih etmektedirler. Gümüşhane Devlet Hastanesi'nin sunmuş olduğu sağlık hizmeti memnuniyeti ise %59 seviyesindedir. Memnuniyetsizliklerin giderilmesi için çalışmada çeşitli öneriler sunulmuştur.

Anahtar Kelimeler: Doktor randevusu, Gümüşhane, memnuniyet.

GİRİŞ

Sağlık sektöründe düzenli bir şekilde hizmet kalitesinin ölçülmesi ve geliştirilmesi toplumun sağlık kalitesi açısından önem arz etmektedir. Toplum sağlığının korunması için yapılacak çalışmalar bütüncül bir veri ağını ve profesyonel sağlık politikalarını gerektirmektir. Bunu sağlamak için her hastanın elektronik ortamda kayıtlarının düzenli olarak tutulması gerekmektedir. Hastaların yeniden aynı hastaneye başvurması, tedavi memnuniyet kalitesinin önemli bir ölçüsüdür. Bu anlayış, doktorlar için de geçerlidir. Çünkü hastaya verilen hizmet kalitesinin yükseltilmesi bir iş birliği sonucunda ortaya çıkmaktadır (Pringle, 2003, 547).

Ekonomi kıt kaynakların etkin dağıtılması üzerine kurulmuştur. Mal piyasasında etkinliği sağlayan unsur piyasadaki fiyattır. Fiyat mekanizması, arz ve talep arasındaki dengenin gerçekleşmesini sağlamaktadır. Ancak sağlık piyasasında, mal piyasasında olduğu gibi net bir fiyat mekanizması bulunmamaktadır ve kamu sektörü, önemli bir arz edici olarak sağlık hizmeti sunmaktadır. Sağlık piyasasında hastalar ve doktorların doğru bir şekilde eşleşmesi veya eşleştirilmesi piyasa etkinliğini ve hasta memnuniyetini artıracaktır. Bu noktada sağlık sektöründe de gerekli piyasa tasarımlarının yapılması ve doğru politikaların oluşturulması gerekmektedir (Roth, 2016, 17-20). Çünkü sağlık hizmetlerinde temel amaç, farklı sağlık hizmetlerini hastanın istediği kalitede, istediği zamanda ve minimum maliyetle sunmaktır (Nakip ve Özçiftçi, 3). Bu amaçla literatürde özellikle sağlık piyasasında belirli bölgeleri veya illeri ele alan çalışmaların artması, lokal problemlerin daha hızlı bir şekilde çözülmesine yardımcı olacaktır. Bu çalışmada amaç, Gümüşhane Merkez'de yaşayan insanların Gümüşhane Devlet Hastanesi'nde muayene olmak için doktor tercihi dikkate aldıkları kriterleri belirlemek ve elde edilen sonuçları analiz etmektir. Ayrıca hastalarda var oluşan memnuniyetsizliklerin sebepleri araştırılmıştır. Bu amaçla Gümüşhane Merkez'de yaşayan insanlardan tesadüfi bir örneklem seçilmiş ve anket formu internet üzerinden paylaşılmıştır. Toplam 108 kişi anketi doldurmuştur. Çalışmada önce kişilere yaş, cinsiyet ve mezuniyet derecesi bilgileri sorulmuştur. Ardından kişilerin doktor tercihlerini nasıl gerçekleştirdiği, doktor muayenesi ve tamamlayıcı sağlık hizmetlerinden memnuniyeti sorulmuştur. Ayrıca hastanın memnuniyetsizliği durumunda bunu herhangi bir kamu kurumuna iletip iletmediği ve ayrılan bir doktordan ötürü üzüntü duyup duymadığı sorulmuştur.

Çalışmadan elde edilen bulgular, ağırlıklı Gümüşhane halkının daha önce bildiği ve muayene olduğu doktorları tercih ettiğini göstermektedir. Burada hastanın doktor tercihinin temel sebebi, doktorun ilgili hastanın hastalığına ilişkin gösterdiği ilgi ve alakadır. Genel olarak da insanlar Gümüşhane'deki sağlık hizmetlerinden memnun gözükmektedirler. Ancak memnun olmayan insanlar da bulunmaktadır ve bu hastalar tedavi maksadıyla Trabzon'u tercih etmektedirler. Trabzon'daki doktorların tercihinde uzmanlık gerektiren yan dal tedavisi ve doktorların bilgi birikimi öne çıkmaktadır. Genel olarak insanlar memnuniyetsiz oldukları durumları kamu kurumlarına bildirmemektedirler.

Gümüşhane ili nüfusu incelendiğinde 2020 itibariyle Merkez ilçesinde 51483 kişi yaşamaktadır. Bu nüfusun %50,8'i erkeklerden %49,2'si kadınlardan oluşmaktadır1. TÜİK istatistiklerine göre Gümüşhane nüfusu 2020 itibariyle %149,3 azalmıştır. Bu istatistik Türkiye'deki iller içerisinde en yüksek azalış değeridir. Bu azalışın gerçekleşmesinde pandeminin ve Gümüşhane şehir merkezinde okuyan öğrencilerin kendi şehirlerine dönmesinin etkisi olduğu düşünülmektedir. Ayrıca yine TÜİK istatistiklerine göre Gümüşhane'de ortanca yaş 34.5, erkeklerde 34.2 ve kadınlarda 34.9'dur. Gümüşhane'nin ortanca yaşı diğer illerin ortalaması seviyesindedir.

Çalışmanın materyal ve metot kısmında önce anketlerden elde edilen demografik bilgiler paylaşılacaktır. Ardından temel bulgular verilmektedir. Temel bulguların alt başlığı istatistik bulgular şeklindedir. En sonda ise tartışma bölümü yer almaktadır.

MATERYAL ve METOT

Demografik Yapı

Ankete katılanların %57,4'si erkek, %42,6'sı kadındır. Kişilerin yaş aralığı incelendiğinde ağırlıklı olarak 20-29 ve 30-39 yaş arasında olduğu görülmektedir. 20-29 yaş arasında bulunan kişiler, ankete katılanların %34.3'ünü, 30-39 yaş arasındaki kişiler %46.3'ünü oluşturmaktadır. Ayrıca 40-49 yaş arası %13, 50-59 yaş arası %5.6 ve 60 yaş ve üzeri %0.9 oranına sahiptir. Bu istatistikler, yukarıda verilen Gümüşhane halkının ortanca yaşı ile benzerlik göstermektedir.

Ankete katılanların mezuniyet derecelerine ilişkin oranlar incelendiğinde yüksekokul veya fakülte mezunu %44.4, yüksek lisans mezunu %15.7 ve doktora mezunu %32.4 şeklindedir. Buna göre lisansüstü eğitim alanların toplam oranı %92,5'tir. Bu yüksek oran ankete katılanların araştırma ve bilgiye dayalı, bilinçli bir şekilde tercih yaptığına işaret etmektedir. Diğer yandan lise mezunu %5,6 ve ilköğretim mezunu %1.9 oranına sahiptir.

BULGULAR ve TARTIŞMA

Ankete katılanlara ilk olarak "Gümüşhane Devlet Hastanesi'nde rahatsızlığınız ile ilgili (acil olmayan) bir doktor randevusuna gideceksiniz. Doktor tercihinizi öncelikle nasıl yaparsınız?" sorusu sorulmuştur. Ankete katılanlara ilgili alanda en az iki doktorun hizmet verdiği varsayımı bildirilmiştir. Böylelikle doktor tercihi, bir zorunluluk haline gelmemektedir. Elde edilen cevaplar Tablo 1'de gösterilmektedir.

Tablo 1: Doktor Tercihleri (%)

Daha önce bildiğim ve muayene olduğum bir doktoru tercih ederim.	39.8
Randevusu müsait bir doktora giderim.	20.4
Çevreme danışarak doktor tercihimi yaparım.	17.6
Trabzon'da kamu ya da özel bir hastaneye gitmeyi tercih ederim.	22.2

Doktor tercihlerine ilişkin cevapların ilk üç tanesi Gümüşhane'de tedavi görmek üzerinedir. Sonuncu alternatif cevap ise Gümüşhane'de tedavinin ikamesi olarak Trabzon'da tedavi görmektir. Doğal olarak insanlar öncelikle Gümüşhane'de tedavi olmak istemektedir ve bu oran %77.8'dir. Daha önce bildiği ve muayene olduğu doktoru tercih edenlerin oranı %39.8, randevusu müsait bir doktora gidenlerin oranı %20.4 ve çevresine danışarak doktor tercihini yapanların oranı %17.6'dır. İnsanların çevresine danışarak doktor tercihini yapması, bir bilgi araştırması gerektirmektedir ve buna işlem maliyeti denilmektedir. İşlem maliyetinin artması, belirsizliğin artmasına ve piyasa etkinliğinin azalmasına sebebiyet vermektedir (Çiçen, 2020, 179-180).

Bir sonraki soruda Gümüşhane'de tedavi olmak isteyip daha önce bildiği ve muayene olduğu doktora giden kişilere, bu tercihin nedeni sorulmuştur. Bu soruda birçok seçeneği işaretleme imkânı tanınmıştır. Cevaplar Tablo 2'de özetlenmiştir.

Tablo 2: Bilinen Bir Doktorun Yeniden Tercih Edilmesi (%)

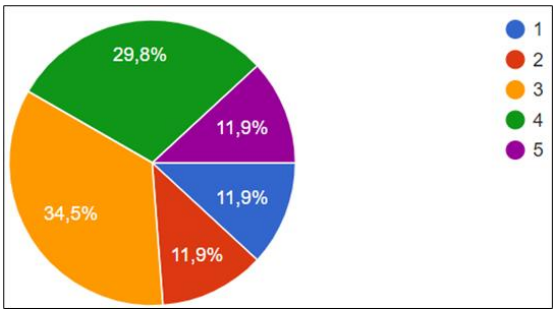
Bilgi birikimi sebebiyle	41.9
Hastalığıma dair ilgi ve alaka göstermesi sebebiyle	81.4
Güler yüzlü olması sebebiyle	18.6

Tablo 2'deki cevaplar arasında yüksek bir oran karşımıza çıkmaktadır. Hastanın daha önce muayene olduğu doktoru yeniden tercih etmesinin sebebi %81.4 ile doktorun hastalığa dair ilgi ve alaka göstermesidir. Burada bilgi

[1] Nüfusu.com (2022). "Gümüşhane Nüfusu". Erişim adresi: https://www.nufusu.com/il/gumushane-nufusu (Erişim tarihi: 25.01.2022).

birikimi cevabı daha geride kalmıştır. Bu istatistiğe göre Gümüşhane'de doktor tercih edip tedavi olmak isteyen hastalar önce doktorun ilgi ve alakasına göre o doktoru tercih etmektedirler. Bu dağılımın sebebi olarak, aynı doktoru tercih eden hastaların hastalıklarına ilişkin ilgili doktorun takibinde olma isteği gösterilebilir. Bu Oyun Teorisi Kuramı'nda "tekrarlı oyun" olarak nitelendirilmektedir. Tekrarlı oyunlar, gerçek hayatı daha iyi yansıtmaktadır. Bu oyunda birden çok iktisadi aktör, birbirleri ile etkileşim içerisinde hareket etmektedirler ve oyun devam eden zaman diliminde tekrarlanmaktadır. Bu oyunlar sosyal hayattaki işbirlikçi davranışlara da kapı aralamaktadır. Hastanın, doktor muayenesinden memnun kalması durumunda, tekrar eden tercihlerinde yine aynı doktoru seçmesi muhtemeldir çünkü hastanın uzun dönemli faydası artmaktadır (Yılmaz, 2016, 285-291). Bu çıkarım, Tablo 2'deki %81.4'lük orana yansımıştır. Diğer yandan hastaların %41.9'u doktorun bilgi birikimini de önemli görmektedir. Doktorun güler yüzlü olması, diğer şıklara göre daha az önemli görülmektedir. Ancak literatürdeki bazı çalışmalarda doktorların gülümsemeyle hastaya yaklaşmaları, doktor tercihlerini ve doktora ilişkin algıları önemli derecede etkilemektedir (Lill ve Wilkimson)

Bir sonraki soruda hastalara Gümüşhane'de genel olarak doktor muayenesinden ve tamamlayıcı sağlık hizmetlerinden (kan tahlili, röntgen, MR vb.) ne derece memnun olduğu sorulmuştur. Cevaplarda 1 puan en düşük, 5 puan en yüksek memnuniyeti ifade etmektedir. Sonuçlar Şekil 1'de gösterilmektedir.



Şekil 1. Memnuniyet Seviyesi (%)

Şekil 1'deki sonuçlara göre Gümüşhane'de muayene olmak isteyenlerin memnuniyet puan ortalaması 3.18'dir. Şekilden görüldüğü üzere en düşük memnuniyet oranı %11.9, düşük memnuniyet oranı %11.9, ne memnun ne memnun olmama oranı %34.5, yüksek memnuniyet oranı %29.8 ve en yüksek memnuniyet oranı %11.9'dur. Buna göre hastaların genel olarak %23.8'i sağlık hizmetlerinden pek memnun değilken, %41.7'si sağlık hizmetlerinden memnundur. Kararsız kesim de dağıtıldığında memnuniyetsiz kesim %41, memnun olan kesim %59 seviyesindedir. %60'a yakın bu memnuniyet oranı sağlık hizmetleri açısından önemlidir ancak bu oranın artırılması toplum sağlık kalitesinin ve mutluluğunun yükseltilmesi açısından önemlidir. Çünkü TÜİK'in 2020 Yaşam Memnuniyeti Araştırması'na göre bireylerin mutluluk kaynağı olarak %70.9 ile sağlık en başta gelmektedir. Ayrıca yine TÜİK'in araştırmasında Türkiye genelinde sağlık hizmetlerindeki memnuniyet %72.1'dir. Ayrıca yine TÜİK verilerine göre Türkiye genelinde devlet hastanelerinden memnuniyet oranı %73'tür. Bu sebeple Gümüşhane'deki sağlık hizmeti memnuniyeti Türkiye ortalaması altındadır ve artırılması gerekmektedir2. Ayrıca memnun olan hastaların (4 ve 5 puan verenlerin) %57.1'i erkektir. Türkiye genelinde ise sağlık hizmetlerinden memnun olan erkeklerin oranı Gümüşhane istatistiğine çok yakın bir şekilde %58.1'dir. Gümüşhane'de sağlık hizmetlerinden memnun olanların %40'ı doktora mezunu ve %37.1'i yüksekokul veya fakülte mezunudur. Türkiye genelinde ise 2020 yılında sağlık hizmetlerinden memnun olanların %46.1'i yükseköğretim mezunudur. Gümüşhane'de memnun olmayan kesim incelendiğinde (1 ve 2 puan verenler) %65'i erkek ve %35'i kadındır. Ayrıca memnun olmayanların %55'i yüksekokul ve fakülte mezunlarından oluşmaktadır.

Ayrıca Gümüşhane'de tedavi görmek isteyen hastalara doktor muayenesinden ve tamamlayıcı sağlık hizmetlerinden (kan tahlili, röntgen, MR vb.) memnun olmadığında, bu memnuniyetsizliği bir kamu kurumuna (devlet hastanesi yönetimi, CİMER, vb.) bildirip bildirmediği sorulmuştur. Hastalar, memnuniyetsiz olsalar bile bunu herhangi bir kamu kurumuna %82.1 oranında bildirmemektedir. Bu durum ilgili sağlık kuruluşunun verimliliğinin artırılmasında bir engel teşkil etmektedir. Hastane yönetimlerinin hasta memnuniyetini bu sebeple daha farklı yollardan temin etmeye çalışması ve memnuniyetsizlikleri gidermesi gerekmektedir.

[2] TÜİK (2021). "Yaşam Memnuniyet Araştırması, 2020". Erişim adresi: https://data.tuik.gov.tr/Bulten/Index?p=Yasam-Memnuniyeti-Arastirmasi-2020-37209 (Erişim tarihi: 27.01.2022).

Memnuniyetsiz hastaların alternatif tercihi Trabzon'da tedavi görmektir. Bu soruya Trabzon'da tedavi görmek isteyenler de cevap vermiştir ancak bu hastaların hiçbiri memnuniyetsizliğini kamu kuruluşlarını bildirmemiştir. Bu durum Trabzon'da tedaviyi kendileri için yeterli gördükleri anlamına geldiği gibi, Gümüşhane'de tedavi görmek istemedikleri ve Gümüşhane'deki hizmet kalitesinin artacağına dair kuşkuları beraberinde getirmektedir. Çünkü Trabzon'da tedavi gören hastalarından en azından birkaçının bu soruya evet demesi beklenirdi. Belirtilmelidir ki, sürdürülebilir bir kamu hizmetinin gerçekleştirilmesi için vatandaşın kamuya olan güveni sağlanmalıdır. Devlet ve vatandaş arasında oluşabilecek güven problemi kamu yönetimi işleyişlerinde aksaklıkları beraberinde getirecektir. Bu noktada, kamunun beklentileri karşılaması adına daha etkin yönetişim anlayışı sergilemesi gerekmektedir. Bu vesileyle topluma şikâyet mercileri konusunda daha fazla bilgilendirme yapılmalı ve ayrıca sorunların ilgili mercilere intikal ettirildiğinde, sorunların çözüleceğine dair güvenin kamu tarafından oluşturulması gerekmektedir (Eroğlu ve Korkmaz, 2017).

Diğer bir soruda Gümüşhane'de tedavi olan hastalara burada ayrıldığınıza üzüldüğünüz bir doktor var mı (cevaplanması zorunlu olmayan) açık uçlu sorusu sorulmuştur. Hastaların %28,2'si bu soruya doktor ismi vererek cevap verirken, %15,2'si yok cevabını vermiştir. Soruya cevap vermeyenlerin oranı ise %56,6'dır. Tayinle gelen doktorlar, bir süre sonra şehir değiştirmektedir. Hastaların %71,8'lik kısmının bu soruda doktor ismi vermemesi, uzun-süreli (tekrarlı oyunlar) hasta-doktor eşleşmesinin gerçekleşmediği anlamına da gelmektedir. Burada hasta, doktor ve hastane arasında uzun vadeli ilişkiler gerçekleştirilemediği için hasta memnuniyeti azalmaktadır (Taşkın vd., 2014).

Diğer yandan Trabzon'da tedavi olmak isteyenlerin oranı azımsanmayacak düzeydedir. Küçük illerden yakın büyük illere hasta sevklerinin en aza indirilmesi, sağlık sisteminin başarısını gösteren bir kriterdir (Kılıç, Dokur ve Ulutaşdemir, 2016). Tablo 1'e göre Gümüşhane'de yaşayanların %22,2'si Trabzon'da tedavi görmeyi tercih etmektedir. Bu çalışmada bunun sebepleri de araştırılmıştır. Trabzon'da tedavi olmak isteyen hastalara neden Trabzon'da tedavi görmek istediği sorulmuştur ve sonuçlar Tablo 3'te gösterilmektedir. Bu soruda da hastalara birden çok seçeneği işaretleme imkânı sunulmuştur.

Tablo 3: Trabzon'da tedaviyi tercih etme sebepleri (%)

Gümüşhane'de doktorların bilgi birikimi yeterli değil.	50
Gümüşhane'de doktorlar hastalarla yeterince ilgilenmiyor.	25
Gümüşhane'de doktorlar hastalarla yeterince ilgilenemiyor (Hasta çok, süre kısıtlı).	41.7
Uzmanlık gerektiren yan dallar (örneğin endokrinoloji, romatoloji vb.) Gümüşhane'de bulunmuyor.	54.2

Gümüşhane'den Trabzon'a gitmek önemli bir işlem maliyetidir. Gümüşhane ile Trabzon arasındaki mesafe 100 kilometredir. Toplu taşım araçları ile Trabzon'a gitmek 1.5-2 saat sürmektedir. Trabzon'da bir kamu ya da özel hastaneden randevu almak, gerekli tetkikleri yaptırmak ve sonuçları tekrar göstermek aynı gün içerisinde tamamlanamamaktadır. Bu sebeple hastalar, muayene ve kontroller için farklı günlerde Trabzon'a yeniden gitmektedirler. Bu bir maliyet unsurudur. Ayrıca özel hastane tercihi de hastanın Gümüşhane'den alamadığı hizmetin işlem maliyetini artırmaktadır. Tablo 3'teki sonuçlar, Gümüşhane'den elde edilen bulgularla birbirini tamamlamaktadır. Hastaların %54,2'si Gümüşhane'de uzmanlık gerektiren dalların olmaması sebebiyle Trabzon'a gitmektedir. Bunun çözümü için örneğin haftanın belirli günlerinde endokrinoloji veya romatoloji gibi yan dal uzmanlarının Gümüşhane'de hizmet vermesinin sağlanması, hastaların Trabzon'a gitmek zorunda kalmaları durumunu ortadan kaldıracaktır. Çünkü sağlık hizmetlerinin en önemli özelliklerinden bir tanesi, hizmete ulaşılabilir olmasıdır (Yang, George ve Mullner, 2006). Ayrıca bir diğer çözüm olarak gelişen internet araçları ve çevrimiçi görüşmeler kullanılarak, modern sağlık hizmetlerinde verimlilik artışı sağlanabilir ve işlem maliyeti düşürülebilir (Hajli vd., 2015).

Diğer yandan Trabzon'u tercih eden hastalar, Gümüşhane'deki doktorların %50'sinin bilgi birikimini yeterli bulmamaktadır. Bu oran hastaların uzmanlık gerektiren alanlardaki doktorlara gitmeyi tercih ettiği gibi, temel alanlarda da doçent, profesör gibi daha uzman kişilere başvurmak istediğine işaret etmektedir. Ayrıca hastaların %41,7'si Gümüşhane'de doktorların hastalarla yoğunluk sebebiyle yeterince ilgilenemediğini söylemektedir. Buna bağlı olarak, yoğunluk sebebiyle hastaların bekleme süreleri uzadıkça memnuniyet puanları düşmektedir (Bleustein vd., 2014). Örneğin Gümüşhane'de doktorlar 10 dakikada bir muayene almaktadırlar. Ancak sabah saatlerinde devlet hastanesine gidip sıra aldığınızda doktorların muayene süresi yaklaşık 5 dakikaya inmektedir. Ayrıca öğleden sonra kan ve tahlil sonuçlarının çıkması ve hastaların bunu doktora göstermek istemesiyle birlikte yoğunluk daha da artmakta ve doktorlar hastalarla yeterince ilgilenememektedir. Çözüm, hastaların tedavi talebi

düşürülemeyeceği için, Gümüşhane devlet hastanesinde yoğunluğu bulunan kliniklerde doktor arzının artırılmasıdır. Böylelikle hem Gümüşhane'de tedavi gören (ve memnuniyetsiz olsa da bunu devlet kurumlarına bildirmeyen) hastaların memnuniyeti artacak, hem de hastalar Trabzon'a tedavi olmak için gitmeyeceklerdir. Hastaların memnuniyetinin artması, aynı zamanda hastaların sağlıklarına kavuşması anlamına geleceği için, hastaneye ziyaret etme sıklığı seyrekleşecektir. Yani doktor arzı artışı, zamanla hastaların tedavi talebi düşüşüne de neden olacak ve arz-talep dengesi sağlanacaktır. Simülasyonlar göstermektedir ki, dinamik bir analizde arz ve talep arasındaki dengesizlikler, klinik uygulama kılavuzları ve kapasite değişikliklerinin rolleri dikkate alınarak çözülebilmektedir (Taylor, Dengerfield ve Le Grand, 2005).

Diğer yandan Trabzon'da tedavi görmek isteyen hastaların %25'i Gümüşhane'deki doktorların hastalarla yeterince ilgilenmediğini ifade etmiştir. Doktorun hastasıyla neden yeterince ilgilenmediği ya da neden böyle bir düşüncenin/algının ortaya çıktığı derinlemesine araştırılması gereken bir konudur. Doktorların çalışma ortamından kaynaklanan belirli iş doyumuna ulaşmış olması bu sonucun ortaya çıkmasına sebep olabilmektedir (Nur, 2011). Gümüşhane'deki hastaların %81,4'ünün doktorların ilgi göstermesi sebebiyle yeniden aynı doktoru tercih etmesi bulgusunu tamamlayıcı olarak, hastalar ilgi görmediklerinde alternatif çözüm arayışlarına girmektedirler. Diğer yandan Trabzon'da tedavi gören hastalara da ayrıldığına üzüldükleri bir doktor olup olmadığı sorulmuştur. Gümüşhane'de tedavi olmak isteyenlerin %28,2'si doktor ismi vermişken, burada hiçbir hasta herhangi bir doktor ismi vermemiştir. Bu bulgu, Gümüşhane'de memnun olduğu doktoru bulamayan hastaların Trabzon'u tercih ettiğinin net bir göstergesi olarak karşımıza çıkmaktadır.

İstatistiki Bulgular

Bu bölümde yukarıda elde edilen bulgular, istatistiki yöntemler kullanılarak analiz edilecektir. Belirtilmelidir ki, ankette güvenilirlik analizi yapılmamıştır. Çünkü yapılan anketteki sorular ölçekler üzerinden değildir. Bulguların elde edilmesi için seçmeli, şıklı ve açık uçlu sorular yönetilmiştir. Çalışmanın bir süre sonra yenilenmesiyle, karşılaştırmalı analiz gerçekleştirilecek ve güvenirlik düzeyi tespit edilebilecektir. Tablo 4'te ANOVA sonuçları verilmektedir.

Tablo 4: Anova Sonuçları

Varyans Kaynağı: Gruplar Arası	Kareler Toplamı	Serbestlik Derecesi	Kareler Ortalaması	F	p-değeri	F tablo değeri
Doktor Tercihi	112.9167	3	37.63889	65535	0.000000	2.692
Doktor Tercihinde Yaş Aralığı	3.357284	3	1.119095	1.008315	0.39464	2.741574
Doktor Tercihinde Cinsiyet	0.009712	3	0.003237	0.002961	0.999776	2.692841
Doktor Tercihinde Mezuniyet Derecesi	7.379959	3	2.459986	2.265713	0.089285	2.748191

Doktor tercihinde, gruplar arasındaki farklılık istatistiki olarak incelendiğinde p-değeri 0.05'ten küçük olduğu için grupların ortalamaları arasında fark olmadığına dair boş hipotez reddedilmektedir. Buna hastaların göre doktor tercihleri arasında istatistiki olarak bir fark bulunmaktadır.

Doktor tercihinde yaş aralığı kriteri istatistiki olarak incelendiğinde p-değeri 0.05'ten küçük değildir. Bu sebeple boş hipotez reddedilmemektedir ve grupların ortalamaları arasında bir fark bulunmamaktadır. Buna göre doktor tercihi yapılırken, yaş aralığı istatistiki olarak belirleyici bir kriter değildir.

Ayrıca doktor tercihlerinde cinsiyet kriteri istatistiki olarak incelenmiştir. Elde edilen bulgulara göre boş hipotez reddedilmemektedir ve hastaların cinsiyeti doktor tercihinde bir farklılık oluşturmamaktadır.

Benzer şekilde doktor tercihlerinde mezuniyet derecesi kriteri istatistiki olarak incelenmiştir. ANOVA sonuçlarına göre p-değeri 0.089 elde edilmiştir. %5 anlamlılık seviyesine göre boş hipotez reddedilemese bile, %10 anlamlılık seviyesinde boş hipotez reddedilmektedir ve gruplar arasında farklılık bulunmaktadır. Buna göre hastaların mezuniyet derecesi, doktor tercihlerini farklılaştırmaktadır.

Özet olarak Tablo 4'te doktor tercihleri istatistiki açıdan incelenmiştir. Hastaların doktor tercihleri arasında anlamlı bir fark ortaya çıkmaktadır ancak bu fark cinsiyet ve eğitimden kaynaklanmamakta, sadece mezuniyet derecesinden kaynaklanmaktadır. Elde edilen bu bulgu, Stokes vd. (2015)'nin elde ettiği bulgu ile uyumludur. Bu çalışmaya göre Türkiye'de mezuniyet derecesi arttıkça sağlık hizmetleri memnuniyeti azalmaktadır.

SONUÇ ve ÖNERİLER

Hastaların doktor tercihleri ve bu tercihlerden elde edecekleri faydalar, sağlık durumları ile yakından ilgilidir. Bu çalışmada hastaların Gümüşhane'de doktor tercihlerini hangi kriterlere göre yaptıkları ve ayrıca memnuniyet-memnuniyetsizlik durumlarının nedenlerini araştırılmıştır.

Gümüşhane'de doktor tercihinde bulunan hastaların genel olarak daha önce gittiği doktorlara gittiği veya çevresine danışarak bilgi edinmeye çalıştığı görülmektedir. Daha önce gittiği doktora hastanın yeniden gitmesi, karşılaşacağı işlem maliyetini minimize etme maksadıyladır. Çünkü daha önce gidilen bir doktor, hastanın hastalık geçmişine daha vakıf olacağı için daha iyi teşhis koyması ve var olan tedaviyi başarıyla sürdürmesi muhtemeldir. Ancak yeni bir doktora gidilmesi, süregelen hastalığın yeniden doktora izah edilmesi ve teşhis-tedavinin yeni bir bakış açısıyla başlatılması anlamına gelmektedir. Bu sebeple, Sağlık Bakanlığı arz-talep dengesinin sağlamasının ardından doğru hasta-doktor eşleşmesinin gerçekleşebilmesi için yapacağı inovatif tasarımlarla hastaların doktorlara ilişkin bilgiye erişimini kolaylaştırmalıdır. Örneğin çeşitli elektronik alışveriş sitelerinde puanlama ve yorum sistemi bulunmaktadır. Bu sitelerde tüketiciler, satıcı ve ürüne ilişkin bilgileri görerek alışverişlerini daha rasyonel bir şekilde gerçekleştirmektedir. Sağlık piyasası için de benzer adımlar atılabilir. Örneğin doktor randevusu alınırken, doktorların uzmanlık alanları daha detaylı bir şekilde hastaya aktarılabilir. Bu hastanın, daha rasyonel bir tercih yapmasına sebebiyet verecektir.

Gümüşhane Devlet Hastanesi'ndeki memnuniyet oranı, Türkiye ortalamasının altındadır. Bu çalışmada bunun nedenleri açık bir şekilde ortaya konulmuştur. Burada en öne çıkan başlıklar, doktorların yoğunlukları sebebiyle hastalarına yeterince vakit ayıramayışı ve uzmanlık gerektiren yan dal tedavilerin Gümüşhane'de gerçekleştirilememesidir. Bu problemlere çözüm olarak, temel kliniklerde doktor arzının artırılması yanında uzmanlık gerektiren dallardaki doktorların yüz-yüze ya da gelişen teknolojiyle çevrimiçi bir şekilde hizmet vermesi sağlanabilir. Örneğin Gümüşhane'de bulunan bir endokrinoloji hastası, devlet hastanesinde hizmet veren Dahiliye uzmanının gözetimi altında çevrimiçi bir şekilde Endokrinoloji uzmanı ile görüşmeler yapabilir ve tedavi gerçekleştirilebilir.

Trabzon'da tedavi görmek isteyenler memnuniyetsizliklerini kamu kuruluşlarına bildirmemiştir. Bu davranış biçimi, Gümüşhane'de sağlık etkinliğinin artırılması önünde bir engel teşkil etmektedir. Ayrıca belirtilmelidir ki, Gümüşhane'de özel bir hastanenin olmayışı, insanları Trabzon'a yönlendirdiği gibi, sağlık sektöründe kamu-özel hastanelerinin tamamlayıcılığı Gümüşhane'de Merkez ilçesinde sağlanamamaktadır. Örneğin Gümüşhane'de hizmet veren özel diş klinikleri, Gümüşhane'de diş sağlığı merkezi olarak hizmet veren Şehit Ebe Kevser Ceylan Ağız ve Diş Sağlığı Merkezi'nin iyi bir ikamesi konumundadır. Gümüşhane'de özel bir hastanenin olması durumunda, burada yaşayan birçok hastanın bu özel hastaneyi tercih edebileceği ve böylelikle Gümüşhane Devlet Hastanesi'nde yaşanan yoğunlukların da azalabileceği bir gerçektir. Bunun için Gümüşhane'de bir özel hastanenin kurulması için devletin teşvik vermesi ya da Belediye öncülüğünde girişim başlatılması düşünülebilir.

Çalışmada genel olarak hastaların doktor tercihlerine ve memnuniyet oranlarına bakılmıştır. Ancak piyasanın talep yönü incelendiği gibi arz yönü de incelenmelidir. Yani doktorların yoğunlukları ve çalışma şartlarının ne derece hasta memnuniyetini sağlayacak düzeyde olduğu tespit edilmelidir. Ayrıca tamamlayıcı sağlık hizmetlerinin yeterli olup olmadığı doktorlara danışılmalı ve doktorların raporları doğrultusunda hastane yönetimi öncelikli eksikleri gidermelidir. Ayrıca unutulmamalıdır ki, yoğun çalışma ortamında pandemi ortamının getirdiği zorluklarla birlikte doktorların enfekte olma riski artarken, çalışma motivasyonu doğal olarak azalmaktadır.

Çalışmanın ilerleyen safhalarında Trabzon'u tercih eden hastaların hangi hastaneleri ve hangi klinikleri tercih ettikleri araştırılabilir. Benzer imkânlar Gümüşhane'de oluşturularak, hastaların Trabzon'a gitmek zorunda kalmaları engellenebilir. Ayrıca iyileştirmelere dönük atılacak adımlar sonrası bu tarz araştırmalar yinelenerek, memnuniyet oranının ne derece yükseldiği düzenli bir şekilde incelenebilir.

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NATIONALISM IN WESTERN BALKAN POLITICAL PARTIES: A QUANTITATIVE ANALYSIS

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Abstract

In this study, we analyze the political manifestos of four Western Balkan countries: Serbia, Montenegro, and Bosnia/Herzegovina. For each country, we choose to analyze two main parties. The manifestos for the two main parties of each country are quantitatively analyzed to substantiate the main topics each party addresses in its manifesto. We use data from the manifesto project, as the countries are selected based on data availability. The availability of manifestos in recent years has been limited in these countries. We quantitatively analyze the content of the manifestos of the two main parties in those countries, focusing on the most recently available documents. The manifestos are analyzed quantitatively, and their content is categorized by topic. Then, we compare each country to determine whether the content is country-dependent or if substantial similarities exist among them. Our analysis reveals that while nationalistic themes are present in their manifestos, these themes are generally not predominant. In contrast, more pragmatic or social themes constitute the majority of their programs.

Keywords: Party Manifestos, Nationalism, Western Balkans.

INTRODUCTION

Not long ago, Western Balkan countries were under monopartite communist regimes. Opposition was outlawed since Marxism was meant to be the only possible and fruitful way to do politics and to develop society. Nationalism, liberalism, and other ideologies contrary to Marxism were considered political schemas born from the interests of one class and aimed at the exploitation of the majority of society so dysfunctional to the attainment of the historic goal of communism. All of the Western Balkan countries except Albania were part of Yugoslavia. After the general demise of communist regimes in Eastern Europe, communist parties' lost power also in Western Balkan countries. Yugoslavia was dissolved in a few cases peacefully, but in others, the process involved bitter wars. The demise of communism allowed multipartite in all Western countries. Alternative ideologies gave birth to parties from the left to the deep right. Liberalism, Nationalism, and other ideologies could now freely flourish in the region. Facing the imminent threat of the country's dissolution and the outbreak of war in the early 1990s, Yugoslav political elites seized the momentum for the revival of politically useful national past(s) (Milošević, 2017, p.2). This grew to fear that strong nationalistic parties and fluxes would further endanger the peace in the area. The past has been a testimonial that these fears were not only imagination. Most countries underwent European integration, and the tension following 1990 has been reduced (Osbild & Bartlett, 2019, p. 19). However, European integration in the Balkans does not necessarily mean total dismantling of nationalism. Historically, one of the basic characteristics of Balkan nationalism was the effort to gain recognition from the West (Stamatopoulos, 2018, p. 21). Many politicians and also societies in the western Balkans define their nationality by distancing themselves from the East and trying to be legitimized as European societies. But in any case, the road to the EU or even Democracy is full of spines for the Western Balkan Countries. Many of them stocked in their democratic achievements and others even have gone through democratic backsliding (Bieber, 2020).

MATERIALS AND METHODS

This study will use primary manifestos of political parties from four countries: Serbia, Croatia, Bosnia and Herzegovina, and Montenegro. The manifestos are sourced from Project Manifesto, in which the author of this study is a coder. The coding schemes used are those implemented by Project Manifesto. In Project Manifesto, there is no single code that defines nationalistic themes, but several codes can be used to detect the nationalistic propensity of the political parties analyzed. Examples of such codes include positive assertions of the national way of life, anti-imperialist assertions, advocacy of militarism, and advocacy of traditional morals. Each of the four countries was chosen based on the main political parties present. The selection criteria for parties to be analyzed were based on the number of seats held in the national parliament. When this was not possible due to a lack of manifestos, the next-ranked party was analyzed. For different countries, the year of analysis is not the same, which is due to the varying years in which elections have taken place and the lack of manifestos in some countries. It is

important to note that Albania and North Macedonia are not included in this analysis due to the lack of recent manifestos.

Table 1. Political Parties Analyzed

Country	Political Party/Coalition	Manifesto Year
Croatia	Croatian Democratic Union	2020
	Restart Coalition	2020
Serbia	Together We Can	2022
	National Democratic Alternative	2022
Bosnia Herzegovina	Party of Democratic Action	2018
	Alliance of Independent Social Democrats	2018
Montenegro	Europe Now Montenegro	2023
	For the Future of Montenegro	2023

FINDINGS

Croatia

Over the past two decades, Croatia has undergone significant political transformations, particularly following its independence from Yugoslavia in the early 1990s. The early 2000s were marked by a transition from a post-war, nationalist Government led by the Croatian Democratic Union (H.D.Z.) to a more centrist coalition Government. This shift was catalyzed by the 2003 elections, which brought the Social Democratic Party (SDP) to power under Ivica Račan. Croatia focused on nation-building, democratization, and European integration during this period. The country made substantial progress aligning with European Union (EU) standards, ultimately achieving EU membership in July 2013. This accession signified a major political milestone and facilitated economic reforms and the adoption of democratic norms. In any case, Croatia's post-accession period tells us that the paths toward regional reconciliation, truth, and justice-seeking are not necessarily cleared by the successful outcome of the EU integration process (Milošević, 2017, p.13).

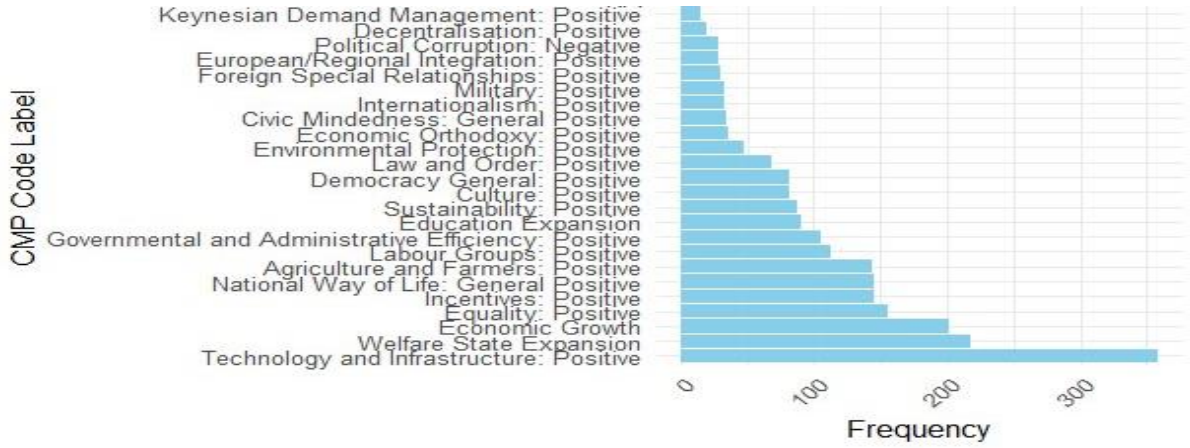

Figure 2 "The Croatian Democratic Union"

The Croatian Democratic Union (HDZ), established in 1989, has been a dominant force in Croatian politics since the country's independence from Yugoslavia in the early 1990s. Under the leadership of its founding president, Franjo Tuđman, the party positioned itself as the primary representative of Croatian national interests. The HDZ has undergone various transformations throughout the years, shifting from a nationalist agenda to embracing a more centrist and pro-European stance, especially after Croatia acceded to the European. Analyzing the graph in Figure 1, we can consider that the HDZ manifesto mainly refers to the material development of the country, which is the most coded quasi-sentence. Referring to the positive development of the infrastructure and technology development. A second theme central to the manifesto of the HDZ is the Expansion of the Welfare State to reach more strata of the Population and economic growth. Among the party's most embedded themes is a discernible positive emphasis on the 'nation's way of life', which is the sixth most coded theme in the manifesto. This code is typical for nationalistic parties and shows the nationalistic legacy of the party.

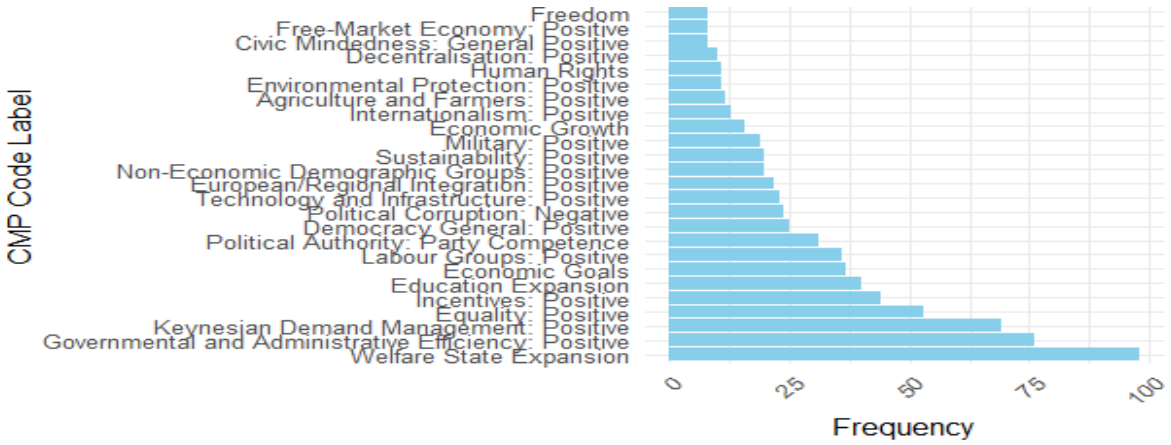

Figure 2 "Restart Coalition" - Croatia

The **Restart Coalition** in Croatia was a center-left alliance formed ahead of the 2020 parliamentary elections to challenge the incumbent Croatian Democratic Union (HDZ) Government. Led by the Social Democratic Party (SDP), the coalition included several smaller parties, such as the Croatian Peasant Party (HSS), Civic-Liberal Alliance (GLAS), and the Pensioners' Party (HSU). Restart aimed to address socioeconomic inequality, enhance Government transparency, and bolster Croatia's healthcare and education systems. Despite its ambitions, the coalition struggled to gain significant traction with voters, losing to the HDZ in the elections. Following this defeat, the Restart Coalition eventually dissolved, with its members either realigning with SDP's efforts or pursuing independent paths. The graph analysis shows that all the main themes are not in the nationalistic realm, such as welfare expansion and efficiency in administrating state affairs. Intervention in the economy is needed to help with economic demand and equality. There are some remarks on positive assessments of the military that lead to nationalistic themes in the manifesto of this coalition. In any case, these are not prevalent in the main coded themes.

Serbia

In the past decade, Serbian politics has been dominated by the Serbian Progressive Party (SNS), led by President Aleksandar Vučić. The SNS has maintained a strong grip on power, winning multiple elections amid accusations of authoritarianism, media suppression, and electoral irregularities (Bieber, 2020). Opposition parties have struggled to unite against the ruling party. Also, they faced challenges in mobilizing public support. The political landscape has also been marked by ongoing tensions with Kosovo, issues surrounding EU accession, and a complex relationship with Russia and China. Overall, Serbia's political environment remains contentious, with significant implications for its democratic institutions and regional stability.

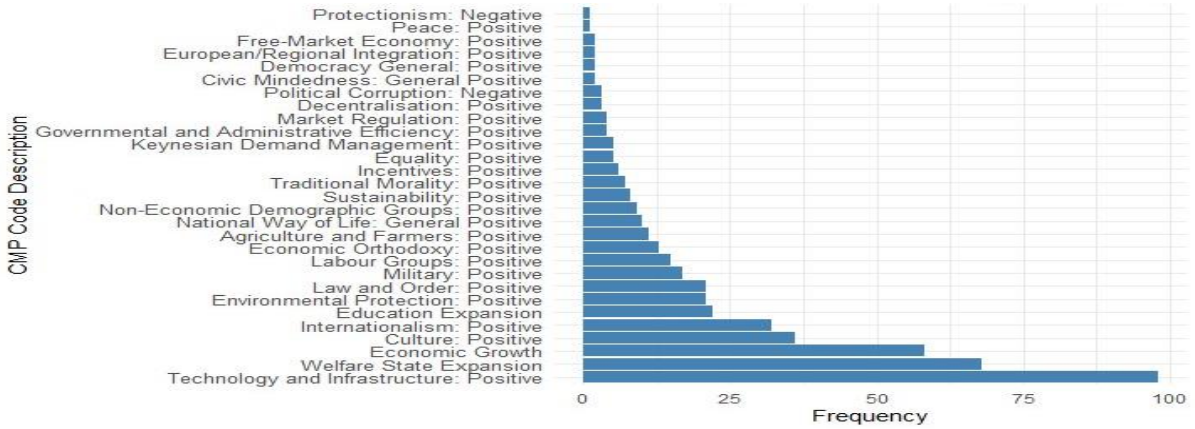

Figure 3 "Together We Can" -Serbia

The **Together We Can** coalition in Serbia is a political alliance centered on the Serbian Progressive Party (SNS), led by President Aleksandar Vučić. Formed to consolidate pro-government forces, the coalition emphasizes stability, economic development, and foreign policy that balances EU integration with strong ties to Russia and China. In recent elections, *Together We Can* appeal to voters by showcasing economic growth and infrastructure improvements. Critics, however, argue that the coalition represents a centralization of power, with limited tolerance for dissent, contributing to concerns over democratic backsliding in Serbia (Nakai, 2023). The coalition's governance has sparked debates on press freedom, judicial independence, and the role of civil society in Serbia's political landscape. From the quantitative analysis of their manifesto, we observe that their central theme is improving the infrastructure and technology in their country. Then, the welfare state expanded, and economic and educational growth also grew. In this case, in the first 20 most used themes of this coalition, we see that nationalistic themes like the National way of life and traditional morality are present. This shows that the traditional and nationalistic themes are still present in this political entity.

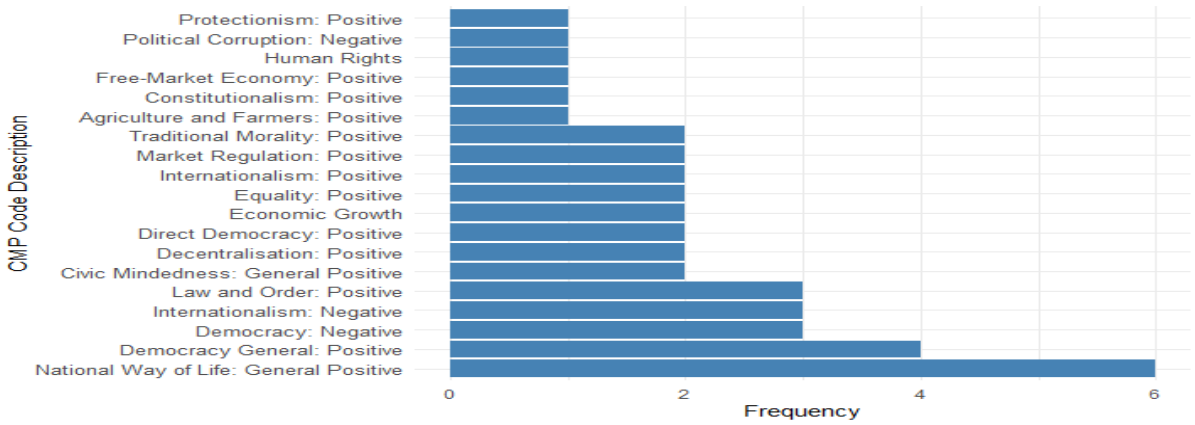

Figure 4 "National Democratic Alternative" - Serbia

The **National Democratic Alternative (NADA)** is a nationalist political coalition in Serbia, founded to present an alternative to the ruling Serbian Progressive Party (SNS) by promoting a platform of Serbian sovereignty, traditional values, and anti-globalism. Formed in 2020, NADA unites several conservative and right-wing parties, including the Democratic Party of Serbia (DSS) and the Movement for the Restoration of the Kingdom of Serbia (POKS). This is also clear in their manifesto, where the most used topic is the National way of life. Also, here in this manifesto, we find praises against internationalism or even against democracy. The coalition emphasizes Serbian cultural identity, more robust national defense, and opposition to EU-imposed reforms perceived as undermining Serbia's independence. NADA's platform appeals to voters who are skeptical of the EU and opposed to what they view as the SNS's compromises on Kosovo and relations with Western powers.

Bosnia and Herzegovina

In the past decade, Bosnia and Herzegovina's political landscape has been characterized by persistent ethnic divisions and political stalemate. The 90s Bosnian conflict led to certain observers and combatants explaining the violence as a consequence of `ancient ethnic hatreds' or `primordial evil (Jeffrey, 2008, p.429). The country is governed by a complex power-sharing arrangement among its three main ethnic groups: Bosniaks, Croats, and Serbs. This arrangement has led to frequent deadlock in governance, particularly in the wake of the 2018 elections, where nationalist parties retained significant power. Additionally, the rise of nationalist rhetoric and secessionist movements, particularly in the Republika Srpska, has heightened tensions and complicated the path toward EU integration and overall stability in the region.

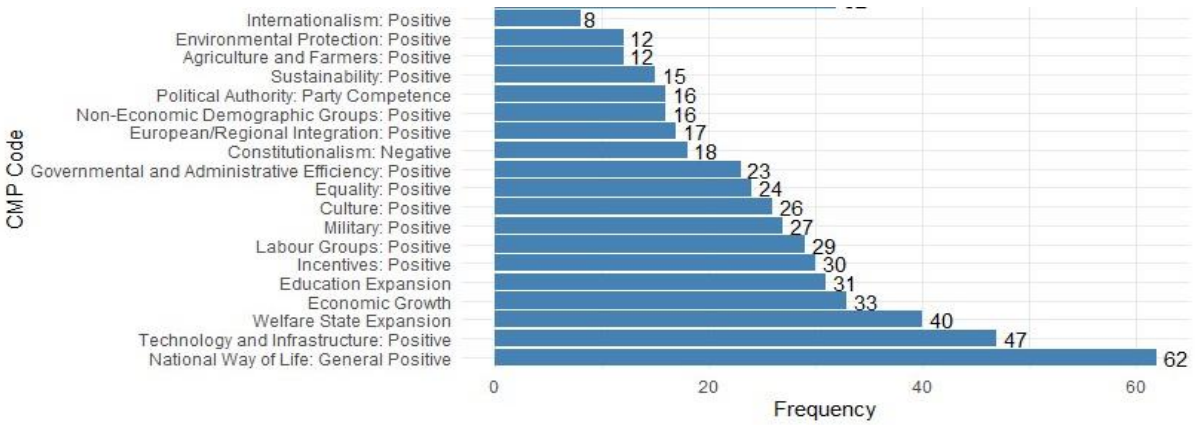

Figure 5 "Party of Democratic Action" - Bosnia and Herzegovina

The Party of Democratic Action (SDA) is probably the most significant political party in Bosnia and Herzegovina. It was founded in 1990 and primarily represents the interests of the Bosniak community. The party emerged during a period of intense political and ethnic turmoil in the region. Throughout its history, the SDA has positioned itself as a proponent of Bosniak nationalism. It emphasizes the importance of a unified Bosnia and Herzegovina and promotes democratic governance and economic development. The party has been a key player in the political landscape, frequently participating in coalition governments. It has played a crucial role in shaping the country's post-war reconstruction and political stability. An analysis of its manifesto shows that the prevalent theme in this document is the promotion of the national way of life that has marked nationalistic valence. Other prone nationalistic themes present in their manifesto are the positive evaluation of military capacities or negative assertion about constitutionalism. Other themes more mainstream in this manifesto are theme are related to material and technological development and economic growth.

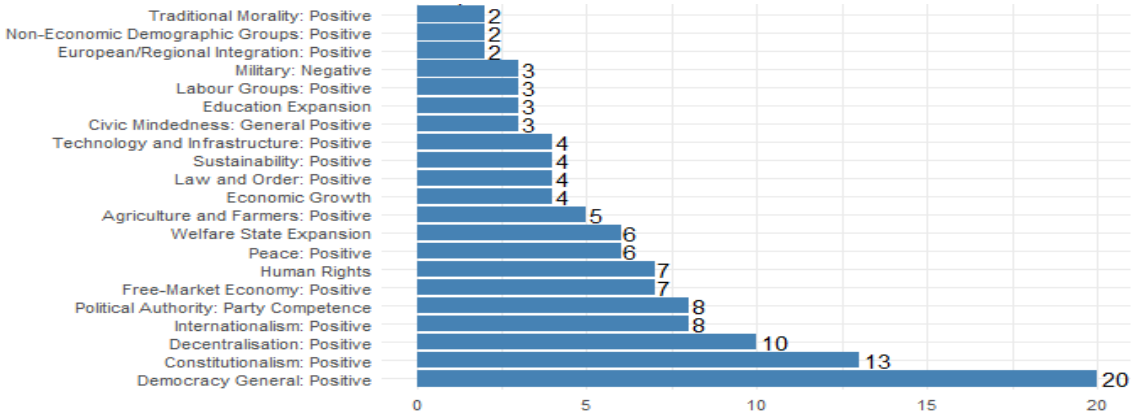

Figure 6 "Alliance of Independent Social Democrats" - Bosnia and Herzegovina

The **Alliance of Independent Social Democrats (SNSD)** is a major political party in Bosnia and Herzegovina, predominantly representing the interests of the Republika Srpska (RS) entity. It advocates for Serb autonomy within the country. The party's influence within the R.S. and Dodik's visibility on the national and international stage make it a pivotal force in Bosnia and Herzegovina's complex political landscape. Looking at this party manifesto, we realize that there are not any nationalistic themes prevalent there, even though we know that, in reality, Mr. Dodik's party has a solid nationalistic agency. In this case, there seems to be an important gap between the political party manifesto and the real agenda of the political party.

Montenegro

Montenegro's politics in the past decade have been marked by significant upheaval and change. After decades of rule by the Democratic Party of Socialists (DPS), the 2020 parliamentary elections resulted in a historic defeat for the DPS, leading to the formation of a coalition government led by the opposition. This coalition, consisting of several smaller parties, reflects a shift in the political landscape. The new government has faced challenges in uniting its diverse factions and addressing pressing issues like economic development and the COVID-19 pandemic. Meanwhile, the political climate remains polarized, with ongoing tensions regarding national identity and relations with Serbia and the Orthodox Church. Political parties that sought to bridge these identities encountered significant challenges (Sartori & Pranzl, 2018, p. 575)

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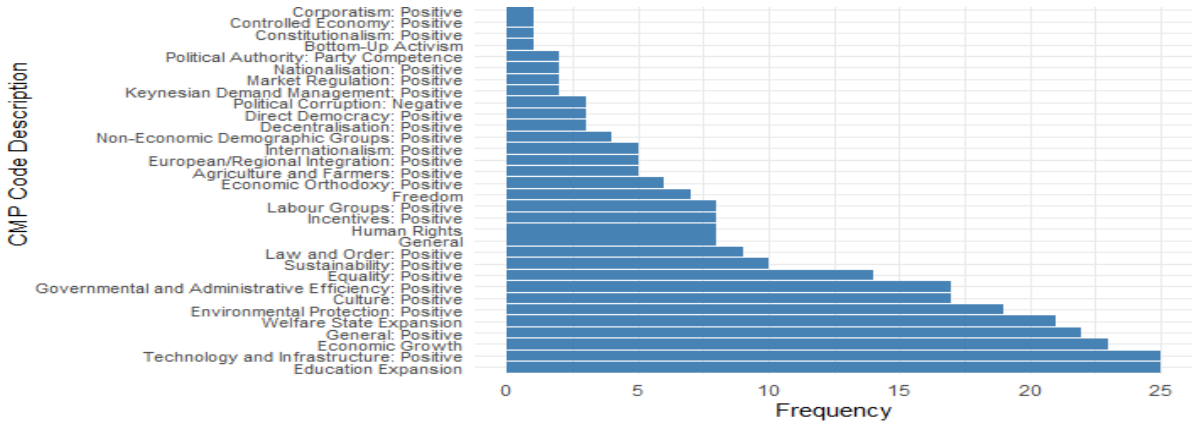

Figure 7 "Europe Now" - Montenegro

Europe Now is a relatively new political movement in Montenegro, formed in 2022 by Milojko Spajić and Jakov Milatović, both former Government ministers. The central theme in the manifesto of this party is the expansion of education. Here, it accentuates its progressive nature. Emerging after political instability, Europe Now promotes economic reform, modernization, and Montenegro's integration into the European Union. This is also clear in the analysis of the manifesto, where the topic of technology and infrastructure is the second most present. The movement gained popularity for its progressive economic agenda, including tax reforms, higher wages, and a pro-business climate to attract foreign investment. Unlike many Montenegrin parties that emphasize ethnic and nationalist themes, Europe Now advocates for a civic-based, inclusive approach to governance. Their rise reflects a growing public desire for transparent governance, reduced corruption, and a more decisive path toward European integration. Although young, the movement has disrupted Montenegro's traditional political landscape and remains a crucial player amid the country's E.U. accession process.

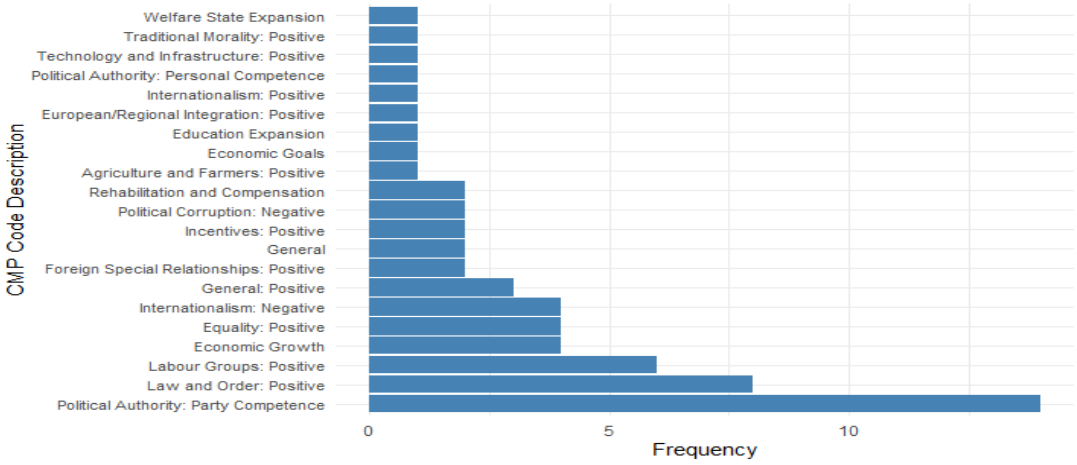

Figure 8 "For the Future of Montenegro"

For the Future of Montenegro (Za Budućnost Crne Gore) is a significant political coalition formed in 2020, marking a major shift in Montenegro's political landscape. Primarily composed of various parties, it emphasizes traditional values and preserving Montenegrin sovereignty. The analysis of its manifesto shows that Party competence is essential to its program. The second is the topic of law and order, which is often found in the right-wing and nationalistic parties that favor nationalistic uniformity and order. We also see that the negative internationalism sentence is present. This shows the presence of nationalistic discourse. The coalition gained substantial support during the 2020 parliamentary elections, appealing to voters dissatisfied with the Democratic Party of Socialists' long-standing rule. It has taken a critical stance on NATO membership and EU integration, focusing instead on national interests and cultural identity. While it has disrupted the previous political dominance, the coalition faces challenges in maintaining unity and addressing the complex socio-economic issues of Montenegro.

DISCUSSION AND CONCLUSION

In Croatia, the two parties analyzed focused in their manifestos more on the welfare policies of the state and economic aspects of the governance. Equality is also an important theme for Croatian parties. Croatian Democratic Union of Croatia focuses also on promoting the national way of life which is probably and nationalistic agenda and this is the sixth most coded theme in their manifesto. For the Other Croatian party, Restart Coalition Croatia, in the first 17 most coded themes included the military positive codes that may indicate some nationalistic agenda. In any case, these nationalistic themes are not the main focus of their manifests.

In Serbia the main political Serbian Coalition "Together We Can" focused mainly on the welfare state and the improvement of the infrastructure, which are its two most frequent codes. However, in the first 20 most frequent thematic of this coalition manifest we find, military positive, positive national way of life, and positive traditional morality. All these codes infer that there does exist a nationalistic sensibility in that party but as far as the manifesto shows other more practical issues are more central.

The most coded theme for the manifesto of National Democratic Alternative Serbia is indeed the National way of life. This shows that this coalition is rallied around nationalistic principles, and its agenda is a nationalistic one. Other codes that we find in this manifesto are pro and against democracy, law, and order, and internationalism negative. All this to further assert their nationalistic stance.

The main theme of the manifesto of the main Bosnia Herzegovina party, the Party of Democratic Action, is a positive national way of life. Other nationalistic codes that we can find in their manifesto are "Military positive" or "Constitutionalism negative". The nationalistic agenda of this party is probably a main theme for them. The contrary can be said for the Alliance of Independent Social Democrats Bosnia and Herzegovina in their manifesto advocates for democracy, constitutionalism, internationalism, and free market. This is quite surprising because the nationalistic and even separatist rhetoric of the party led by Dodic is well known.

In the case of Montenegro both the parties manifest, one of the For the Future of Montenegro, also for Europe Now, does not exhibit notable symptoms of nationalistic agenda. Europe Now codes have a propensity toward law

and order and some quasi-sentences against internationalism. Whereas Europe Now seems a marked economic and pragmatic stance. But in general, the Montenegro parties, at least in their manifestos seem less nationalistic.

In conclusion, the analyzed manifestos reveal varied priorities and degrees of nationalist sentiment across these Balkan parties. In Croatia, while both the Croatian Democratic Union and Restart Coalition include some nationalistic themes, their primary focus remains on welfare and economic policies. Serbian parties present a blend of practical issues and nationalistic undertones; "Together We Can" balances welfare and infrastructure with a subtle nationalist sentiment, whereas the National Democratic Alternative's manifesto overtly centers on nationalist themes. In Bosnia, the Party of Democratic Action's manifesto is notably nationalist, emphasizing themes like "national way of life" and "military positive," while the Alliance of Independent Social Democrats supports democratic and market-oriented principles, contrasting with its leader's rhetoric. Montenegrin parties, by contrast, emphasize economic and pragmatic goals, with little evidence of nationalism in their manifestos, setting them apart in a regional context.

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Manifestos dataset website

https://visuals.manifesto-project.wzb.eu/mpdb-shiny/cmp_dashboard_dataset/#

HOW SAFE ARE SAFE HAVEN CURRENCIES? THE CASE OF RECENT TÜRKİYE CRISES

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Abstract

The aim of this study is to test the safe-haven feature of strong currencies against the stock market during the recent crises in Türkiye. For this purpose, the Gezi Events, the July 15 Coup Attempt and the Covid-19 Pandemic, which took place in Türkiye between 2012-2023, have been considered as crisis periods. According to the results obtained under the GJR-GARCH (1,1) and EGARCH (1,1) error term assumptions, the US dollar, euro, Swiss franc, British pound and Chinese yuan acted as strong safe haven assets, the Japanese yen acted as weak safe haven assets during the Gezi Events. The US dollar, Swiss franc, British pound and Chinese yuan acted as strong safe haven assets during the July 15 Coup Attempt, the euro and Japanese yen acted as weak safe haven assets. During the Covid-19 Pandemic, only the Chinese yuan acted as strong safe haven assets, the US dollar, euro and Swiss franc acted as weak safe haven assets.

Keywords: safe haven, currencies, GARCH analysis

INTRODUCTION

Portfolio diversification by investors in normal times is a precaution against possible losses. However, portfolio diversification has a very limited effect on reducing losses in times of crisis. Because in such periods, there is a decline in assets and portfolios along with the markets in general.

By their nature, stocks are risky assets. Especially when a global or local crisis occurs, stock investors seek ways to minimize the effects of the crisis by shifting their investments from these risky assets to risk-free assets (Gorton, 2017: 547). During crises, financial assets that reduce the impact of the crisis or provide better returns than the market are called safe haven assets. In other words, a safe haven asset is an asset that is either uncorrelated or negatively correlated with other assets during crisis periods (Baur and Lucey, 2010: 219). As can be understood from this definition, when the stock market declines during a crisis, safe haven assets either maintain their value or, on the contrary, gain value. The degree of correlation indicates whether the asset is a strong or weak safe haven. If there is a negative correlation between this asset and another asset or portfolio during crisis periods, this asset is a strong safe haven asset, if there is no correlation, it is a weak safe haven asset (Tomak, 2013: 22).

Different assets have been preferred as safe haven assets in various periods. Especially precious metals are among the most preferred ones. Gold is one of these precious metals. Gold has always maintained its value both as an investment instrument and as an industrial input. In addition, as a source of assurance, the use of central banks of states, companies and individuals as a reserve and value storage tool makes gold important (Nagayev and Dinç, 2018: 3).

Safe haven assets consist of different types of financial assets. In addition to gold, silver, platinum and palladium are also preferred as safe haven assets. Government bonds, cryptocurrencies, and participation assets and indices based on Islamic principles are also safe haven assets where investments are concentrated during crises (Daştan, 2023).

Like other safe haven assets, safe haven currencies are highly preferred assets by investors (Todorova, 2020: 579). Like other assets, currencies as safe haven assets represent the flight from a risky portfolio or asset to these currencies in times of crisis when risk is high. If risk aversion is high, the value of risky assets falls and the value of safe haven assets rises (Habib and Stracca, 2012: 50).

The US dollar is undoubtedly one of the leading safe haven currencies. This is because the dollar has always maintained its value in times of crisis. This is because the US is the world's largest economy, and the dollar is the reserve currency in the global economy. In addition, investors have high confidence in the US government to fulfill its obligations (Marketplace, 2022).

In recent years, the euro has attracted attention as an alternative safe haven currency. Although the dollar has been at the forefront both as a reserve currency and as a safe haven, in recent years the euro has shown that it is a safe

currency rivaling the dollar (Chinn and Frankel, 2005). The biggest reason why the euro is a strong currency is undoubtedly the fact that it is the official currency of 19 out of 27 European countries. It is also the currency of countries that are not part of the Union, such as Andorra, San Marino, the Vatican and Monaco. Many other countries also use currencies pegged to the euro. In addition, the euro accounts for 36.7% of global payments, 45.4% of green bonds issued and 20.5% of international reserves (European Commission, 2022).

Another currency that investors prefer as a safe haven in times of crisis is the Swiss franc. Undoubtedly, Switzerland's financial and banking sector development plays a critical role in this characterization of the Swiss franc. The fact that the inflation rate in the country is always low and the existence of legal regulations to back the Swiss franc with at least 40% gold reserves provide confidence in this currency (Todorova, 2020: 586).

Japan has a strong economic structure due to its low inflation and negative interest rates, positive current account balance, net foreign asset position and high reserves. Due to this strong economic structure behind it, the Japanese yen is accepted by both investors and researchers as a safe haven during crises (Czech, 2021: 323; EU Business, 2022).

Although it has lost its attractiveness in some periods, the British pound has been the currency of choice for investors, especially during crises, due to the strong economy behind it. The steps taken by the Bank of England, the British central bank, to protect the strong financial system have always made sterling valuable (Amin, 2024). Studies also draw attention to the safe haven feature of pound during crises (Shahzad et al., 2022; Lee, 2017; Tachibana, 2018).

As one of the biggest economic actors of recent years, China is one of the reference countries, especially in production and technology. The Chinese yuan, which has gained an important position at the global level due to its economic structure, has started to be considered as a safe haven currency by both market participants and observers. In fact, according to many, the yuan has been fulfilling this characteristic for years (Fatum et al., 2017: 189). According to Habib and Stracca (2012), a country's net foreign asset position and the size of its stock market make its currency a safe haven asset. China has the largest net foreign asset position in the world and the second largest stock market in terms of market capitalization.

This study aims to test the US dollar, euro, Swiss franc, British pound, Japanese yen and Chinese yuan, which are safe haven currencies, against the stock market in Türkiye during the Gezi Events, July 15 Coup Attempt and Covid-19 outbreak. The study is expected to contribute to the literature in terms of examining whether different safe haven currencies fulfill these qualities against the stock market in Türkiye in different crises.

LITERATURE REVIEW

While research on safe haven currencies was quite limited before the 2008 Global Financial Crisis, there has been a significant increase in the number of studies in this area after the crisis. Prior to the 2008 crisis, Ranaldo and Söderlind (2010) found that the Swiss franc and the Japanese yen strengthened during periods of decline in the US stock market between 1993 and 2008. They argue that the euro is a weak safe haven currency, while the British pound is not always a safe haven currency. In another study conducted before the 2008 crisis, Kaul and Sapp (2006) pointed out that the US dollar was a safe haven currency during the Y2K process.

Fatum and Yamamoto (2016) examine which currencies were safe havens during the 2008 crisis. According to their results, the Japanese yen was the first safest, the Swiss franc was the second safest and the US dollar was the third safest currency. In another study, Coudert et al. (2014) tested the safe-haven properties of 26 currencies of both developed and emerging economies between 1999 and 2013. Among these currencies, only the Japanese yen and the US dollar are safe havens.

In the literature, the number of studies on the US dollar as a safe haven currency is quite high. Wen and Cheng (2018) test the safe haven feature of the US dollar against the stock markets of different countries and find that the US dollar fulfills the safe haven feature. In similar studies, Baur and McDermott (2016) and Liu et al. (2016) stated that the dollar is a safe haven.

Grisse and Nitschka (2015) tested the safe haven feature of the Swiss franc against other currencies. In this study, they find that the franc is a safe haven. In a similar study, Chemma et al. (2022) argue that the Swiss franc was a safe haven during the two largest crises in recent history, the 2008 crisis and the Covid-19 pandemic.

Studies on the safe haven feature of the euro have increased considerably in recent years. In these studies, it has been stated that the euro exhibits safe haven characteristics (Scheiber and Stix, 2009; Todorova, 2020). Beckmann

and Scheiber (2012) examined the safe haven role of the euro by surveying households in European countries and found that households in European countries trust the euro more than local currencies. In another study, Shahzad et al. (2021) found that the euro is both a hedge and a safe haven asset.

Fatum et al. (2017) tested the safe haven feature of the Chinese yuan between 2011-2017. According to their results, they stated that the yuan showed safe haven feature in the initial period but lost this feature in the following periods. In another study, Fong and Wong (2020) stated that the yuan is a safe haven.

MATERIALS AND METHODS

Purpose and Scope of the Research

The aim of this study is to test safe haven currencies against the stock market during the recent crisis periods in Türkiye. In this study, US dollar, euro, Swiss franc, British pound, Japanese yen and Chinese yuan are analyzed as safe haven currencies. The BIST 100 index is used as the benchmark index to represent the stock market in Türkiye.

The daily closing prices of the variables used in the study between 20.03.2012 - 29.12.2023 are employed. The one-month period following each crisis is considered as the crisis period. Dummy variables are created for each crisis period.

As mentioned above, safe haven assets are assets that are uncorrelated or negatively correlated with another asset or portfolio in times of crisis. Safe haven currencies are among these assets. In any crisis period, stock markets are also affected by the crisis and fall. In such periods, equity investors compensate for their investments by investing in safe haven currencies. This study uses GARCH analysis to investigate whether safe haven currencies exhibit safe haven characteristics against the stock market during the recent crises in Türkiye.

Method of the Research

As is known, conventional econometric analysis assumes that the variance of error terms is constant over time. However, time series exhibit high volatility in certain periods and low volatility in others. This means that the conditional expected values of the error terms may be larger in certain periods than in others. In such cases, the constant variance assumption limits the model. In such cases, models that allow the variance to depend on its past values are preferred (Bilgin, 2022: 25).

The ARCH model developed by Engle (1982) defines the conditional variance as a function of the squares of the error terms at time t. The ARCH model has enabled the analysis of financial volatility.

$$\sigma_t^2 = a_0 + a_1\varepsilon_{t-1}^2 + a_2\varepsilon_{t-2}^2 + a_q\varepsilon_{t-q}^2 + u_t \quad (1)$$

The equation shows the relationship between the conditional variance of the error terms, which is the dependent variable, and the lagged values of the squares of the error terms. In the equation, the conditional variance can never be negative. Therefore, restrictions are imposed so that all coefficients are positive. In other words, the conditional variance σ_t^2 must be positive for all t's and satisfy the condition $1<\alpha_i<0$ (Çavdar, 2017: 31).

The ARCH model produces appropriate results by clustering large and small errors in the estimation of financial time series. However, different levels of demand for financial assets cause the mean and variance of the financial asset to vary. In this case, the ARCH model with the assumption of constant mean and variance is not robust. On the other hand, it is known that negative return shocks are more effective than positive return shocks in dynamic markets. Nevertheless, the ARCH model assumes that the impact of negative and positive shocks on volatility is equal (Sarsour, 2023: 24). In this respect, the ARCH model was developed, and the Generalized Autoregressive Conditional Changing Variance (GARCH) model was created by Bollerslev in 1986 by transforming the autoregressive conditional changing variance model into an autoregressive moving average model to express a more complex fluctuation, volatility and structure.

While the univariate ARCH model is a model that autonomously explains the volatility of financial asset returns in the short run, the GARCH model is defined as a model that provides a long-run explanation by including time dependence between various financial markets and assets in addition to the ARCH model.

The GARCH (1,1) model is used to analyze the volatility in financial return series and is expressed by the following equation.

$$\sigma_t^2 = \omega + a\varepsilon_{t-1}^2 + \beta\sigma_{t-1}^2 \quad (2)$$

In the model, ω is the long-run volatility, α is the magnitude of the response to shocks to the series and β is the effect of the previous volatility on the current volatility. The larger the α parameter in the equation, the greater the response to shocks to the series. A large parameter β (GARCH coefficient), which is the lag of the volatility itself, indicates that the shocks to the series continue for a long time (Hatipoğlu, 2015).

For GARCH models to be significant, the condition ω, α,β>0 is restricted and the inequality α+β<1 must be satisfied for the covariance to be stationary. Failure to satisfy the inequality causes the unconditional variance to be infinite.

The GJR-GARCH model used in this study adds the leverage parameter and captures the asymmetry in volatility. The conditional variance of the GJR-GARCH (1,1) model is given by the following equation.

$$\sigma_t^2 = \omega + (a + \gamma l_{t-1})\varepsilon_{t-1}^2 + \beta\sigma_{t-1}^2 \quad (3)$$

In the above equation, l is a dummy variable and γ, which is the asymmetry parameter, is significant when ε<0 according to the equation l_{t-1}=1. Also, according to this equation, the parameter showing the effect of bad news is (α+γ). When ε>0, according to the equation l_{t-1}=0, the parameter indicating the effect of good news is α. When γ>0, bad news has a leverage effect and increases volatility. When γ≠0, it shows that the effect of news on volatility is not symmetric (Çavdar, 2017: 32).

Conditional variance models assume that the effects of shocks on volatility are symmetric. The existence of the leverage effect, which is defined as negative news increasing volatility more than positive news, is not allowed due to the symmetric constraints of these models (conditional variance models). The EGARCH model, which is one of the models that does not require the symmetricity structure, in other words, does not require all estimated parameters in the standard GARCH model structure to be positive, is as follows.

$$\ln(\sigma_t^2) = \omega + \beta\ln(\sigma_{t-1}^2) + \gamma\frac{u_{t-1}}{\sqrt{\sigma_{t-1}^2}} + a\left[\left|\frac{u_{t-1}}{\sqrt{\sigma_{t-1}^2}} - \frac{\sqrt{2}}{\pi}\right|\right] \quad (4)$$

The safe haven feature of the currencies used in the study against the stock market is analyzed with the following equations (Hasan et al., 2021; Baur and McDermott, 2010).

$$R_{it} = \alpha + b_t r_{stockmarket} + \varepsilon_t \quad (5)$$

$$b_t = c_0 + c_1 D(1) + c_2 D(2) + c_3 D(3) \quad (6)$$

$$\sigma_t^2 = \omega + (a + \gamma l_{t-1})\varepsilon_{t-1}^2 + \beta\sigma_{t-1}^2 \quad (7)$$

$$\ln(\sigma_t^2) = \omega + \beta\ln(\sigma_{t-1}^2) + \gamma\frac{u_{t-1}}{\sqrt{\sigma_{t-1}^2}} + a\left[\left|\frac{u_{t-1}}{\sqrt{\sigma_{t-1}^2}} - \frac{\sqrt{2}}{\pi}\right|\right] \quad (8)$$

The relationship between the stock market and safe haven currencies during the crisis period is given by equation (5). α and b are the estimated parameters, ε_t is the error term. Equation (6) is the equation with dummy variable. $D(1)$ is the Gezi Events, $D(2)$is the July 15 coup attempt and $D(3)$ is the Covid-19 pandemic. Each currency is tested separately against the stock market. Two GARCH models are proposed based on the Minimum Akaike (AIC) and Schwarz Information Criterion (SIC). Equation (7) is GJR-GARCH model and equation (8) is EGARCH model. All equations are estimated using the maximum likelihood criterion. The US dollar, British pound and Chinese yuan are estimated with the EGARCH model, and the euro, Swiss franc and Japanese yen are estimated with the GJR-GARCH model.

The equations are interpreted as follows. The parameters (c_0, c_1, c_2, c_3) are positive when currencies move in the same direction as the stock market. If the parameters (c_0, c_1, c_2, c_3) are negative and statistically significant, they indicate that currencies are a strong safe haven asset, while if they are negative and statistically insignificant, they indicate that currencies are a weak safe haven asset.

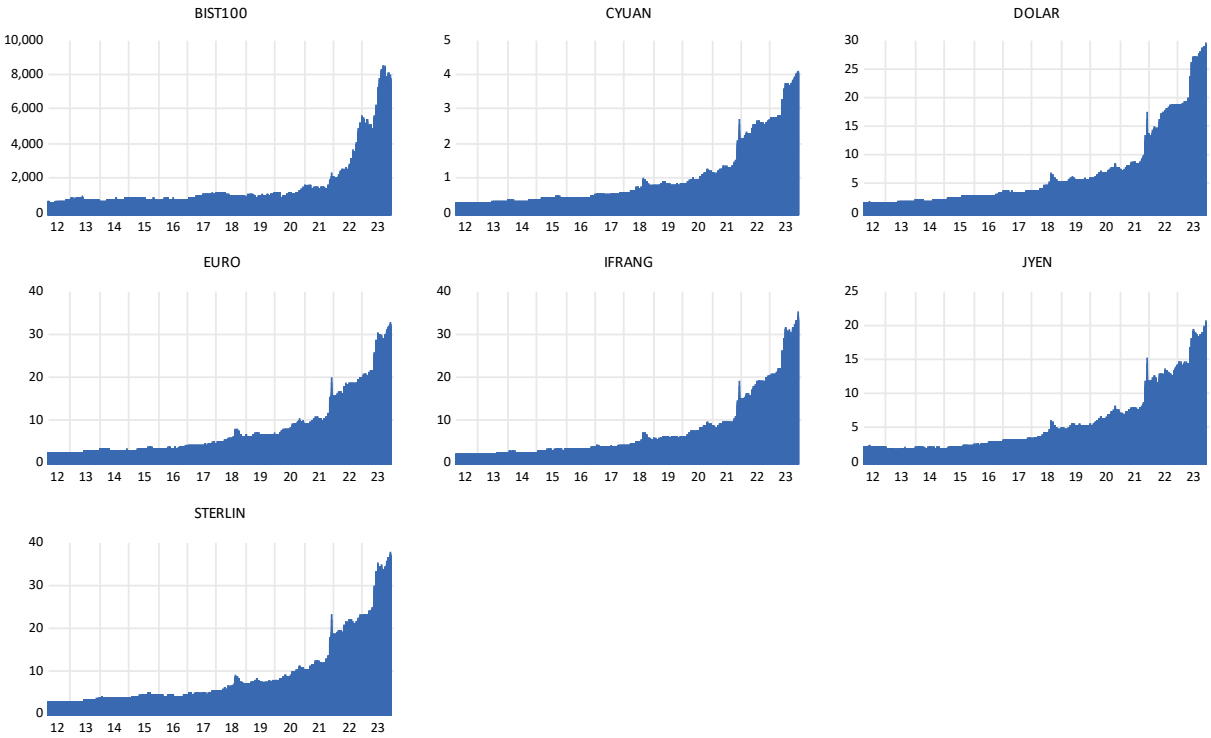
FINDINGS

The findings of the data and analyses are presented below.

Findings on Data

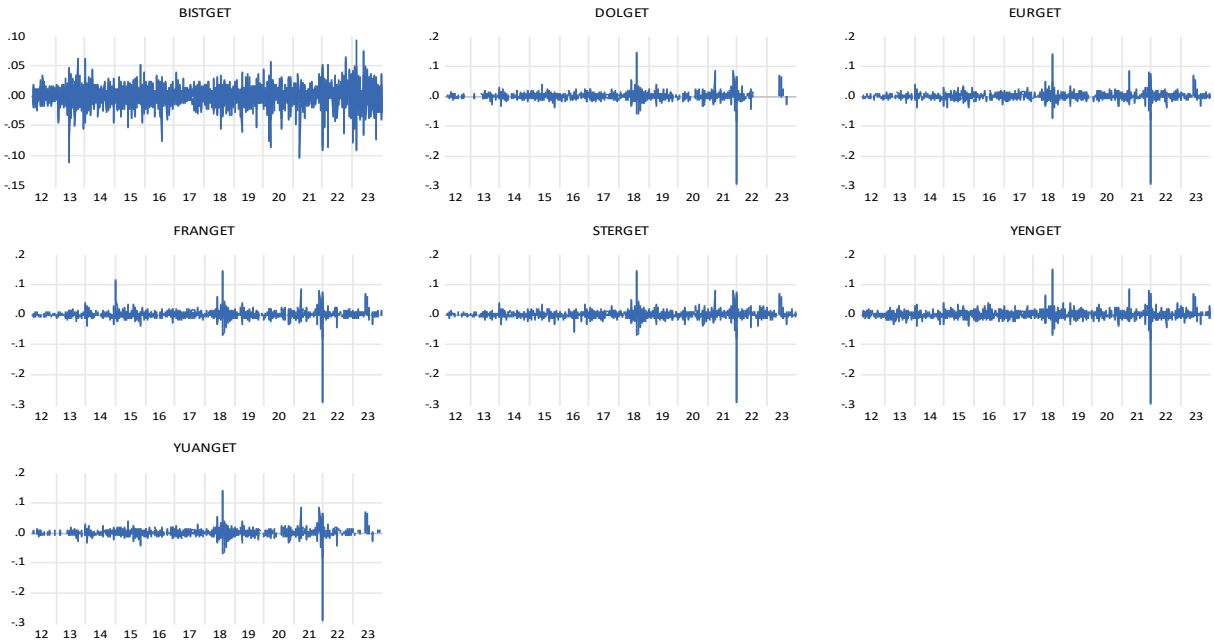
The graphs and tables of the data used in the study are presented below. In addition, ADF unit root test results are also given in this section to test the stationarity of the variables.

Chart 1: Price Graphs of Variables



The charts show that currencies have appreciated significantly against the Turkish lira in recent years. Especially the exchange rate shock in Türkiye in 2018 was the beginning of this increase. The increase continued with the Covid-19 pandemic.

Chart 2: Return Graphs of Variables



When the return graphs of the variables are analyzed, volatility clusters are observed in all variables. This is particularly high in the BIST 100 index return. One of the two particularly striking points in currencies is the exchange rate jump in 2018. At this point, all currencies appreciated against the TL. The other is the significant decline in exchange rates in December 2021, when the Foreign Currency-Protected TL Time Deposit and Participation Accounts System was first announced.

Table 1: Descriptive Statistics of Variables

	BIST 100	DOLLAR	EURO	FRANG	POUND	YEN	YUAN
Mean	0.000841	0.000945	0.000888	0.000975	0.000872	0.000767	0.000906
Median	0.001336	0.000404	0.000444	0.000515	0.000519	0.000115	0.000499
Maximum	0.094219	0.147065	0.140194	0.1468781	0.145365	0.151915	0.143091
Minimum	-0.110633	-0.293976	-0.291531	-0.2912809	-0.2915477	-0.295380	-0.293128
Std. Dev.	0.015633	0.010765	0.010837	0.011312	0.011174	0.011870	0.010734
Skewness	-0.670903	-5.398023	-5.357011	-4.115157	-4.844350	-3.993871	-5.511193
Kurtosis	8.266642	213.6851	198.7330	173.1226	177.3323	148.7874	212.2276
Jarque-Bera	3638.0933	5481504	4732829	3572997	3754815	2625641	5406735
Probability	0	0	0	0	0	0	0
Sum	2.486313	2.794728	2.626531	2.884234	2.579426	2.267416	2.680430
Sum Sq. Dev.	0.722251	0.342473	0.347085	0.378169	0.369016	0.416358	0.340529
Observations	2956	2956	2956	2956	2956	2956	2956

Table 2: Correlation Coefficients of Variables

	BIST 100	DOLLAR	EURO	FRANG	POUND	YEN	YUAN
BIST 100	1						
DOLLAR	0.046888	1					
EURO	0.050332	0.905792	1				
FRANG	0.052576	0.889611	0.944889	1			
STERLIN	0.053302	0.881104	0.918418	0.884358	1		
YEN	0.057260	0.887056	0.876847	0.880236	0.830172	1	
YUAN	0.052219	0.978394	0.919126	0.898721	0.898665	0.889185	1

The correlation coefficients between the variables are presented in Table 2. It is noteworthy that there is a low correlation between all currencies and the BIST 100 index. Among currencies, there is a high correlation between the Chinese yuan and the US dollar. Similarly, there is a high correlation between the euro and the Swiss franc. All correlation coefficients between other variables are shown in the table above.

Table 3: Unit Root Test Results of Variables

Variables	t-Statistic	Prob.
BIST 100	-54.856255	0.0001
DOLLAR	-33.672266	0.0000
EURO	-33.759358	0.0000
FRANG	-26.905955	0.0000
POUND	-33.455164	0.0000
YEN	-33.503517	0.0000
YUAN	-33.832113	0.0000

The Augmented Dickey-Fuller Test (ADF) was applied to test the stationarity of the series. The t statistics of all variables are lower than the 1%, 5% and 10% test critical values and are statistically significant. The series are stationary and do not contain unit root.

Test Results of Safe haven Currencies

Table 4 shows whether the currencies considered in the study exhibited safe-haven characteristics against the stock market during the recent Gezi Events, the July 15 coup attempt and the Covid-19 pandemic crises in Türkiye.

Table 4: Safe Haven Currencies Test Results

Currencies	Periods	Coefficients	Standard Errors	z-Statistics	Probabilities
Dollar	**Gezi** (c_1)	-0.055397	0.022479	-2.464396	0.013724
	Coup (c_2)	-0.099205	0.043298	-2.291197	0.021951
	Covid-19 (c_3)	-0.041731	0.035918	-1.161824	0.245306
Euro	**Gezi** (c_1)	-0.080078	0.029803	-2.686905	0.007211
	Coup (c_2)	-0.060556	0.042271	-1.432588	0.151975
	Covid-19 (c_3)	-0.024091	0.048959	-0.492066	0.622672
Frang	**Gezi** (c_1)	-0.112001	0.036285	-3.086697	0.002023
	Coup (c_2)	-0.083637	0.044131	-1.895177	0.058068
	Covid-19 (c_3)	-0.004987	0.050958	-0.097880	0.922027
Pound	**Gezi** (c_1)	-0.084567	0.026521	-3.188675	0.001429
	Coup (c_2)	-0.178363	0.080655	-2.211437	0.027005
	Covid-19 (c_3)	0.032264	0.058290	0.553506	0.579916
Yen	**Gezi** (c_1)	-0.062719	0.040467	-1.549878	0.121170
	Coup (c_2)	-0.011169	0.090819	-0.122989	0.902115
	Covid-19 (c_3)	0.057393	0.065101	0.881600	0.377992
Yuan	**Gezi** (c_1)	-0.061584	0.025851	-2.382239	0.017207
	Coup (c_2)	-0.120539	0.040266	-2.993545	0.002757
	Covid-19 (c_3)	-0.053511	0.030374	-1.761716	0.078117

As mentioned above in the methodology section, the parameters (c_1, c_2, c_3) are positive when currencies move in the same direction as the stock market. Positive parameters indicate that currencies are not safe havens. If the parameters c_1, c_2, c_3 are negative and statistically significant, currencies are a strong safe haven asset, while if they are negative and insignificant, they are a weak safe haven asset.

According to the results, the US dollar, euro, Swiss franc, British pound and Chinese yuan were strong safe haven assets, the Japanese yen was a weak safe haven asset during the Gezi Events. During the July 15 Coup Attempt, the US dollar, Swiss franc, British pound and Chinese yuan acted as strong safe haven currencies, the euro and Japanese yen acted as weak safe-haven currencies. Finally, during the Covid-19 pandemic, only the Chinese yuan exhibited strong safe haven asset characteristics, the US dollar, euro and Swiss franc acted as weak safe haven currencies.

DISCUSSION AND CONCLUSION

Although capitalism has brought economic growth to countries, it has also created many economic and financial crises in the past and present. In addition to the crises caused by the economic system, crises are also caused by many political and social events such as terrorism, coups, mismanagement and health. Regardless of the cause, all crises have an economic dimension. The recent Covid-19 pandemic was initially a health-related crisis, but later turned into an economic crisis. The policies implemented by countries to prevent the spread of the pandemic disrupted the functioning of supply chains and significantly reduced production. Another aspect of the crisis is its sphere of influence. While some crises, such as the Covid-19 pandemic, have global consequences, others are limited to the country or region where they occur. Whether the crisis is caused by economic conditions, social or health-related reasons, almost every crisis creates serious negative effects on the financial markets of the countries it affects. This, in turn, causes serious losses to investors.

Investors, especially stock investors, shift their investments in risky assets to risk-free or less risky assets during crisis periods. Assets that do not lose their value or appreciate more during crisis periods are called safe haven assets in the finance literature. These assets move in the opposite direction of declining markets and prevent the loss of their investors. Some investment instruments in different categories are recognized as safe havens. For example, gold, silver, government bonds of strong countries, participation instruments created according to Islamic principles and some currencies are among the safe haven assets.

The Republic of Türkiye has faced many crises to date. Although some crises have been caused by global reasons outside of Türkiye, some are unique crises. In the crises experienced, both individual and institutional investors investing in the Turkish stock market have invested their investments in the safe haven assets mentioned above. In this study, safe haven currencies have been tested against the stock market in three crises experienced in Türkiye

in the last decade. According to the results, the Chinese yuan has shown strong safe haven characteristics in all crises. These results are similar to the results of the Fong and Wong (2020) study. The US dollar, the euro and the Swiss franc have also shown safe haven characteristics in all crises. However, all three currencies have shown weak safe haven characteristics during the Covid-19 process. They have shown these characteristics strongly in the other two crises. The safe haven characteristics of the US dollar, the euro and the Swiss franc are parallel to the studies of Wen and Cheng (2018), Chemma et al. (2022) and Shahzad et al. (2021). The other two currencies, the British pound and the Japanese yen, could not be safe haven currencies during the Covid-19 outbreak. However, in the other two crises, the British pound was a strong safe haven while the Japanese yen was a weak safe haven.

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REASSESSING THE EFFECTIVENESS OF WESTERN INTERVENTION IN THE BALKANS: REFLECTIONS ON THE KOSOVO QUESTION

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Abstract

More than two decades after NATO's 1999 bombing of Yugoslavia, the lingering tensions on the question of Kosovo's sovereignty and heightened perceptions of regional insecurity in general call for a reassessment of the effectiveness of Western intervention in the Balkans. The United States and different European Union (EU) member states have invested enormous resources into building a sustainable regional security order and making the West 'the only game in town' in the Balkans in the post-Cold War period. While they have been successful in preventing a humanitarian catastrophe in Kosovo and in pushing and supporting Kosovo's independence from Serbia, their efforts have not achieved the desired results when it comes to the question of building a functioning multiethnic polity in Kosovo. Building on a careful analysis of political patterns over the past decade, this paper argues that both short-term developments like the coming to power in Pristina of a socialist, Western-skeptic movement (current prime minister Albin Kurti's Self-Determination Movement) and long-term trends like the increasing mono-ethnicization of Kosovo and the persistence of the four NATO member states (Greece, Romania, Slovakia, Spain) on not recognizing Kosovo's independence show the limitations of Western influence and the partial failure of Western intervention in achieving its goals in the Balkans. The paper concludes by pointing out that, in face of Russia's ongoing aggression in Ukraine, the question of achieving lasting stability and security in Kosovo becomes more urgent than ever and, as such, requires a new and fresh Western approach toward the region.

Keywords: Kosovo, Western intervention, Balkans

INTRODUCTION

The West, denoting here the United States (U.S.) and the European Union (EU), has geopolitically been the 'only game in town' in the Balkans in the post-Cold War period. All major political actors in this small and fragile corner of the Old Continent proudly declare themselves to be part of Europe and the main foreign policy objective of the countries they rule has invariably been integration into the Euro-Atlantic institutions. Stated differently, there is no mainstream political actor in the post-Cold War Balkans that has been able to advance an alternative political course to the West. This observation should not come as surprising since the most distinctive geopolitical characteristic of the Balkans is that it is a region with a very long history of external influence, domination and occupation by great powers. The Ottomans dominated this corner of Europe from the late 14th century up until their defeat in the First Balkan War in 1913. This represents the longest continuous period of the domination of the region by a single great power. Indeed, the history of the Balkans is so intertwined with the Ottoman Empire that the Balkans as a region is often academically defined as "those areas of Southeastern Europe that were part of the Ottoman Empire." (Mylonas, 2012: 53). The Russian Empire and the Austro-Hungarian / Habsburg Empire competed with the Ottomans for geopolitical influence in this corner of Europe (Jelavich, 1991). While most of present-day Croatia and Slovenia have been Habsburg territories for centuries, it is only since the 1878 Congress of Berlin that Vienna began encroaching directly on Ottoman-held lands by de facto annexing Bosnia and Herzegovina and then by de jure controlling those lands since 1908 (Sugar, 1977; Pavlowitch, 1999; Mazower, 2001; Roudometof, 2001).

The First World War brought partial Italian occupation of the region, the interwar period introduced the alien ideology of Bolshevism, and the Second World War brought along fascist / Nazi occupation, domination and untold suffering to the region. At the end of the Second World War, all the Balkan countries with the notable exception of Greece became communist, either through direct external imposition (Bulgaria and Romania) or as a result of indigenous anti-fascist communist insurgencies and the agreement among great powers that assigned the Balkans to the Soviet sphere of influence (Albania and Yugoslavia). Even though the latter countries, unlike the former, were not Soviet satellites for most of the Cold War, the very fact that they were ruled by the ideology of the one of the superpowers of the period (i.e. Soviet Union) suffices to consider the Cold War period also as one of external domination of the region (Jelavich and Jelavich, 1965; 1977). Finally, since the end of the Cold War,

the West has emerged as the new dominant external power in the Balkans and, together with the West, liberal democracy, free market economy and Western culture, have become the new bandwagon. As Roger Petersen (2011: 3) aptly put it, echoing the once-famous thesis of Francis Fukuyama: "in an important sense one type of history had ended in the Balkans."

Western domination of the region has been manifested most clearly in the large number of agreements that Western actors have brokered to resolve ethnic conflicts and long-standing political and economic disputes in the region. Serbia and Montenegro (back then forming together the Federal Republic of Yugoslavia, FRY) were sanctioned during most of the 1990s due to the wars in Croatia and Bosnia (Lika, 2024); the 1995 Dayton Peace Agreement ended the genocide in Bosnia but designed a badly functioning federation divided into monoethnic federal units; the North Atlantic Treaty Organization (NATO) heavily bombed FRY in 1999 and drove out of Kosovo Milosevic's murderous Serbian forces; the United Nations (UN) then took over the administration of the former ethnic Albanian and Muslim province of Serbia from 1999 until 2008; Western powers pushed Kosovo in 2008 to unilaterally declare independence from Serbia and ever since have been the main international sponsors of this independence; Western actors ended a quasi-civil war in the Former Yugoslav Republic of Macedonia (FYROM) in 2001 between Albanian insurgents and Macedonian security forces, brokered in the same year the Ohrid Framework Agreement (OFA) and then in 2018 ended the three-decade long embarrassing name dispute between Greece and Macedonia by engineering the Prespa Agreement that constitutionally changed the name of the country from FYROM to North Macedonia (Aktürk and Lika, 2022a; Lika, 2023). Skopje's western neighbor, Albania, experienced authoritarian rule for much of the 1990s mainly due to the strong support Western powers gave to the strongman Sali Berisha, the country came to the brink of collapse and civil war due to the disastrous pyramid investment schemes in 1997, and then Western actors stepped in once more to restore stability in the country by the so-called Operation Alba (Abrahams, 2015). At the end of the aforementioned tumultuous and dramatic developments, all Balkan countries with the exception of the trio of Serbia, Bosnia and Kosovo find themselves as NATO members and are gradually progressing toward EU membership as well. Out of all the cases briefly mentioned above, the heaviest investment of Western resources, both military and economic, has by far been in Kosovo and Bosnia. Petersen (2011: 5) notes that "fourteen years after the Dayton Accords, the international community had poured more money into Bosnia per capita than into any recipient of the Marshall Plan.", whereas in Kosovo "the West was pouring money into Kosovo at a rate twenty-five times greater than into Afghanistan and had helped fund troop levels at a rate fifty times greater." (see also King and Mason, 2006). Among the two, a good case can be made that Kosovo is relatively more important than Bosnia. Indeed, as recent work on the topic in question has shown, Serbia's ability to still stir troubles across the Balkans largely hinges on its ability (with Russian and Chinese backing) to block further international recognition of Kosovo's independence and sovereignty (Joseph, 2022; Lika, 2022). In other words, regional stability in the Balkans directly depends on stability in Kosovo and as long as disputes over Kosovo's sovereignty persist, the potential for regional instability will persist as well.

MATERIALS AND METHODS

Given that peace and stability in Kosovo is key to regional stability, this paper reassesses the effectiveness of Western intervention in the Balkans more than two decades after NATO's bombing campaign drove Milosevic's murderous Serbian forces out of Kosovo. Have the U.S. and EU member states succeeded in their stated aim of creating a viable and functioning multiethnic democracy in Kosovo? What are the obstacles still ahead? In face of Russia's ongoing aggression in Ukraine these questions become even more pertinent as "policymakers and scholars alike have voiced serious concerns that the instability and violence could potentially spill over into the Balkans." (Lika, 2022: 2). Up until now, such a scenario has been averted, but there is no guarantee that the situation will stay the same. This paper builds on previous work published on the subject, especially on Roger Petersen's excellent book published in 2011 *Western Intervention in the Balkans: The Strategic Use of Emotion in Conflict*. It also draws on recent reports of *the International Crisis Group*, the prominent international think tank that has reported extensively on the Balkans after the fall of the Iron Curtain. Methodologically, the paper uses process tracing as a within-case qualitative method (George and Bennett, 2005) for analyzing political patterns over the last decade in Kosovo.

It bears emphasis that from the perspective of International Relations (IR) theories, the lingering tensions between Kosovo and Serbia should come as no surprise. Realist IR theories would point to the high level of security fear the two states have toward each other under anarchy. Sharing the same border only serves to amplify the threat perceptions (Mearsheimer 1990; 2001). The presence of Western actors as the dominant great powers in the region surely dampens the baleful affects of anarchy, however any signs of wavering commitment from the Western

powers toward the Kosovo question will significantly increase the security fears between Kosovo and Serbia. On the other hand, a civilizational perspective like the one put forward by Samuel Huntington (1996) would likewise have predicted the lingering tensions between the two countries since they belong to different civilizations. Needless to say, Huntington's cultural deterministic approach gives credence to the rhetoric used by genocidal leaders like Slobodan Milosevic, who justified the wars waged in Bosnia and later in Kosovo as a kind of 'crusade' to save Christianity from the alleged Islamic threat. Huntington had made the same argument in the 1990s with respect to the tensions between Russia and Ukraine as well. Contrary to realist scholars like John Mearsheimer, he had predicted that the potential for war erupting between the two countries was minimal because both Russia and Ukraine belonged to the Slavic, Eastern Orthodox civilization. Huntington instead saw a greater potential for Ukraine splitting in half due to the western part of the country being mostly Roman Catholic (Huntington, 1996). Kremlin's full-scale invasion of Ukraine since February 2022 and the unity among all parts of Ukraine in opposition to this invasion proved that Huntington was not correct in his predictions. In brief, both realist and civilizational IR theories would argue that despite all the enormous Western investment to build a functioning multiethnic democracy in Kosovo, this was somehow bound to fail given the security competition between Kosovo and Serbia and the civilizational fault lines dividing the two countries. Still, I believe it is not useful to describe the effects of Western intervention in black and white terms. Western actors have definitely been successful in achieving some of their aims in Kosovo while they have failed in others. It is to an analysis of this mixed record that I now turn.

FINDINGS

Averting a humanitarian catastrophe and another potential genocide in the Balkans (after the Bosnian one) within a decade has clearly been the most important Western achievement in Kosovo. Despite the presence of competing views questioning the ulterior motives behind NATO's bombing of FRY, at the end of the day no one can dispute that it served a humanitarian purpose as well. Scholars have argued that Milosevic's ultimate aim in Kosovo, unlike in Bosnia, was not to physically eliminate the entire Kosovar Albanian population but rather to drive them out of the territory of Kosovo since that territory is considered sacred in Serbia's nationalist historiography (Petersen, 2001; 2002). In other words, Serbia's policy toward Bosnian Muslims was clearly genocidal whereas the one toward Kosovar Albanians can be more appropriately called ethnic cleansing. As such, Western intervention in Kosovo clearly succeeded in preventing ethnic cleansing.

Second, Western intervention has succeeded to a great extent in sponsoring the recognition of Kosovo's independence. As of November 2024, 117 out of 193 UN member states have recognized the independence of Kosovo.3 Although the world's two most populous states, India and China, and other countries with global standing, such as Russia, Brazil, South Africa and Indonesia continue not to recognize Pristina (indeed, none of the BRICS countries recognizes Kosovo), Western efforts in this direction should still be viewed as mostly successful given the complexity of the Kosovo question. It bears emphasis that the two most consequential non-recognizers are clearly Russia and China, two UN Security Council permanent members that have effectively blocked Kosovo's bid to become a UN member.

However, where Western intervention in Kosovo in this direction has mostly failed is in the persistence of four NATO member states – Greece, Romania, Slovakia and Spain – in not recognizing Kosovo's independence. Although the four NATO non-recognizers cite their own domestic minority issues as the reason for their stance, it should be noted that the U.S. has large leverage over each of these four countries and, as such, their continued obstructionism in this direction is reflective of either the inability or reluctance of Western powers in pressuring them to change their stance. Russia's full-scale invasion of Ukraine might provide an important window of opportunity in this regard. As Lika (2022: 5) recently noted:

The war in Ukraine and Pristina's staunch support of Kyiv has the potential to become a game changer as it could facilitate Kosovo's path to NATO membership. More specifically, Russia's invasion of Ukraine has triggered serious threat perceptions among European countries, and this might lead the four NATO member states that still do not recognize Kosovo (Greece, Romania, Slovakia and Spain) to change their stance, thus opening up the way for Kosovo to join NATO. The position of these four NATO members is of vital importance for the security and stability of the Balkans. By recognizing Kosovo, they can reverse the greatest source of leverage Serbia has over the Balkans and as a result also deny Russia (and China) the opportunity to stir up trouble in the region. By increasing the threat perception in Europe, the Ukraine war will likely push these four NATO non-recognizers to

[3] See the data from the website https://www.kosovothanksyou.com/ (last accessed: 30 November 2024).

be more accommodating toward Kosovo and eventually change course on the issue of recognizing its independence.

An alternative course of action for Western powers might also be to push Ukraine itself toward recognizing Kosovo. The effects of such a potential course of action would also be significant since it would indirectly put pressure on the four NATO non-recognizers to do the same. In other words, if a country that has been under Russian invasion for more than two years and that has had five of its regions annexed by Russia recognizes Kosovo, what excuse would remain for the four NATO non-recognizers to not do the same?

Apart from the persistence of Greece, Romania, Slovakia and Spain on not recognizing Kosovo, another important issue area that shows the limitations of Western influence and the partial failure of Western intervention in achieving its goals in the Balkans is the increasing mono-ethnicization of Kosovo. This refers not only to Serbian minority members living in almost complete isolation north of the Ibar river, but also, and perhaps more importantly, to the virtual disappearance of the Serbian minority from all major Kosovar cities south of the Ibar river. Writing in 2011, Petersen (2011: 139-140) captured the gloomy situation with these words:

For a state to have a true multiethnic society, it cannot be one in which minorities lack any presence in every urban area, where they have been driven out and choose not to return. But that is exactly what has happened in Kosovo. At the time of independence, not only Pristina, but also all of the major cities south of the Ibar River were essentially monoethnic. Pristina had about 30,000 Serbs on its voter rolls in 2008, but only a couple hundred Serbs resided there. Prizren was left with a couple of dozen Serbs. Podujevo had no Serbs at all, the last two elderly women driven out in the early 2000s. There is not a single major Kosovo city where Serbs play any significant political, social, or cultural role … One city that has not been listed, Mitrovica e Kosoves/Kosovska Mitrovica, is split by the Ibar River and has become the site of one of the world's "frozen conflicts." Neither side crosses the main bridge. There is no interaction. North of the Ibar, Serbs essentially live in Serbia. They use the Serbian dinar as currency, collect wages and payments from Belgrade, and refuse to recognize the Kosovo government.

This is an issue of critical importance to the Western sponsors of Kosovo's independence since one of the main stated aims of Western intervention has been to create a viable and functioning multiethnic democracy in Kosovo. As such, Pristina's Western patrons would definitely not be pleased with the mono-ethnicization trend observed in Kosovo. However, the trend observed by Petersen in 2011 has arguably only increased ever since. Of particular importance are the policies of the current socialist ruling party, the Self-Determination Movement (LVV) of prime minister Albin Kurti, who has tried to wrest control of the four Serb municipalities north of the Ibar river since he came to power with a landslide in the February 2021 parliamentary elections (on Kurti's socialist government see also Aktürk and Lika, 2022b). Kurti's policies, which have been castigated as 'unilateral' by Kosovo's Western sponsors, have led to a backlash from the Serbian minority and have arguably worsened an already very tense and polarized situation between the Pristina government and its Serbian minority. All this has reportedly increased Serbian migration out of Kosovo over the past few years. As a recent International Crisis Group (2024: 3) report aptly notes:

In 2015, the Kosovo Serb population was an estimated 145,000 strong; by 2023, it had dipped below 100,000. While exact numbers are unknown due to the Serbs' boycott of the last census, held in 2011, Serbian authorities say another 13 per cent of Serbs left Kosovo over the past year. Many of these departures are from central and southern Kosovo, where the Serbs live alongside the Albanian majority and are well integrated, with the population being rural and elderly, but some are from the four northern municipalities. It is not hard to imagine the trend accelerating in the north as Pristina asserts its sovereignty with an increasingly heavy hand. The Kosovo Serb population is likely to decline in both absolute and relative terms no matter what happens in the Belgrade-Pristina dialogue, but the rate of change will almost surely depend on the level of tensions, on perceptions of safety and on policy. Pristina may welcome this demographic shift but should recognise that it comes at a cost: it is in Kosovo's best interest that its Serb minority stay in the country and have an opportunity for self-rule, because this is the easiest way to build good-will in Serbia and gain the concession that Pristina most wants – recognition.

The risk entailed in the continuous shrinking of Kosovo's Serb minority is too significant to be overlooked. Pristina governments should be cognizant of the fact that they might as well risk losing Western support over such an issue. Whether the failure to build a viable and functioning multiethnic democracy is the "most glaring Western failure" in Kosovo (Petersen, 2011: 139) or not is open to discussion, but there can be no doubt that the increasing mono-ethnicization of Kosovo is "less than Western Democracies hoped for when they intervened to stop barbarities in Kosovo in 1999, and much less than most of the thousands of foreigners and Kosovans of all communities believed they were working towards between 1999 and 2005." (Petersen, 2011: 140). To quote Petersen (2011) once more,

it is indeed ironic that "[d]uring the early 1990s, it was the Albanian population living in a parallel world. Now the system had come full circle." (140)

DISCUSSION AND CONCLUSION

More than two decades after NATO's 1999 bombing of Yugoslavia, the lingering tensions on the question of Kosovo's sovereignty and heightened perceptions of regional insecurity in general call for a reassessment of the effectiveness of Western intervention in the Balkans. The U.S. and different EU member states have invested enormous resources into building a sustainable regional security order and making the West 'the only game in town' in the Balkans in the post-Cold War period. While they have been successful in preventing a humanitarian catastrophe in Kosovo and in pushing and supporting Kosovo's independence from Serbia, their efforts have not achieved the desired results when it comes to the question of building a viable and functioning multiethnic democracy in Kosovo. Building on a careful analysis of political patterns over the past decade, in this paper I argued that both short-term developments like the coming to power in Pristina of a socialist, Western-skeptic movement (current prime minister Albin Kurti's Self-Determination Movement) and long-term trends like the increasing mono-ethnicization of Kosovo and the persistence of the four NATO member states (Greece, Romania, Slovakia, Spain) on not recognizing Kosovo's independence show the limitations of Western influence and the partial failure of Western intervention in achieving its goals in the Balkans.

In this paper I also pointed out that in face of Russia's ongoing aggression in Ukraine, the question of achieving lasting stability and security in Kosovo becomes more urgent than ever and, as such, requires a new and fresh Western approach toward the region. While entailing risks for Kosovo, the Ukraine crisis might also turn out to be a window of opportunity by pushing the four NATO non-recognizers to shift course, and / or by making Ukraine first to recognize Pristina and hence indirectly put pressure on the four NATO non-recognizers to do the same. Of course, the commitment and determination of Western powers to make Kosovo a NATO member will also depend on domestic developments in Kosovo and currently one of the most pressing problems is arguably the gradual mono-ethnicization of the country. The trend in question needs to be reversed if Pristina does not want to lose the support of its Western patrons. It needs to be reversed because it could also "undercut the most promising path toward resolution of the long-running disputes between Belgrade and Pristina." As further explained by the International Crisis Group (2024: 3) recent report: "Crisis Group has argued that the best route to good Kosovo-Serbia relations is a compromise by which Serbia accepts Kosovo's independence in return for Kosovo granting its Serb minority substantial self-rule. Yet demographic changes driven by political tensions risk gradually sliding that deal off the table, as the Kosovo Serb population shrinks toward the point where autonomy may become impractical."

There is no easy way out of the Kosovo-Serbia imbroglio. The Western intervention first to contain and then to try to solve this conflict has had its successes and failures. The failures cannot be easily captured by a static struggle for power realist perspective, much less by a civilizational approach focusing on the religious fault lines dividing the two countries. What seems to be more the case is that spoiler domestic elites from both countries have a vested interest in blocking the resolution of the conflict. The task of Western powers is to publicly criticize and sanction these elites and support instead alternative actors willing to cooperate and act multilaterally.

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THE IMPLICATIONS OF THE BRICS' ROLE ON THE DOMINANCE OF THE US DOLLAR IN THE GLOBAL ECONOMY: A PROSPECTIVE STUDY

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Abstract

The role of the BRICS group in the global economy has been a topic of debate for many years, particularly concerning the dominance of the US Dollar. The BRICS group—Brazil, Russia, India, China, and South Africa—represents a significant portion of the world's population, landmass, and economic output. With their combined economic power, the BRICS countries have the potential to challenge the dominance of the US Dollar as the world's primary reserve currency.

The rise of the BRICS as an economic block has altered the global economy's landscape and challenged the long-standing dominance of the US dollar as the world's reserve currency. As the BRICS countries have sought to reduce their reliance on the dollar and promote their financial systems and currencies, this has had significant implications for the future status of the US dollar.

The BRICS' role in the global economy can shift the balance of power away from the US Dollar and towards a more multipolar financial system. This could have wide-ranging implications for global trade, investment, and economic development, as world countries adjust to a changing currency landscape.

This prospective study examines the evolving role of BRICS in reshaping international financial systems, focusing on their efforts to promote alternative currencies and foster economic cooperation. As these countries increase trade among themselves using local currencies and develop new financial institutions, the traditional reliance on the US dollar is challenged. This analysis highlights the potential for a multipolar currency system, the impact on global trade dynamics, and the geopolitical consequences of diminishing dollar supremacy. Ultimately, this study aims to provide insights into the future of global economic governance and the shifting balance of power in international finance.

Keywords: BRICS, US Dollar, international trade, global reserve currency.

INTRODUCTION

Since the end of WWII, the world's economy has been largely built around the US dollar as the world's reserve currency. This status has afforded the US significant economic and geopolitical advantages, allowing it to wield substantial influence over the international financial system.

As is well-known, the Bretton Woods Agreements (1944) established the US dollar as the global reserve currency. It kept its dominant position in international trade, and this dominance has largely continued since then. The United Nations (UN) reports world trade transactions between countries in dollars (Coquidé, Lages, and Shepelyansky, 2023, p. 1).

It is worth noting that the Bretton Woods Agreements pegged other currencies to the US dollar, which was convertible to gold at a fixed rate. This, in fact, solidified the dollar's status as the primary medium of exchange for international trade and finance following decades. Despite the collapse of the Bretton Woods system in 1971, the US dollar has maintained its dominant position in the global economy. There are several key reasons for this continued dominance:

Size and Liquidity of US Financial Markets: The US has the largest and most liquid financial markets in the world, making the dollar an attractive currency for international transactions and investment.

Global Demand for Dollar-Denominated Assets: The dollar's status as the dominant reserve currency has created sustained demand from central banks, investors, and businesses for dollar-denominated assets like US Treasuries and corporate bonds.

Lack of Viable Alternatives: While other currencies, such as the euro and Chinese renminbi, have gained prominence, none have yet emerged as a true rival to the US dollar's global supremacy. The dollar continues to be the most widely accepted currency for international trade and payments.

Network Effects and Path Dependence: The dollar's dominance has become self-reinforcing, as its widespread usage in global transactions and as a reserve currency makes it difficult for other currencies to displace it, creating significant path dependence.

US Geopolitical Influence: The dollar's dominance has given the US significant geopolitical leverage, allowing it to exert influence over the global financial system and conduct foreign policy more freely.

Eichengreen (2011) believed that despite the rise of other currencies, such as the euro and the Chinese renminbi, the US dollar has maintained its preeminent position in the global financial system. In 2021, the US dollar accounted for around 60% of global foreign exchange reserves, 40% of global debt, and 80% of global trade transactions in 2021. This long-standing dominance of the US dollar has provided significant benefits to the US, including the ability to borrow at lower interest rates, conduct foreign policy more freely, and exert influence over the global financial system (pp. 215-222)

However, the rise of BRICS and their efforts to challenge the dollar's status quo have posed new challenges to the US dollar's supremacy. These countries have taken steps to reduce their reliance on the dollar and promote the use of their currencies in international trade and finance. The emergence of the BRICS has introduced new dynamics that challenge the traditional dollar-centric global financial architecture.

It is worth mentioning that the issue of de-dollarization has become a hot topic since the beginning of the Russia-Ukraine War and the US-EU measures that blocked Russia's large international reserves as a punishment for invading Ukrainian territory. These actions constituted major threats to move toward outright confiscation and destroy confidence among partners. Thus, harming the US dollar. What happened to Russian assets set off alarms to China, a major holder of US dollar bonds as part of its international reserves. Therefore, countries that experience conflicts with the US or the West realized that steps were needed to reduce their reliance on the US dollar and the Western financial system. In this regard, efforts were intensified in many parts of the world to use national currencies in international transactions, to build or reinforce alternative payment systems, to rely more on the Chinese renminbi, and even to create a new BRICS reference currency (Batista, 2024, p. 5).

The BRICS states have been actively working to reduce their reliance on the US dollar and promote the use of their currencies in international trade and investment. The steps that the BRICS have taken include the establishment of alternative financial institutions, such as the New Development Bank and the Contingent Reserve Arrangement, that aim to provide financing and support outside of the traditional US-led global financial architecture. The BRICS have also pursued strategies of 'de-dollarization,' including the use of national currencies in bilateral trade agreements and the development of SWIFT alternatives.

These actions by the BRICS have the potential to significantly impact the dominance of the US dollar and reshape the global financial landscape. The diversification of reserve currencies, the creation of alternative financial institutions, and the de-dollarization efforts could erode the US ability to exert economic and financial influence through the dollar's hegemonic status. This, in turn, could have profound geopolitical ramifications, altering the balance of power and the dynamics of the world's governance.

As the aforementioned issue has raised several questions, there has been a plethora of scholarly research that explored the implications of the BRICS' role in the dominance of the US dollar in the global economy.

Faudot (2018) investigated the intricate workings of the US dollar payment system, analyzing its attendant political implications. He aimed to enhance our understanding of the US dollar's role within global financial systems and its broader political ramifications. In his article, the author illuminated the architecture of the dollar's payments infrastructure and its influence on political dynamics.

In their published work, Joshua and Joshua (2019) examined 'The Changing International Financial System,' within the context of the Belt and Road Initiative (BRI). Their work emphasized the interconnectedness of global financial systems, providing a crucial framework for understanding de-dollarization's wider impact.

Burova, Kozlovtseva, Makhankova, and Morozov (2021) investigated the intricate relationship between dollarization, financial stability risks, and the implementation of monetary policy, further enriching our understanding of the challenges associated with de-dollarization.

In their published article entitled 'De-Dollarization: The Harbinger of a New Globalization Architecture?', Gouvea and Gutierrez (2023) posited that de-dollarization extends beyond mere economic consequences, potentially influencing the global order itself. Through the analysis of various factors driving and resulting from de-dollarization, they presented a framework for comprehending this phenomenon.

Saaida (2023), in his published article entitled 'The BRICS' Move Away from US Dollar: The Implications for International Politics,' examined the geopolitical ramifications of BRICS nations' endeavors to lessen dependence on the US dollar. In his study, he examined the political ramifications, offering insights into the broader consequences of international relations.

In their work, Aqeeq, Tahir, Haider, Aqeeq, and Abdullah (2023) focused on developing nations' sustainable economic development and the role of energy transition. Within this context, they provided a unique perspective on the intersection of economic strategies and de-dollarization efforts.

Minerva Research Initiative (2023) explored 'Rising Power Alliances and the Threat of a Parallel Global Order.' This research focused on the BRICS nations' collaborative efforts to reshape the global economic landscape and challenge existing power structures, potentially influencing de-dollarization trends.

In their prospective study entitled 'Prospects of BRICS currency dominance in international trade,' Coquidé, Lages, and Shepelyansky (2023) proposed a mathematical model of influence battle of three currencies, namely, the US dollar, the euro, and a hypothetical BRICS currency. The results obtained showed that at the beginning of 2012 about 58% of countries would have preferred to rely on the BRICS new currency, 23% on the euro, and 19% on the US dollar. In addition, the results announced favorable prospects for the dominance of the BRICS currency in global trade.

In his work entitled 'Trends, reasons, and prospects of de-dollarization,' Li (2023) provided a comprehensive analysis and understanding of the factors driving de-dollarization, its potential future trajectories, and the various perspectives surrounding the phenomenon.

In his study, Bai (2024) examined the de-dollarization of the Global South and their impacts on the evolution of the global economic order. Since they pursued their attempts to reduce their use of the US dollar in global commerce, the countries of the Global South, in addition to the BRICS, started strengthening their monetary sovereignty and national economic security; thus, separating between global commerce and financial system, which was linked to the US dollar.

Furthermore, Bai (2024) further argued that several debates on de-dollarization advocated for substituting the US dollar with the Chinese Renminbi (RMB) as a world currency. This, in fact, will not take place in the future unless the US dollar's credibility is destroyed by a debt crisis in the US. In addition, the US dollar's global status will be weakened by the de-dollarisation steps of the countries of the Global South, and the global financial order system will shift from the US dollar to the BRICS' currency dominance.

Saaida (2024) examined the de-dollarization phenomenon of the BRICS+ and its impact on global economic dynamics. In his research, he employed an analytical descriptive technique to explore the factors that influence the BRICS+-led de-dollarization and the results it may lead to. The study discussed the BRICS+ strategy, considering economic and political factors, and identified potential areas of divergent interests within the changing global landscape. The paper proposed recommendations based on creating internal strategies to meet the BRICS+ economic needs and external strategies to be designed in response to proactive economic challenges of the US in the international context.

The abovementioned literature review highlighted the growing body of research on de-dollarization, focusing on its drivers, implications, and potential future scenarios. By examining diverse perspectives, including the broader global context, the role of rising powers, and individual nation-state dynamics, this present literature review provided a comprehensive understanding of this complex and evolving phenomenon. Studies have found that the BRICS have been actively working to reduce their reliance on the US dollar in global commerce, including the establishment of alternative financial institutions, such as the New Development Bank, and the increased use of local currencies in bilateral trade agreements. As a result, the US dollar's share in global foreign exchange reserves and international transactions has gradually declined over the past decade. In addition, scholarly research and

studies pointed out that the BRICS' efforts to de-dollarize the global economy could undermine the US ability to conduct independent monetary policy and use the dollar as a foreign policy tool. This could limit the US capacity to influence global financial conditions and reduce the exorbitant privilege associated with the dollar's reserve currency status.

The present research addresses to the following questions:

- How have the BRICS worked to reduce their reliance on the US dollar?
- How have the BRICS' de-dollarisation efforts impacted on the global financial system and the role of the US dollar as the world's reserve currency?
- To what extent can the BRICS countries successfully establish alternative financial and monetary arrangements to challenge the US dollar's hegemony?
- What are the potential geopolitical implications of a shift away from the US dollar's dominance, and how might this impact the global balance of power?

This paper aims to provide a prospective study on the potential implications of the BRICS' growing influence on the future of the US dollar's dominance in the world economy. It will examine the motivations and strategies of the BRICS in their de-dollarisation attempts, as well as the potential consequences for the US and the global monetary system. The analysis will consider the economic, political, and geopolitical factors driving these developments, and explore potential scenarios for how the relationship between the BRICS and the US Dollar may evolve in the years to come.

Understanding the complex interplay between the BRICS and the US dollar is crucial for policymakers, businesses, and global citizens alike, as it has far-reaching implications for the stability and distribution of economic power in the 21st century. The present paper will contribute to the ongoing discourse on the future of the global monetary system and the changing dynamics of global finance.

The BRICS: An Overview:

Although the world power structure was dominated by the west in post-cold war era, transition in the international political system has occurred since 2001 with the emergence of BRIC. Originally, the term BRIC was first coined by Jim O'Neill, chief economist of Goldman Sachs, in 2001 within the context of exercising a global forecast of economic trends over the next half century (O'Neill, 2001, p. 3). The acronym BRIC refers to the original countries of Brazil, Russia, India, and China. It was a formalized forum with the meetings of Foreign Ministers of the four countries on the margins of the UN General Assembly in New York in September 2006. The first BRIC summit was held in Yekaterinburg, Russia in 2009. Later, it was extended BRICS, following a census of BRIC leaders, when South Africa joined the group on December 24, 2010 (Sethi and Thakur, 2016, p. 1). As an informal organization, BRICS represents an association of major emerging economies that have seen rapid economic growth and increasing geopolitical influence in recent decades. The table below provides basic information on BRICS countries.

Country	Area of Territory	Capital City	Population Size	Share of Global (%)	Gross Domestic Product (GDP)	Share of Global (%)	GDP Purchasing Power Parity	GDP Growth	Foreign Exchange Reserve
			(2023)	(2023)	US $ (2023)	(2023)	US $ (2023)	% (2023)	(2023)
Brazil	8.510 Km2	Brasilia	216,422,446	2.7%	$ 2.081	2.0%	$4.0T	2.9%	59.8bn
Russia	17.125 Km2	Moscow	144,444,359	1.8%	$ 2.063	2.0%	$5.0T	3.6%	20.6bn
India	3.287 Km2	New Delhi	1,428,627,663	17.8%	$ 3.737	3.6%	$13.0T	7.8%	60.5bn
China	9.600 Km2	Beijing	1,425,671,352	17.7%	$ 19.374	18.4%	$33.0T	5.2%	58bn
South Africa	1.221 Km2	Pretoria	60,414,495	0.8%	$ 399	0.4%	$1.0T	0.6%	62.5bn

Table 1: Basic Information of BRICS Countries. Source (Adapted by the author from different resources).

In the BRICS summit held in August 2023 in Johannesburg, a decision was taken by the intergovernmental organization to open the door for admission of new members, and on January 1, 2024, Egypt, Ethiopia, Iran, and the UAE were admitted as new members to the group. Thus, it became to be known as BRICS+ (Jütten and Falkenberg, 2024, p. 1).

The BRICS collaboration is driven by the following key reasons:

Economic cooperation: The BRICS represents some of the largest emerging economies in the world. By collaborating, they aim to increase trade, investment, and economic ties among themselves, creating new avenues for growth and development.

Geopolitical influence: As a collective, the BRICS seek to increase their global political and economic influence, counterbalancing the dominance of traditional Western powers.

Reform of global governance: The BRICS have advocated for reforms in international financial institutions, such as the IMF and World Bank, to give greater voice and representation to developing economies.

Development financing: The BRICS' New Development Bank (NDB) and the Contingent Reserve Arrangement (CRA) were established to provide alternative sources of development financing and financial stability, reducing the dependence on Western-dominated institutions.

Technology and innovation: Collaboration in areas like science, technology, and innovation can help the BRICS countries leapfrog development stages and foster shared growth and progress.

Sustainable development: The BRICS have emphasized the importance of sustainable development, renewable energy, and environmental protection as part of their collaborative efforts.

Cultural and people-to-people exchanges: The BRICS mechanism also aims to facilitate cultural, educational, and people-to-people exchanges, fostering mutual understanding and cooperation among their citizens. (Sethi and Thakur, 2016, p. 2)

By working together, the BRICS seek to create a more multipolar world order, assert their collective interests, and promote global development that is more inclusive and representative of emerging economies.

The objectives of BRICS are:

- To deepen, broaden, and strengthen cooperation within the group members and among individual countries for more sustainable, equitable and mutually beneficial development.
- To improve member countries' growth, development, and poverty objectives to ensure relations built on the respective country's economic strengths and to avoid competition.
- To assure political-diplomatic entity with diverse objectives,
- To seek an increase in collective influence of member countries on global affairs and decision-making processes, balancing the dominance of traditional Western powers.

The overarching goal of BRICS is to reshape the global order and create a multipolar world, where developing countries have a greater say in international affairs and the global economy ('BRICS', n. d., pp. 2-3).

It is worth noting that the creation of BRICS was rooted in the economic interest of the member countries, including reforming the global financial and economic architecture, strengthening the principles and standards of international law, and supporting the complementarities in several economic sectors.

It needs to be noted that the agenda of BRICS meetings has shifter, over the years, from economic issues of mutual interests to other global issues, such as climate change and sustainable development, food and energy security, health, the global trading order, reforms in international economic and financial institutions and international and regional political developments. BRICS cooperation has two pillars:

consultation on issues of mutual interest through meetings of Leaders as well as of Ministers of Finance, Trade, Health, Science and Technology, Education, Agriculture, Communication, Labor, etc.

and practical cooperation in several areas through meetings of Working Groups/Senior Officials. (Sethi and Thakur, 2016, p. 3)

Since its formation, the BRICS held 12 summits. These are annual meetings of the BRICS countries' leaders. The first BRICS summit was held in 2009 in Yekaterinburg, Russia. The summits provide a forum for the BRICS countries to discuss and coordinate political, economic, and cultural cooperation. The main objectives of the BRICS summits are:

- Strengthen political, economic, cultural, and people-to-people ties among the BRICS countries.
- Contribute to the reform of global financial institutions to better represent emerging economies.
- Promote multipolarity and a more equitable global order.
- Collaborate on issues of mutual interest such as sustainable development, digital economy, and global governance. (Kundu, 2014, p. 1)

The BRICS summits achieved the following key outcomes:

- Establishment of the New Development Bank, aka the BRICS Development Bank, in 2015 to finance infrastructure and development projects.
- Creation of the BRICS Contingent Reserve Arrangement, a framework for protecting against global liquidity pressures.
- Agreements on cooperation in areas, such as security, trade, science & technology, culture, and people-to-people exchanges.
- Joint statements and declarations on global issues reflecting the BRICS countries' shared perspectives. (Kundu, 2014, p. 2).

The table below illustrates the BRICS summits (2009-2023).

Year	***Host Country***	***Main Focus of the Summit***
2009	**Yekaterinburg, Russia**	Mostly focused on economic and financial issues arising out of the 2008 financial crisis, reform of International Financial Institutions, Sustainable Development and measures to combat climate change (Sethi & Thakur, 2016, p. 2).
2010	**Brasilia, Brazil**	Focused on identifying intra BRIC cooperation initiatives and also included input from civil society. The joint declaration from this summit focused on increasing the voting quotas of the BRICS within the IMF and fostering greater involvement in the choice of leaders for the IMF and the World Bank (Sethi & Thakur, 2016, p. 2).
2011	**Sanya, China**	Added strength to its geographical representation thus opening a new foray into the African continent. Apart from discussing UN reform, and combating terrorism in line with the UN and economic cooperation, an Action Plan was formulated to deepen areas of cooperation in diverse fields such as health, science and technology, renewable energy, peaceful use of nuclear energy, eradication of hunger and poverty as well as reemphasizing the UN Millennium Development Goals (Sethi & Thakur, 2016, p. 3).
2012	**New Delhi, India**	It was remarkable for enunciating financial cooperation with third countries through the establishment of the BRICS Bank for financing infrastructure needs and sustainable development projects of BRICS and other developing countries. The Agreement was also signed to facilitate credit approval in local currencies for establishing and strengthening the economies of BRICS countries (Sethi & Thakur, 2016, p. 3).
2013	**Durban, South Africa**	It laid the foundation for ushering in Contingence Reserve Arrangement with an initial amount of $ 100 billion, adoption of the feasibility report for setting up the BRICS Development Bank, and establishment of two important centers, namely, BRICS Business Council and BRICS Think Tanks Council for enhanced coordination and cooperation among member countries (Sethi & Thakur, 2016, p. 3).
2014	**Fortaleza, Brazil**	Decisions were taken to fund infrastructure and sustainable development projects in emerging markets were signed. Furthermore, under Contingency Reserve Arrangement (CRA), an amount of $ 100 billion was allocated for forestalling short-term Balance of Payments pressures. The New Development Bank (NDB) had a startup capital of $50 billion with the capital increased to $ 100 billion over time. With Pretoria, South Africa, being the regional hub and named as the 'New Development Bank Africa Regional Center', each of the constituent countries, Brazil, Russia, India, China, and South Africa, made an initial contribution of $ 10 billion each to the fund with the primary focus of lending on infrastructure projects of up to an estimated lending of up to $ 34 billion annually (Sethi & Thakur, 2016, p. 3).

2015	**Ufa, Russia**	It underwent the process of ratification of constituting agreements of Contingency Reserve Arrangement as well as the New Development Bank. With the consent of the Bank's Council of Governors and Board of Directors, Contingent Reserve Arrangements became fully operational thus providing a clear road map to strengthen, diversify and enhance trade and investment among the five BRICS countries (Sethi & Thakur, 2016, p. 3).
2016	**Goa, India**	BRICS member countries strongly condemned terrorism in all its forms and manifestations, particularly attacks against its members. Agreements for establishment of BRICS Agricultural Research Platform, Mutual Cooperation between Diplomatic Academies and Regulations on Customs Cooperation Committee were signed. The summit deliberated on the possibility of setting up an independent BRICS Rating Agency based on market-oriented principles, in order to further strengthen the global governance architecture. The summit also forged new bridge between BRIC nations and BIMSTEC nations comprising India, Nepal, Bangladesh, Bhutan, Sri Lanka, Thailand and Myanmar (Sethi & Thakur, 2016, p. 3).
2017	**Xiamen, China**	The 2017 BRICS Summit was held in Xiamen, China, on September 3-5, 2017, under the theme 'BRICS: Stronger Partnership for a Brighter Future.' The priorities emphasized by China as the host included (1) deepening BRICS practical cooperation, (2) reforming global economic governance, and (3) upholding world peace and development. The BRICS leaders signed the Xiamen Declaration, which outlined their common positions on a range of global and regional issues. They launched the BRICS Rating Agency to provide alternative credit ratings to the major Western rating agencies. They established the BRICS Agricultural Research Platform to boost agricultural cooperation. The leaders agreed to strengthen BRICS cooperation in areas like innovation, digital economy, energy, and people-to-people exchanges. They called for reform of the UN, IMF, World Bank and WTO to better reflect the growing economic clout of emerging markets. The 2017 Xiamen summit consolidated the BRICS mechanism and reaffirmed the group's role as an influential platform for emerging economies. It showcased China's leadership in shaping the BRICS agenda and advancing cooperation in the BRICS+ framework. Moreover, the summit outcomes demonstrated the BRICS countries' commitment to reforming global governance and promoting a more balanced, inclusive world order ('Theme and Cooperation Priorities of 2017 BRICS Summit,' 2017, papa. 1-6).
2018	**South Africa**	The 2018 BRICS Summit was held in Johannesburg, South Africa, on July 25-27, 2018, under the theme 'BRICS in Africa: Collaboration for Inclusive Growth and Shared Prosperity in the 4th Industrial Revolution'. The priorities emphasized by South Africa as the host included: (1) strengthening intra-BRICS cooperation, (2) promoting inclusive growth and sustainable development, and (3) leveraging the 4th Industrial Revolution for the benefit of BRICS countries. The BRICS leaders adopted the Johannesburg Declaration, which laid out their shared positions and commitment to multilateralism. They launched the BRICS Partnership on New Industrial Revolution to promote cooperation in innovation, digitization, and industrial transformation. The leaders agreed to strengthen coordination on global and regional issues such as climate change, terrorism, and reform of international organizations. They announced the establishment of the BRICS Institute of Future Networks to facilitate collaboration in 5G, IoT, and other emerging technologies. The BRICS Contingent Reserve Arrangement was operationalized to provide protection against global liquidity pressures. The 2018 Johannesburg summit emphasized the BRICS countries' focus on leveraging new technologies and the digital economy to drive inclusive and sustainable development. It showcased South Africa's leadership in shaping the BRICS agenda, especially in the context of Africa's development priorities. The summit outcomes reflected the BRICS nations' collective efforts to reform global governance and promote a multipolar world order (Sharma, 2018, para. 1-4).
2019	**Brasilia, Brazil**	The 2019 BRICS Summit was held in Brasilia, Brazil, on November 13-14, 2019, under the theme of 'BRICS: Economic Growth for an Innovative Future'. The priorities emphasized by Brazil as the host included (1) fostering economic growth and sustainable development, (2) promoting innovation and the digital economy, and (3) enhancing people-to-people cooperation.

		The BRICS leaders signed the Brasilia Declaration, which outlined their joint positions on global issues and the group's internal cooperation. They launched the BRICS Women's Business Alliance to promote women's entrepreneurship and economic empowerment. The leaders agreed to strengthen cooperation in areas such as the digital economy, science, technology and innovation, and agriculture. They established the BRICS Creative Economy Alliance to boost collaboration in creative industries. The BRICS Interbank Cooperation Mechanism was expanded to facilitate cross-border investment and financing. The 2019 Brasilia summit focused on leveraging innovation and the digital economy to drive sustainable and inclusive growth within the BRICS countries. It showcased Brazil's leadership in shaping the BRICS agenda, particularly in areas like the creative economy and women's empowerment. The summit outcomes demonstrated the BRICS nations' commitment to strengthening their economic and people-to-people ties, while also advocating for reform of global governance institutions (‘BRICS BRASIL 2019 - Theme and priorities,’ 2019, para. 1-3). "
2020	**Moscow, Russia (Virtual summit due to COVID-19)**	The BRICS leaders adopted the Moscow Declaration, which outlined their collective efforts to address the COVID-19 crisis and its socio-economic impacts. They agreed to establish a BRICS Vaccine Research and Development Center to facilitate joint vaccine R&D, clinical trials, and production. The BRICS Counter-Terrorism Strategy was approved to enhance cooperation in combating terrorism and extremism. The leaders committed to strengthening the role of the BRICS New Development Bank in financing sustainable development projects. They endorsed the Strategy for BRICS Economic Partnership 2025 to deepen intra-BRICS economic ties. The 2020 virtual BRICS Summit was a significant event, as it was the first time the leaders met in a completely online format due to the COVID-19 pandemic. It showcased Russia's leadership in coordinating the BRICS countries' collective response to the global health and economic crisis. The summit outcomes reflected the BRICS nations' commitment to deepening cooperation in healthcare, the digital economy, and sustainable development, even in the face of the pandemic. The virtual format allowed the BRICS leaders to continue their engagement and maintain the momentum of the grouping during a challenging time (‘BRICS Summit 2020,’ 2020, para. 1-4).

2021	**New Delhi, India (Virtual)**	The 13th BRICS Summit, which was held under India’s Chairship on September 9, 2021, was under the theme of *BRICS @ 15: Intra-BRICS Cooperation for Continuity, Consolidation and Consensus*. It reflected the approach to strengthen the founding principles of BRICS cooperation based on continuity, consolidation and consensus.
		The main outcomes of the BRICS summit were:
		• **Political and Security:** To enhance cooperation and dialogue on issues of global and regional security, developments in the global political space for peace, security and prosperity through (1) Reform of the Multilateral System, and (2) Counter Terrorism Cooperation.
		• **Economic and Financial:** To promote economic growth and development for mutual prosperity through the expansion of intra-BRICS cooperation in sectors, such as trade, agriculture, infrastructure, small and medium enterprises, energy and finance & banking. Recognizing the advantages of using technological and digital solutions for the achievement of Sustainable Development Goals in BRICS countries with a special focus on:
		  • Implementation of the BRICS Economic Partnership Strategy 2020-25.
		  • Operationalization of the BRICS Agriculture Research Platform.
		  • Cooperation on Disaster Resilience.
		  • Innovation Cooperation.
		  • Digital Health and Traditional Medicine.
		• **Cultural and People to People:** To qualitatively enrich and enhance intra-BRICS people to people contacts in cultural, academic, youth, sports, business, through regular exchanges. Exchanges among Parliamentarians, young scientists etc. are also held (‘13th BRICS Summit India, 2021, para. 1-3).

2022	**Beijing, China (Virtual)**	The 14th BRICS Summit took place in Beijing, China, on June 23-24, 2022. The focus was on shaping the future of BRICS value chains. Under the theme of *facilitating the recovery of world economy after Covid-19, promoting economic*

		connectivity and mutual benefits to build a sustainable future together, the 14th BRICS summit brought together leaders from Brazil, Russia, India, China, and South Africa to discuss various global issues, including economic cooperation, sustainable development, and strategies to enhance collaboration among member states. The most important outcome of the 14th BRICS summit was the *Beijing Declaration* which highlighted the group's commitment to multilateralism and cooperation on global issues. Some of the key points from the declaration included: **Multilateralism:** Emphasis on the need for a multipolar world and strengthening the role of the United Nations. **Economic Cooperation:** Commitment to enhancing trade and investment among BRICS countries, promoting sustainable economic growth. **Global Security:** Acknowledgment of the importance of collective security and addressing geopolitical tensions. **Sustainable Development:** Reaffirmation of support for the Sustainable Development Goals (SDGs) and climate action. **Health Cooperation:** Focus on strengthening health systems and cooperation in response to pandemics. **Cultural Exchange:** Promotion of cultural and people-to-people exchanges to enhance mutual understanding. **Expansion:** Discussion on potential expansion of BRICS to include new member states, highlighting inclusivity. The declaration reflects the shared priorities of BRICS nations and their commitment to addressing pressing global challenges collaboratively ('BRICS Summit 2022,' 2022, para. 1-4).
2023	**Johannesburg, South Africa**	The BRICS summit's theme was *BRICS and Africa: Partnership for Mutually Accelerated Growth, Sustainable Development and Inclusive Multilateralism*. The summit adopted the *Johannesburg II Declaration.* The most outcomes of the BRICS summit 2023 were: • **Expanding the BRICS:** This summit has unanimously decided to invite six countries to become full members, and include Argentina, Egypt, Ethiopia, Iran, Saudi Arabia, and the UAE by January 1, 2024. With the addition of six new members, BRICS now has 30 % of the world economy, with a combined GDP of US$30.76 trillion. It also constitutes 40 % of the world's population. • **Reducing dependency on the US dollar and to increase the pace of de-dollarisation in global trade:** BRICS members discussed currency alternatives such as including the potential development of a shared currency. The BRICS New Development Bank was proffered as a concrete step away from the dollar. • **Including multilateralism and global governance:** The summit supported comprehensive reform of the United Nations (UN) system, including the United Nation Security Council (UNSC), to strengthen the representation of developing countries in the UN councils. In addition, the summit leaders agreed to cooperate on strengthening and protecting human rights and fundamental freedoms under the principle of mutual respect. • **Agreement on extending support for an African Continental Free Trade Agreement (AfCFTA):** The summit stressed the value of the political stability of the African continent in building market certainty. Leaders at the summit also explored potential ways and methods to strengthen communication and cooperation to expand AfCFTA. • **Emphasizing investing in agriculture and green economy**: The summit stressed transitioning to a green economy with an aim to promote eco-friendly jobs, fostering low-carbon and sustainable practices (Pramod, 2023, para. 1-5).

Table 2: BRICS Summits (2009-2020). (Source: Adapted by the researcher from different sources).

The BRICS summits have helped elevate the political and economic influence of the BRICS countries on the global stage over the past decade and a half.

Economic Growth and Development of BRICS Countries:

The BRICS economies have been the subject of significant global attention and optimism over the past two decades. These five major emerging markets, collectively accounting for 42% of the world's population and nearly

a quarter of global GDP, have been hailed as the engines of future economic growth and development. BRICS countries have experienced impressive economic strides, with each country contributing unique strengths and facing distinct challenges (Sawal and Anjum, 2023, p. 73).

China has undoubtedly been the star performer of the BRICS group. Driven by its export-oriented manufacturing prowess, massive infrastructure investments, and the rapid expansion of its domestic consumer market, China has sustained average annual GDP growth rates of around 7-8% over the past decade. This rapid growth has lifted hundreds of millions out of poverty and transformed China into the world's second-largest economy. As an economic powerhouse of the group, China has seen a gradual moderation in its growth rate, with the government focusing on fostering a more sustainable, consumption-driven model of development. In 2023, China is expected to maintain GDP growth in the range of 5-6%, a slower pace compared to the breakneck expansion of the past, but one that aligns with its objective of transitioning away from an over-reliance on investment and exports. The country's efforts to address debt levels, promote technological innovation, and mitigate the impact of an aging population will be crucial in shaping its economic trajectory in the coming years (Ali, 2019, pp. 17-8).

However, China now faces the daunting task of rebalancing its economy towards more sustainable, consumption-led growth, while also addressing rising debt levels and an aging population.

India, the other demographic giant of the BRICS, has also emerged as a fast-growing economy, with an average annual GDP growth of around 7% in the 2010s. India's growth has been fueled by expanding its services sector, a young and growing workforce, and cautious economic reforms. Yet, India continues to grapple with widespread poverty, inadequate infrastructure, and social/economic inequalities that pose challenges to inclusive and sustainable development. Despite the challenges posed by the COVID-19 pandemic, the Indian economy is poised to grow by around 7% in 2023, buoyed by robust domestic consumption, a thriving services sector, and the gradual implementation of structural reforms. However, India must continue to address persistent issues such as widespread poverty, infrastructure deficits, and social/economic inequalities to ensure that the benefits of growth are more equitably distributed (Sawal & Anjum, 2023, p. 75).

Brazil and Russia, on the other hand, have experienced more uneven economic trajectories. As for Brazil, its economy struggled with political instability, high inflation, and weak productivity growth, leading to a prolonged period of stagnation. The COVID-19 pandemic further exacerbated these challenges, causing a 4.1% contraction in 2020. Brazil, after a prolonged period of economic stagnation, is cautiously optimistic about its prospects in 2023. The country's GDP is expected to expand by around 2%, driven by a recovery in private consumption, commodity exports, and the gradual implementation of much-needed fiscal and structural reforms under the new administration. Yet, Brazil's ability to sustain this momentum will hinge on its success in addressing political instability, high inflation, and the lingering effects of the pandemic (Sawal & Anjum, 2023, p. 74).

Russia's economy has also faced headwinds, including the impact of low oil prices, economic sanctions, and the pandemic. While Russia has made efforts to diversify its economy, it remains heavily dependent on energy exports and vulnerable to geopolitical tensions. Russia, grappling with the ongoing impact of economic sanctions and the fallout from the Ukraine conflict, faces a more uncertain economic outlook in 2023. The Russian economy is projected to experience a modest contraction, with GDP forecasted to decline by around 1%. The country's efforts to diversify its economy, strengthen its technological capabilities, and mitigate the effects of geopolitical tensions will be crucial in determining its path forward (Sawal & Anjum, 2023, pp. 74-5).

South Africa, the smallest of the BRICS economies, has faced its own set of daunting obstacles. Plagued by high unemployment, inequality, corruption, and policy uncertainty, South Africa has struggled to achieve meaningful and sustained economic growth, with an average annual GDP growth of just 1.5% in the 2010s. The country's reliance on mining and minerals, coupled with the lack of economic diversification, has constrained its ability to foster inclusive development and create jobs for its rapidly growing population. In 2023, the country's GDP grew around 1.5%, a modest improvement from the previous year but still insufficient to address the country's high unemployment, inequality, and lack of economic diversification. Tackling corruption, implementing structural reforms, and investing in human capital and infrastructure will be essential for South Africa to unlock its long-term growth potential (Sawal & Anjum, 2023, p. 76).

Despite these varied economic trajectories, the BRICS countries remain significant players on the global stage, with the potential to shape the course of the world economy in the coming decades. Addressing structural weaknesses, investing in human capital and infrastructure, and implementing market-oriented reforms will be

crucial for the BRICS to unlock their full economic potential and ensure more equitable and sustainable development for their citizens.

The BRICS' Increasing Share of Global GDP and Trade:

Since its establishment, the BRICS countries have emerged as increasingly influential players on the world economic stage. In addition, they have seen a significant increase in their global share of GDP and global trade.

The combined share of the GDP of the BRICS countries had risen dramatically. In 2000, the BRICS accounted for 23% of global GDP. By 2022, their share had increased to around 31% of global GDP share. In 2023, the BRICS accounted for a historic 35.7% share of global GDP in Purchasing Power Parity (PPP). This growth has been driven primarily by the rapid economic expansion of China and India: China's GDP grew from around 4% of global GDP in 2000 to approximately 30% in 2023. On the other hand, India's GDP grew from 4% in 2000 to 15% in 2023. According to World Bank Data, the other BRICS countries have seen more modest increases in their global shares over this period, with a remarkable increase of 10.6%, compared to the previous year. Thus, the BRICS has seen its global economic share rise by 10.2%. Conversely, the G7 nations saw their economic indicators decline to 29% of global GDP share, the lowest in 30 years, losing 0.4% year-on-year. The G7's global GDP share has decreased by 9.7% (As cited in 'BRICS surges to 35.7% of global GDP in 2023; G7 declines to 29%', 2024, para. 1-4).

Regarding the BRICS' share of global trade, it is worth mentioning that in 2000 the BRICS countries collectively accounted for 15% of global trade exports and 12% of imports. However, the BRICS's share of global trade exports to 20%, and 15% of imports in 2023. Like in the global share of GDP, China remained the largest contributor, significantly impacting both exports and imports. In 2000, China accounted for 4% of global trade in 2000. In 2023, China's share rose to 25% (Makgetla and Zondi, 2024, p. 5).

India's share of global trade rose from 1% in 2000 to 3% in 2023. Russia's global share of trade rose from 1% in 2000 to 3% in 2023. Brazil's global share of trade rose from 1.1% in 2000 to 2% in 2023. South Africa rose from 0.7% in 2000 to 1% in 2023 (Makgetla and Zondi, 2024, p. 13).

Compared with the G7, O'Neill (2007) estimated that the BRICS will overtake the G7 economies by 2032. They will rise to be among the four most dominant economies in the world, with GDP more doubled than that of the G7 by 2050 (As cited in Chen, 2012, p. 222).

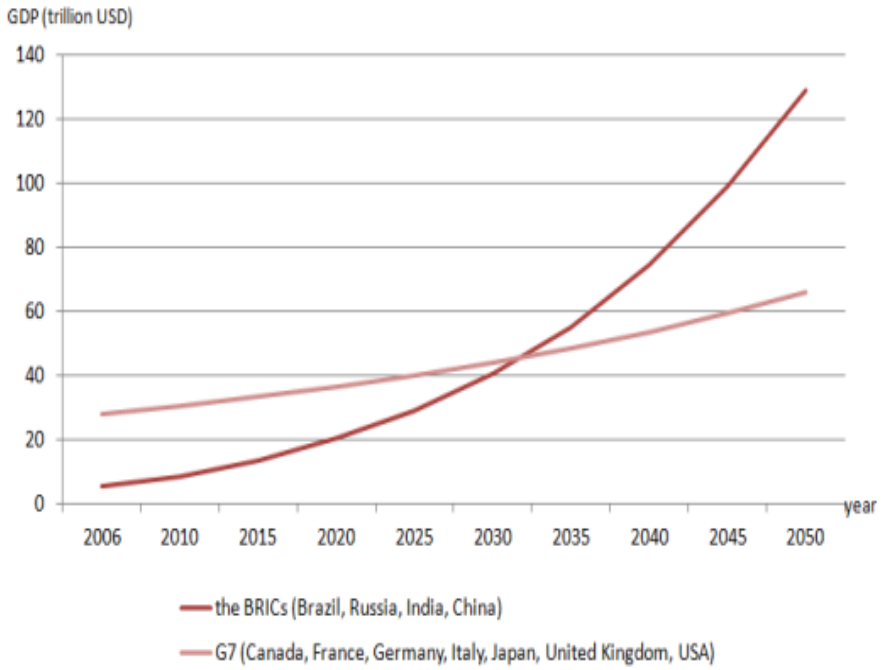

Fig. 1: GDP 2006-2025, BRICS VS G7. (Source: Adapted from Chen, 2012).

This shift in economic power dynamics has had significant geopolitical implications. The BRICS have become increasingly vocal in calling for reforms to the existing global financial and trade architecture, which they perceive

as being dominated by Western powers. The establishment of the New Development Bank and the Contingent Reserve Arrangement, both initiated by the BRICS, are examples of their efforts to create alternative institutions that challenge the dominance of the International Monetary Fund and the World Bank.

As the BRICS continue to consolidate their economic might, their influence on the global stage is poised to grow even further. The ability of these nations to harness their collective strengths and collaborate effectively will be a key factor in determining their future impact on the international order. The world is undoubtedly witnessing a profound shift in the global economic balance of power, with the BRICS emerging as a formidable force to be reckoned with.

BRICS' Efforts to Reduce Reliance on the US Dollar:

Since the BRICS have achieved remarkable economic growth—increasing their share of GDP and global trade, they have been moving progressively away from the US dollar in their international transactions. This movement will reflect a broader trend among emerging economies to seek greater autonomy in the global financial system, which has been historically dominated by the US dollar. The BRICS move signals profound implications and repercussions for the global economy and international relations (Kodabux, 2023, p. 6).

As the BRICS have taken steps for potential transition away from the US dollar, this can weaken the US dollar's primacy and confer greater eminence to the BRICS currencies in the realm of international trade (Kuehnlenz, Orsi, and Kaltenbrunner, 2023, p. 105).

The BRICS have several motivations for reducing their dependency on the US dollar. These are explained below as follows:

Economic Sovereignty: One of the primary motivations for BRICS to lessen their reliance on the US dollar is the desire for economic sovereignty. The dollar's dominance allows the US to influence global financial markets considerably. Sanctions and other financial tools can be wielded to achieve political objectives, often at the expense of other nations' economic interests. By reducing dependence on the dollar, BRICS aims to shield themselves from such external pressures (Saaida, 2024, p. 18);

Trade Facilitation and Diversification: BRICS have recognized that their trade relationships are increasingly diversified. By conducting trade in local currencies or alternative currencies, these countries can mitigate exchange rate risks and reduce transaction costs. This shift promotes intra-BRICS trade and enhances economic resilience against global market volatility. In addition, promoting trade among BRICS in local currencies can facilitate smoother transactions, reduce currency conversion costs, and enhance trade volume (Saaida, 2023, p. 36);

Diversification of Currency Reserves: Reducing dollar dependency encourages the use of alternative currencies, thus diversifying foreign exchange reserves and mitigating risks associated with dollar fluctuations (Poenisch, 2023, p. 2);

Geopolitical Realignment: The geopolitical landscape is shifting, with emerging powers seeking to assert themselves on the global stage. The US-led order is being challenged, and BRICS are positioning themselves as a counterbalance. Reducing reliance on the dollar is a strategic move to create a multipolar world where power is not concentrated in a single currency or country (Saaida, 2024, p. 18);

Economic Sanctions: Countries like Russia and Iran have faced US sanctions, prompting them to seek alternatives to the dollar to maintain trade relationships and economic stability (Saaida, 2024, p. 18);

Strengthening Regional Ties: Enhancing the use of local currencies can strengthen economic ties among BRICS, fostering collaboration and shared economic interests (Saaida, 2024, p. 18);

Influence in Global Finance: By developing alternatives to the dollar, BRICS aim to increase their influence in global financial systems and institutions. (Saaida, 2024, p. 18)

These motivations reflect a broader desire for economic independence and a more balanced international financial landscape.

Establishment of the BRICS New Development Bank (NDB):

Founded by the BRICS in 2014, the BRICS New Development Bank (NDB) was established as a response to the growing need for alternative financial institutions that cater to the needs of emerging economies. The NDB aims

to provide financial support for infrastructure and sustainable development projects within member countries and other emerging economies. Acioly da Silva (2019) highlighted below the reasons for creating BRICS' NDB:

Addressing Infrastructure Gaps: One of the primary motivations for the creation of the NDB is the significant infrastructure deficit faced by many developing countries. According to estimates from various international organizations, developing nations require trillions of dollars in infrastructure investment to meet their needs. Traditional financial institutions, such as the International Monetary Fund (IMF) and the World Bank, often fall short in addressing these demands. The NDB seeks to fill this gap by providing accessible funding for infrastructure projects.

Reducing Dependence on Western Institutions: The BRICS aimed to reduce their reliance on Western-dominated financial institutions. The NDB was conceived as an alternative to the IMF and World Bank, which have been criticized for their conditionality and governance structures that favor developed countries. By establishing the NDB, BRICS sought to create a platform that reflects the interests and priorities of emerging economies.

Promoting Sustainable Development: In addition to infrastructure financing, the NDB emphasizes sustainable development. The bank is committed to funding projects that align with the United Nations Sustainable Development Goals (SDGs). This focus not only addresses immediate infrastructure needs but also promotes long-term environmental sustainability and social equity. (pp.10-1)

Regarding its organizational framework, the NDB operates with a governance structure that includes a Board of Governors, a Board of Directors, and a President. Each BRICS country member appoints a governor, typically at the ministerial level, while the Board of Directors is responsible for day-to-day operations and decision-making. This structure ensures that all member countries have a voice in the bank's operations. As for capital and funding, the NDB was initially capitalized at $50 billion, with plans to increase this amount as needed. Member countries contribute to the bank's capital, and the NDB also raises funds through bond issuance in international markets. This diverse funding approach allows the bank to maintain flexibility in financing projects. Moreover, the NDB focuses on financing economically viable and environmentally sustainable projects. It provides loans, guarantees, and equity investments, targeting transportation, energy, and water supply sectors. The bank's project evaluation process includes rigorous assessments to ensure alignment with its development goals (Griffith-Jones, 2015, pp. 1-3).

The BRICS' NDB represents a significant shift in the global financial landscape. By providing an alternative to traditional financial institutions like the International Monetary Fund (IMF) and the World Bank, the NDB aims to address emerging economies' infrastructure and sustainable development needs. Its impacts on global finance include:

Strengthening South-South Cooperation: The establishment of the NDB represents a significant step towards strengthening South-South cooperation. By providing funding and expertise to developing countries, the bank promotes collaboration among emerging economies. This cooperation can lead to knowledge sharing and the development of best practices in infrastructure financing (United Nations Office for South-South Cooperation, 2024, para. 3-4).

Challenging the Dominance of Western Institutions: The NDB's existence challenges the longstanding dominance of Western financial institutions in global finance. It offers an alternative model that prioritizes the needs of emerging economies, potentially reshaping the global financial landscape. As the NDB grows, it may influence the policies and practices of traditional institutions, prompting them to adapt to the changing dynamics of international finance (Hofman and Srinivas, 2022, pp. 3-4);

Enhancing Financial Stability: By diversifying sources of funding and providing support to infrastructure projects, the NDB contributes to financial stability in emerging markets. By addressing infrastructure deficits, the bank helps to create more resilient economies that are better equipped to withstand global economic shocks. (Acioly da Silva, 2019, p. 9)

The establishment of the BRICS New Development Bank marks a significant development in the global financial landscape. Driven by the need to address infrastructure gaps, reduce reliance on Western institutions, and promote sustainable development, the NDB serves as a vital resource for emerging economies. Its governance structure, focus on project financing, and commitment to South-South cooperation position it as a key player in the future of international finance. As the NDB continues to grow and evolve, its impact on global financial stability and

development will be closely monitored, with the potential to reshape economic relations among emerging economies.

The Creation of BRICS Currency and Alternative Payment Systems:

As the global economic landscape evolves, the BRICS are increasingly exploring the idea of a shared currency or alternative payment systems to reduce reliance on the US dollar. This initiative reflects the desire of these emerging economies to enhance their economic sovereignty, improve trade efficiency, and create a more balanced global financial system. According to Pistilli (2024), the BRICS were motivated by the following reasons to introduce their currency:

Economic Sovereignty: One of the primary motivations for establishing a BRICS currency is to gain greater economic sovereignty. The dominance of the US dollar in global trade allows the US to exert significant influence over economies worldwide. By developing an alternative currency, BRICS aim to diminish this influence and assert their own economic policies without external pressures.

Trade Facilitation: BRICS are major trading partners, and many transactions are currently conducted in US dollars. This reliance not only incurs additional costs due to exchange rate fluctuations but also complicates trade agreements. A shared currency or alternative payment system could streamline transactions, reduce costs, and enhance trade efficiency among member countries.

Geopolitical Realignment: The rise of BRICS reflects a broader geopolitical shift towards multipolarity. As these countries seek to assert their influence on the global stage, discussions around a BRICS currency align with efforts to create a new financial architecture that better represents the interests of emerging economies. This shift aims to challenge the existing dominance of Western financial institutions and practices. (Para. 4-5).

The mechanisms for implementing the BRICS new currency and alternative payment system include:

Currency Basket Approach: One proposed mechanism for a BRICS currency is the creation of a currency basket, similar to the Special Drawing Rights (SDRs) used by the International Monetary Fund (IMF). This basket could include the currencies of all member nations, allowing for a stable exchange medium that mitigates individual currencies' volatility. Such a system would require careful coordination and agreement on exchange rates and contributions (Institute for Applied Economic Research, 2015, p. 40).

Digital Currency Initiatives: The advent of central bank digital currencies (CBDCs) presents another avenue for BRICS to explore. By developing a shared digital currency, these countries could facilitate faster and more secure cross-border transactions. Digital currencies could also accommodate innovative payment systems that enhance integration among member countries (Assen, 2021, p. 8);

Bilateral and Multilateral Agreements: To ease the transition from the dollar, BRICS nations have already engaged in various bilateral and multilateral agreements to conduct trade in local currencies. Expanding these agreements could serve as a steppingstone towards a more formalized BRICS currency or payment system. These arrangements would help build confidence and familiarity among member nations. (Bai, 2024, pp. 23-4)

It is worth mentioning that the creation of BRICS currency will have implications for the international finance system, which include:

Impact on the US dollar: Establishing a BRICS currency or alternative payment system could significantly impact on the US dollar's status as the world's primary reserve currency. A successful transition to a BRICS currency might lead to a gradual decline in dollar dominance, reshaping global financial dynamics and reducing the US economic leverage (Sullivan, 2023, para. 5-6);

Enhanced Financial Stability: By promoting trade in local currencies or a BRICS currency, member nations could reduce their exposure to currency fluctuations and financial volatility. This stability could foster stronger economic growth and development, particularly in emerging markets that are often more vulnerable to external economic shocks (Mosebua and Maswabi, 2024, p. 8);

Emergence of New Financial Institutions: Creating a BRICS currency is likely to spur the development of new financial institutions and frameworks that prioritize the interests of emerging economies. These institutions could provide alternative financing options, challenge existing structures, and promote greater collaboration among member nations. (Luna, 2016, p. 9)

The creation of BRICS currency and alternative payment systems reflects the growing ambition of these nations to reshape the global financial landscape. Motivated by the desire for economic sovereignty, trade facilitation, and geopolitical realignment, BRICS is exploring various mechanisms for implementation. While the path to a shared currency remains complex and fraught with challenges, the potential implications for international finance are profound. As the BRICS continue to collaborate and innovate, they may pave the way for a more balanced and multipolar economic order that better serves the needs of emerging economies.

Bilateral Trade Agreements Using Local Currencies:

In an era marked by increasing economic interdependence, the BRICS have taken significant steps to enhance their economic cooperation through bilateral trade agreements. A notable aspect of these agreements is the growing trend of conducting trade in local currencies rather than relying on the US dollar. This approach aims to reduce transaction costs, mitigate exchange rate risks, and foster stronger economic ties among member states. The employment of bilateral trade agreements using local currencies is driven by the following motivations:

Reducing Dependence on the US dollar: One of the primary motivations for BRICS to use local currencies in trade is to diminish their dependence on the US dollar. The dollar's dominance in global trade has historically given the United States significant leverage over other nations. By conducting transactions in local currencies, BRICS aim to enhance their economic sovereignty and reduce vulnerability to dollar fluctuations and US monetary policy (Bai, 2024, p. 29);

Enhancing Trade Efficiency: Conducting trade in local currencies can streamline transactions by eliminating the need for currency conversion. This reduces transaction costs and simplifies trade processes, making it easier for businesses to engage in cross-border trade. Enhanced trade efficiency can lead to increased trade volumes and economic growth among member nations (Sayera, Begum, Abdul Karim, and Ripon, 2024, p. 5);

Strengthening Economic Ties: Bilateral trade agreements using local currencies foster deeper economic integration among BRICS. This cooperation can strengthen political ties and create a sense of solidarity among emerging economies. As these nations collaborate more closely, they can work together on broader issues, such as sustainable development and global governance. (Yan, 2024, p. 7)

The BRICS have engaged in numerous bilateral agreements that facilitate trade in local currencies. For example, China and Russia have established agreements to conduct trade in their respective currencies, the yuan and the ruble. Similar arrangements have been made between India and Russia, as well as between Brazil and China. These agreements often outline the terms for currency exchange rates and payment mechanisms, providing a clear framework for traders (Bai, 2024, p. 24).

To facilitate transactions in local currencies, BRICS are exploring the use of digital payment platforms. These platforms can enable real-time currency conversion and secure transactions, making it easier for businesses to engage in cross-border trade. For instance, China’s Cross-Border Interbank Payment System (CIPS) serves as a model for integrating local currency transactions among BRICS (Canuto, 2023, para. 1-3).

Central banks of BRICS are increasingly collaborating to support local currency trade. By establishing currency swap agreements and sharing foreign exchange reserves, central banks can provide liquidity and stability for local currency transactions. This cooperation enhances confidence among traders and encourages the use of local currencies in bilateral trade (Mosebua and Maswabi, 2024, p. 7).

The BRICS' bilateral trade agreements using local currencies represent a significant shift in the approach to international trade among emerging economies. Motivated by the desire to reduce dependence on the US dollar, enhance trade efficiency, and strengthen economic ties, these agreements offer a framework for deeper cooperation. While challenges remain, the implications of this trend could be profound, potentially leading to a more balanced and multipolar global economy. As BRICS continues to pursue local currency trade, their collective actions may reshape the future of international trade and finance.

Calls for reform of global financial institutions (IMF, World Bank):

The BRICS have increasingly voiced their concerns regarding the existing global financial architecture, particularly the International Monetary Fund (IMF) and the World Bank. These institutions, which have traditionally been dominated by Western powers, are often seen as insufficiently representative of the interests and needs of emerging economies. The BRICS has called for reform of global financial institutions, such as the International Monetary Fund (IMF) and the World Bank for the following key reasons:

Representation and Governance: One of the primary motivations for BRICS' calls for reform is the perceived lack of representation within the IMF and World Bank. Despite the significant economic growth of emerging markets, decision-making power in these institutions remains largely concentrated in the hands of developed countries. BRICS argue that the governance structures of the IMF and World Bank do not reflect current global economic realities, necessitating a reevaluation of voting shares and leadership positions (Streltsov, Rozhin, Vosiev, and Kosnikov, 2021, p. 3);

Conditionality and Policy Influence: BRICS often criticizes the conditionality attached to loans from the IMF and World Bank. These conditions frequently mandate austerity measures and structural adjustments that may not align with the developmental priorities of recipient nations. BRICS advocates argue for a more flexible approach that takes into account the unique economic circumstances of developing countries, allowing for greater policy autonomy (Mwase and Yang, 2012, p. 5);

Focus on Sustainable Development: As emerging economies grapple with challenges such as poverty alleviation, climate change, and sustainable development, BRICS calls for a stronger focus on these issues within global financial institutions. They argue that the current frameworks of the IMF and World Bank often prioritize financial stability over developmental goals, limiting the ability of countries to address pressing social and environmental concerns. (Mwase and Yang, 2012, p. 15)

The BRICS has proposed some key reforms for global financial institutions, the IMF, and the World Bank to enhance their effectiveness and inclusivity. These are cited below as follows:

Governance Restructuring: BRICS advocates for a restructuring of governance within the IMF and World Bank to ensure more equitable representation. This includes increasing the voting shares of emerging economies and revising the allocation of executive positions. A more balanced governance structure would allow BRICS to have a greater voice in decision-making processes (Duggan, Azalia, & Rewizorski, 2022, p. 499);

Reforming Loan Conditions: The BRICS coalition seeks to reform the conditionality policies associated with financial assistance from these institutions. They propose that loan agreements should be more tailored to the specific needs of borrowing countries, allowing for developmental considerations rather than strict fiscal constraints. This would enable countries to pursue growth-oriented policies without sacrificing essential social programs (Mwase and Yang, 2012, pp. 7-8);

Enhanced Focus on Development: BRICS calls for a renewed emphasis on sustainable development goals within the mandates of the IMF and World Bank. This includes prioritizing funding for infrastructure projects, climate change initiatives, and social programs that can foster inclusive growth. By aligning financial assistance with sustainable development objectives, these institutions can better support the needs of emerging economies. ('BRICS Countries Expand Partnership for Sustainable Development,' 2023, para. 2-3)

The BRICS' calls for reform of global financial institutions stem from a desire for greater representation, flexibility in lending, a focus on sustainable development, enhanced economic sovereignty, and a more balanced geopolitical landscape. These reforms seek to create a global financial architecture that better serves the interests of emerging economies and addresses contemporary global challenges. The BRICS' reforms will have implications for the Global Financial System in the form of:

Shift in Power Dynamics: If BRICS' calls for reform are heeded, there could be a significant shift in the power dynamics of global financial governance. A more inclusive and representative system may lead to a more balanced approach to international economic policy, allowing emerging economies to play a greater role in shaping global financial norms (Haibin, 2013, p. 2);

Increased Competition: The push for reform may also spur competition among financial institutions. As BRICS explore alternative lending mechanisms—such as the New Development Bank (NDB) and the Asian Infrastructure Investment Bank (AIIB)—traditional institutions like the IMF and World Bank may be compelled to adapt to changing demands or risk losing relevance (Wang, 2019, p. 223);

Enhanced Global Stability: By addressing the concerns of emerging economies and promoting a more equitable financial architecture, reforms could contribute to greater global stability. A more representative system may lead to policies that better reflect the diverse needs of countries, reducing the likelihood of economic crises resulting from one-size-fits-all approaches. (Khan and Lima, 2024, para. 3-4).

The BRICS calls for reform of global financial institutions like the IMF and World Bank reflect a growing recognition of the need for a more equitable and representative global financial architecture. Motivated by concerns over governance, conditionality, and sustainable development, BRICS advocates for significant changes that prioritize the interests of emerging economies. The potential implications for the global financial system could be profound, paving the way for a more balanced and inclusive economic order that better addresses the challenges of the 21st century.

BRICS' De-dollarization: Potential Implications for the Global Economy:

In recent years, the BRICS have increasingly advocated for de-dollarization, seeking to reduce their reliance on the US dollar in international trade and finance. This movement is driven by various factors, including economic sovereignty, geopolitical considerations, and the desire for greater financial stability. As the BRICS have taken steps toward this de-dollarization movement, the potential implications for the global economy include:

Reduced Demand for US dollars and US Treasuries:

The movement towards de-dollarization by BRICS has significant implications for the global financial landscape, particularly concerning the demand for US dollars and US Treasuries. As these countries seek to reduce their reliance on the US dollar in international trade and finance, the potential decline in demand for US assets could reshape economic dynamics. With BRICS accounting for a significant portion of global trade, their move towards local currency transactions could have a cascading effect on other countries. As more nations adopt similar practices, the overall demand for US dollars declines, leading to a reconfiguration of international trade dynamics. This could also encourage other economic blocs to explore alternatives to the US dollar (Saaida, 2024, p. 21).

As BRICS reduce their reliance on the US dollar, their demand for US Treasuries declines, too. If these nations begin to allocate their reserves away from US debt instruments, this could lead to increased volatility in the Treasury market and higher borrowing costs for the US government. A reduction in demand for US Treasuries could result in rising interest rates. As the price of Treasuries falls due to decreased demand, yields will rise to attract buyers. Higher interest rates could lead to increased borrowing costs for consumers and businesses in the US, potentially dampening economic growth. A decline in the demand for US dollars and Treasuries could weaken the global economic influence of the US (Saaida, 2024, p. 22).

BRICS' de-dollarization efforts have significant implications for the demand for US dollars and US Treasuries. The shift towards local currencies in trade may lead to reduced demand for the dollar, impacting on its status as the world's primary reserve currency. Consequently, this demand reduction could affect US Treasury markets, influence interest rates, and weaken US economic influence globally. As these dynamics unfold, the global financial landscape may undergo profound changes, signaling a transition towards a more multipolar economic order.

Increased Volatility in Currency Markets and Exchange Rates:

As BRICS pursues de-dollarization, the global financial landscape faces significant changes. One of the critical implications of this shift is the potential for increased volatility in currency markets and exchange rates. The move towards local currency transactions among BRICS can create uncertainty in currency markets. As these countries engage in bilateral trade agreements using their currencies, fluctuations in exchange rates may become more pronounced. This transition could lead to a lack of liquidity in local currency markets, further exacerbating volatility (Saaida, 2024, p. 23).

The de-dollarization efforts of BRICS are likely to result in increased volatility in currency markets and exchange rates. The transition to local currencies, coupled with speculative trading and unpredictable trade dynamics, may create an uncertain environment for businesses and investors alike. As exchange rate fluctuations become more pronounced, the risks to financial stability in emerging economies may also increase. Understanding these implications is crucial for navigating the evolving global financial landscape as BRICS countries continue to pursue their de-dollarization objectives (Saaida, 2024, p. 24).

Shifts in Global Trade and Investment Patterns:

Since BRICS engage in bilateral and multilateral trade agreements that emphasize local currencies, the dynamics of international trade are likely to change. These nations can reduce transaction costs and exchange rate risks by conducting transactions in their currencies. This shift may encourage other countries, particularly those in the Global South, to adopt similar practices, further diminishing the dollar's role in global trade. As BRICS strengthens

economic ties through local currency agreements, they may prioritize trade with one another over traditional partners. This could result in increased intra-BRICS trade and the development of new economic blocs that focus on regional cooperation, challenging the existing trade dominance of Western economies (Saaida, 2024, p. 22).

As the demand for the US dollar decreases, investors may begin to diversify their portfolios away from dollar-denominated assets. This could lead to increased capital flows into emerging markets, as BRICS presents new investment opportunities. Such diversification may attract Foreign Direct Investment (FDI) into infrastructure projects, technology, and sustainable development initiatives. As BRICS seeks to enhance their financial systems, innovative products may emerge, enabling investors to engage in cross-border investments without relying on the dollar. This could lead to the development of regional financial markets that are less tied to traditional Western institutions.

BRICS' de-dollarization efforts are poised to bring about significant shifts in global trade and investment patterns. The increased use of local currencies, realignment of trade relationships, diversification of investment portfolios, and the emergence of new financial instruments will reshape the landscape of international commerce. The global economy may experience a transition towards a more multipolar structure, where emerging economies play a significant role in shaping economic dynamics.

CONCLUSION

The present paper analyzed the potential implications of the BRICS on the dominance of the US dollar on the global economy. The emergence of BRICS, as a cohesive economic bloc, has profound consequences for the future of the US dollar's dominance in the global economy.

This research demonstrated that the BRICS have been taking several steps to reduce their reliance on the US dollar in international trade and finance. Among these steps, we can mention (1) the promotion of bilateral trade agreements, (2) the establishment of alternative payment systems, (3) the creation of the NDB, and (4) the promotion of local currencies. These efforts reflect a broader trend among emerging economies to seek greater financial independence and reduce vulnerability to fluctuations in the US dollar and US economic policies.

Another important milestone in this research is that the BRICS' de-dollarisation efforts have several implications for the global financial system and the role of the US dollar as the world's reserve currency. So, while the US dollar remains dominant for now, the BRICS' de-dollarisation efforts signal a growing trend towards diversifying currency use in global finance, which could reshape the financial system in the coming years.

Moreover, the geopolitical ramifications of BRICS' ascent cannot be overlooked. The alliance enhances the bargaining power of its members on the global stage, potentially leading to a reconfiguration of international economic governance. As countries seek to reduce their dependence on the dollar, we may witness the emergence of a multipolar monetary system, characterized by increased competition among various currencies. While these trends may introduce short-term volatility and uncertainty in global markets, they also offer opportunities for innovation in financial systems and practices. The potential rise of digital currencies and regional trade agreements could further accelerate this transformation. Ultimately, the trajectory of the US dollar will depend on how effectively it adapts to these changes. As BRICS continues to assert its influence, the global economy may be on the brink of a significant paradigm shift, marking the beginning of a new era in international finance and trade.

While BRICS countries have made strides toward establishing alternative financial arrangements, the extent of their success will depend on their ability to navigate economic, political, and geopolitical challenges. A gradual shift away from dollar dependency is possible, but it will likely take time and require substantial cooperation and trust-building among member states and the broader global community.

Lastly, the research highlighted that shifting away from the US dollar's dominance could significantly alter the geopolitical landscape, prompting a redistribution of power, changes in alliances, and new economic dynamics. While this transition may offer opportunities for emerging economies, it also carries risks of instability and conflict as the global order adapts to new realities

The implications of BRICS' growing influence could reshape the global financial architecture, fostering a more balanced economic system that reflects the interests of a broader range of nations. This prospective study underscores the importance of monitoring these developments, as the outcomes will significantly affect global trade, investment patterns, and geopolitical relations in the years to come.

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INFLUENCE OF THE RUSSIA–UKRAINE WAR AND COVID-19 PANDEMIC ON GEOPOLITICAL RISK UNCERTAINTY, TIME-VARYING BETA AND INVESTOR'S FEAR: EVIDENCE FROM NIFITY FINANCIAL SERVICES SECTOR

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Abstract

This study aims to examine the impact of economic policy uncertainty (EPU), geopolitical risk (GPR), and asymmetric investor fear (VIX) on the Nifty financial services sector, focusing on the varying levels of shock transmission across different market conditions over four distinct periods. Utilizing quantile regression techniques, we analyze monthly data from 2018 to 2023. Our results indicate that EPU measures generally possess limited predictive power on stock returns. GPR is found to influence returns under bullish market conditions, particularly during the Russia-Ukraine war period. Additionally, time-varying beta is observed across all periods except for the pre-COVID-19 period under bearish conditions. Our findings also reveal asymmetric effects of the VIX, with investor fear in India not being evident during the war period but becoming apparent when the VIX increased before and during the COVID-19 period. This suggests that the VIX serves as a useful hedge against downside risks. These insights offer important implications for market regulation and portfolio management.

Keywords: geopolitical risk, uncertainty, fear, Time-varying beta, asymmetric, Quantile analysis, COVID-19, war

INTRODUCTION

In financial economics research, the discussion surrounding the impact of economic policy uncertainty (EPU) has garnered significant attention, particularly following the 2007–2008 global financial crisis. During this period, investors and regulators became increasingly concerned about the potential negative effects of economic policies on stock market performance (Arouri et al., 2016). The Russia-Ukraine conflict has created ripples throughout the global economy, resulting in sanctions and trade restrictions imposed on Russian banks, businesses, and individuals (Berner et al., 2022). This situation is likely to exacerbate uncertainty across various economies, affecting businesses, households, and financial markets. Geopolitical tensions, arising from conflicting national interests, compel countries to employ economic coercion through strategic means, thereby influencing global trade dynamics (Clayton et al., 2023). These tensions contribute to uncertainty and instability on the international stage, jeopardizing global trade and diplomatic relations. Nations directly involved in conflict experience heightened impacts, as do those connected through trade, financial markets, and other channels (Schultz, 2015). Models incorporating time-varying beta can explain much of the observed cross-sectional differences in expected asset returns without the necessity for additional factors, as highlighted by Fama and French (1995).

Additionally, price dynamics in financial markets are influenced by shifts in investor sentiment and geopolitical risk. Previous studies highlight the complex interrelationship between economics, geopolitics, market sentiment, and stock market performance (Shen & Hong, 2023). Among these key factors, geopolitical risk (GPR) and market sentiment, as measured by the Chicago Board Options Exchange's CBOE Volatility Index (VIX), are particularly significant. GPR is largely determined by a country or region's geography, which shapes its vulnerabilities and the opportunities it must be prepared to seize (Klement, 2021). For instance, most major investor concerns of this century—excluding the COVID-19 pandemic—are geopolitical in nature. Several studies have examined the causal influence of the VIX on European stock indices (Bossman et al., 2023a), with a general consensus that the VIX has demonstrated significant predictive power for certain European markets, especially since the onset of

COVID-19. The pandemic in 2020 provided a new opportunity to reassess the impact of economic policy uncertainty (EPU) on stock market performance (Yousaf et al., 2023). Similarly, the ongoing Russia-Ukraine conflict has heightened geopolitical risks, presenting new challenges (Bossman & Gubareva, 2023). Throughout these unprecedented events, the extent of changes in economic policies aimed at mitigating external shocks has been crucial for managing financial instability across various capital markets.

In this paper, we aim to explore the effects of geopolitical risk, economic policy uncertainty (EPU), asymmetric investor fear, and time-varying beta on the Nifty Financial Services Index. Specifically, we focus on the asymmetric impacts of VIX shocks by analyzing both positive and negative changes in the VIX, as well as assessing the effects of small versus large VIX fluctuations. Additionally, we employ a quantile approach to investigate the heterogeneous dependence under varying market conditions, examining four distinct periods: the full period, the pre-COVID-19 phase, and the crisis periods of the COVID-19 pandemic and the Russia-Ukraine war.

The remainder of the study is organized as follows: Section 2 provides a review of the relevant literature. Section 3 outlines the data and econometric methods employed. Section 4 presents the empirical results, while Section 5 concludes the study.

LITERATURE REVIEW

Economic Policy Uncertainty (EPU)

It is theoretically sound to investigate the relationship between economic policy uncertainty (EPU) and stock market performance, particularly in light of the recent COVID-19 pandemic (Yousaf et al., 2023) and the ongoing Russia-Ukraine conflict (Bossman & Gubareva, 2023). Below, we review several recent studies on this topic. Kundu and Paul (2022) explore how stock market returns, and volatility respond to EPU under both bullish and bearish market conditions. Shen and Hong (2023) find that risks stemming from geopolitical tensions and EPU are influenced by the Russia-Ukraine conflict. Bossman et al. (2023) examine the asymmetric effects of EPU, geopolitical risk (GPR), and market sentiment (VIX) on European Union (EU) stocks across different sectors. Their findings suggest that EPU generally has low predictive power regarding stock returns in EU sectors. However, the study highlights that EPU originating from the EU has the strongest predictive ability for EU sectoral stock returns, while EPU from the U.S. shows no significant influence on EU stock returns.

Geopolitical Risk (GPR)

The major crises of this century have predominantly been geopolitical, significantly influencing global stock market performance with varying effects across countries and regions. Given India's longstanding bilateral relations with Russia (formerly the USSR) since gaining independence in 1947, the Indian economy and financial markets are particularly vulnerable to increases in geopolitical risk (GPR) triggered by the ongoing military conflict. Kumar and Rao (2024) investigate the influence of geopolitical risk on the Indian financial sector, focusing on bonds, banking, currency, and equity markets. Utilizing a Quantile Vector Auto Regression (QVAR) model, they find that GPR has a significant impact on the Indian financial sector. Bossman and Gubareva (2023) evaluate the asymmetric financial effects of GPR resulting from the Russia-Ukraine conflict on the top seven emerging (E7) and developed (G7) stock markets using a nonparametric quantile-on-quantile regression model. Their findings reveal that the impact of GPR on stock markets is both market-specific and asymmetric. With the exception of Russia and China, all E7 and G7 markets respond positively to GPR under normal conditions. Among the E7 (G7) countries, stock markets in Brazil, China, Russia, and Turkey (France, Japan, and the US) exhibit resilience to GPR during bearish conditions. Albaity et al. (2023) demonstrate that investor sentiment during COVID-19 and economic policy uncertainty (EPU) negatively affects bank stock returns, while oil returns are significant and positive only in the lowest quantile. GPR negatively impacts bank returns up to the median quantile, but the effect becomes positive in the upper quantiles.

Fear Investor (VIX)

Academic scholars and market participants often refer to the VIX as a "fear index." Mensi et al. (2023b) examine spillovers and interconnectedness among G7 real estate markets, conducting their analysis separately for the pre-COVID-19 and COVID-19 periods. Their findings indicate that the lower and upper quantiles of returns are more sensitive to changes in factors such as the VIX compared to the middle quantiles. Najaf et al. (2023) explore the relationship between the escalation of the Russia-Ukraine conflict and stock returns, focusing on the Russian and

Ukrainian stock markets. Their results demonstrate that conflict-related news increases volatility and leads to a significant decline in stock indices for both countries, with the Russian stock market experiencing a sharper drop during the conflict's buildup and the onset of military operations compared to the Ukrainian market.

Stress Market and Risk Assessment

While there is a recognized need for time-varying beta, the debate over the appropriate estimation method remains unresolved (Nieto, Orbe, & Ainhoa, 2014). Lewellen and Nagel (2006) argued that allowing for conditional time-varying dynamics may not fully address the limitations of the traditional Capital Asset Pricing Model (CAPM). To estimate time-varying beta effectively, it is essential to make accurate assumptions about the unobservable conditional information set available to investors. Chakrabarti and Das (2021) investigate the time-varying nature of industry betas in India and the United States, finding significant volatility transmission from domestic markets to time-varying betas in both countries. In emerging markets, betas tend to increase during periods of domestic market stress, while in developed markets, betas either avoid or mitigate market stresses, thereby reducing investment risk.

In this study, we investigate the asymmetric nature of investor fear within the Nifty financial services sector by modeling both positive and negative changes in the VIX. Additionally, we analyze the effects of small and large VIX fluctuations and identify how time-varying beta transmits volatility under various market conditions across four distinct periods of extreme conditions.

MATERIALS AND METHODS

MATERIALS

We analyzed four distinct periods: the full period from January 1, 2018, to December 31, 2023; the pre-COVID-19 period from January 1, 2018, to December 31, 2019; the COVID-19 period from January 1, 2020, to February 28, 2022; and the war period from March 1, 2022, to December 31, 2023. Our analysis employs monthly data from the Nifty Financial Services Index, which reflects the performance of the Indian financial market, encompassing banks, financial institutions, housing finance, insurance companies, and other financial services firms. Additionally, we incorporate the Chicago Board Options Exchange Market Sentiment Index (VIX) and the Geopolitical Risk (GPR) Index developed by Caldara and Iacoviello (2022). We calculate time-varying beta using the lagged diagonal VECH model (Bollerslev, 1990; Bollerslev et al., 1988). Furthermore, the monthly Economic Policy Uncertainty (EPU) Index, created by Baker, Bloom, and Davis (2016), is based on the frequency of newspaper coverage.

Table 1: Definitions of all variables

Variable	Label	Definitions	Source
Nifty Financial Services Sector	Ri	The returns of the Nifty Financial Services Index include banks, financial institutions, housing finance companies, insurance firms, and other entities within the financial services sector.	Investing
Time-varying Beta	β	measures the conditional beta between the returns of the Nifty Financial Services and the market return of the Nifty 50.	Using the VECH model to calculate the returns of Nifty Financial Services in relation to the market return of Nifty 50.
Fear index	VIX	Chicago Board Options Exchange Market Sentiment	Investing
Geopolitical Risk Index	GPR	Developed by Caldara and Iacoviello (2022), the index is based on the monthly count of newspaper articles pertaining to adverse geopolitical events.	Matteoiacoviello
Economic Policy Uncertainty	EPU	It includes various sub-indices that are based exclusively on news data.	Federal Reserve Bank of St. Louis

METHODS

Stock markets frequently undergo varying conditions over time, including bearish, normal, and bullish phases. Policymakers and investors are eager to understand how uncertainty impacts stock returns in these different market conditions to formulate more refined strategies for risk management and investment. The quantile regression approach, introduced by Koenker and Bassett (1978), serves as a valuable tool for this analysis, as it enables the examination of how independent variables affect different distributions of dependent variables. Generally, the quantile regression of yi given xi is defined as follows:

$$Q_{yi}\ (\tau|x) = \alpha(\tau) + x_i'\delta(\tau)$$

where y is the dependent variable assumed to be linearly dependent on x, $Q_{yi}\ (\tau|x)$ represents the τ-th conditional quantile of yi, and $0 < \tau < 1$. $\delta\ (\tau)$ is the quantile regression coefficient, and $\alpha(\tau)$ denotes the unobserved effect.

The Time-Varying Beta

Time-varying betas are calculated using a diagonal VECH multivariate GARCH model. This choice is supported by two main reasons: first, studies by Faff et al. (2000) have shown that switching to methods such as the Kalman filter does not significantly alter the results for computing betas; second, various models from the GARCH family have proven effective in capturing volatility dynamics in the Indian stock markets (Malik, 2011). Additionally, Ronzani et al. (2017) demonstrated that applying GARCH models to compute time-varying betas yields consistent results when analyzing large datasets. The conditional beta is calculated as Conditional Var (Rmarket) is estimated from h22, t and Conditional cov (Rfinancial services sector, Rmarket) is estimated from h12;t.

$$\beta_t = \frac{\text{Conditional Cov}(R_{\text{financial services sector}}, R_{\text{market}})}{\text{Conditional Var }(R_{\text{market}})}$$

We analyze the asymmetric effects of VIX fluctuations on Indian stock returns under different market conditions.

Positive and Negative Changes in the VIX:

To evaluate the impact of VIX fluctuations on Indian stock returns across various market conditions, the following methodology is used:

$$Q_{rt}\ (\tau|x) = \alpha(\tau) + \delta_1(\tau)\Delta VIX_t^{+/-} + \delta_2(\tau)GPR_t + \delta_3(\tau)EPU_t + \delta_4(\tau)\beta_t \quad (1)$$

An increase in the VIX indicates that investors anticipate greater future volatility, which may heighten their fear. Conversely, a decrease in the VIX suggests that investors expect more stable future volatility, potentially leading to a more optimistic or exuberant outlook. This study investigates these asymmetric reactions by analyzing both positive and negative changes in the VIX.

Small and Large Changes in the VIX:

$$Q_{rt}\ (\tau|x) = \alpha(\tau) + \delta_1(\tau)\Delta VIX_t + \delta_2(\tau)GPR_t + \delta_3(\tau)EPU_t + \delta_4(\tau)\beta_t \quad (2)$$

The group of large changes includes months with unusually high positive and negative shifts (10%) in the VIX, while the small changes group consists of the remaining months. In this paper, five quantiles are selected: τ = (0.10, 0.25, 0.50, 0.75, and 0.90). The lower quantiles (0.10 and 0.25) represent bearish market conditions, the median quantile (0.50) denotes normal market conditions, and the upper quantiles (0.75 and 0.90) correspond to bullish market conditions.

FINDINGS

In Figure 1, it is evident that the NIFTY Financial Services Index experienced a sharp decline in returns in 2020, during the COVID-19 pandemic. This period also witnessed peaks in Economic Policy Uncertainty (EPU), the Volatility Index (VIX), and Time-varying beta. A similar peak in Geopolitical Risk (GPR) occurred in 2022, coinciding with Russia's invasion of Ukraine, which began in February 2022. These events provide a valuable opportunity to analyze the asymmetric effects of VIX measures, geopolitical risk, EPU, and Time-varying Beta on the NIFTY Financial Services sector.

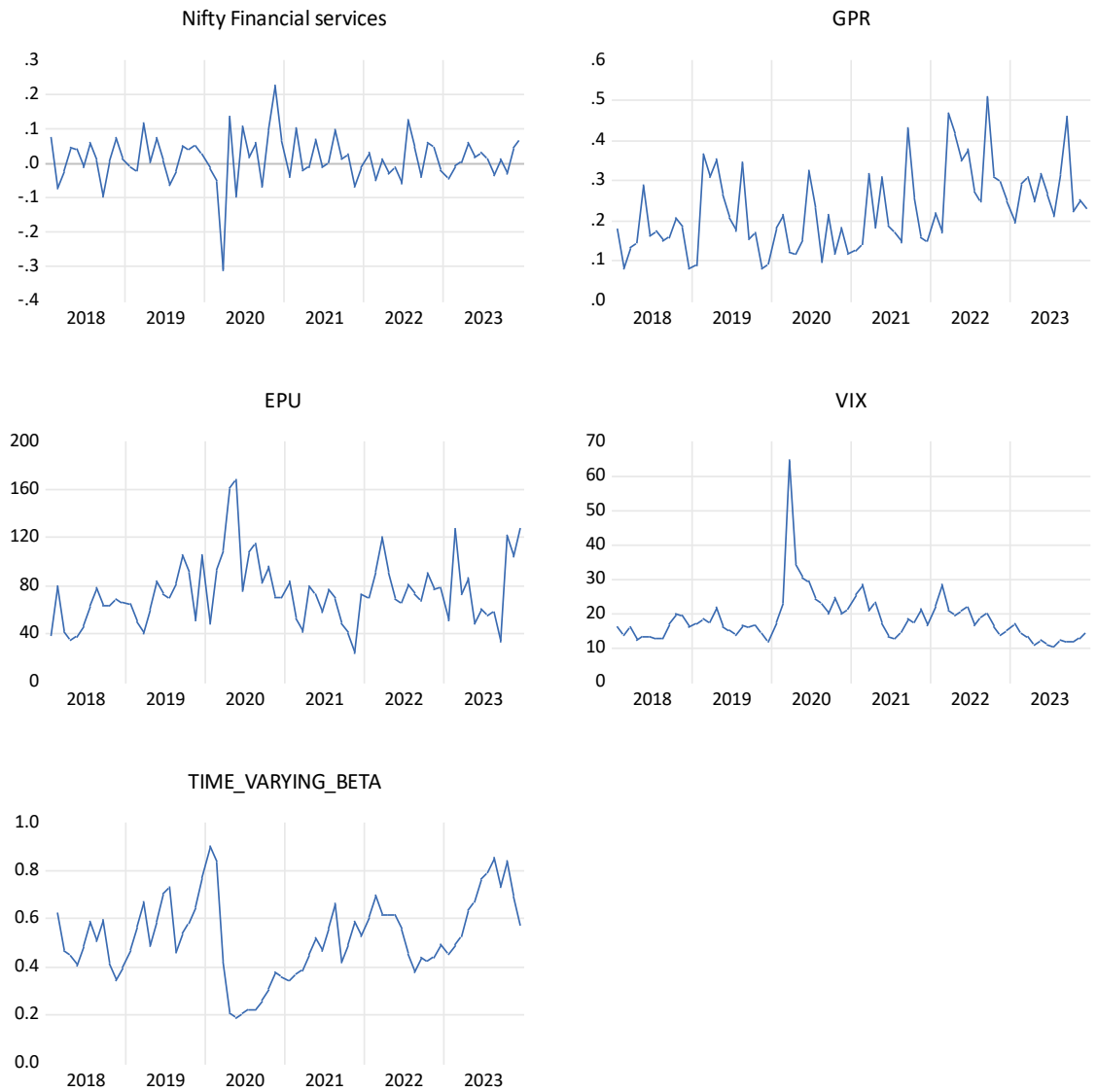

Figure 3: Time series plot the monthly observations of variables from 2018-2023

The sample statistics presented in Table 2 indicate that, the sample period, mean stock returns are NIFTY Financial Services in are positive across different distinct time intervals.

The return series exhibits leptokurtic characteristics during both the full period and the COVID-19 period, while it is platykurtic in the pre-COVID-19 period and the Russia–Ukraine War. The return series is negatively skewed, except during Russia–Ukraine War when it is positively skewed. In the full period, the VIX has a mean of 18.2675, with a peak of 64.4075. The GPR has a mean of 0.226901, reaching a high of 0.506627. The EPU records a mean of 74.90956, with a peak of 167.7502. The time-varying beta has a mean of 0.522622 and a peak of 0.899445.

In the full period, all series reject the normality hypothesis, while the time-varying beta accepts it. In the pre-COVID-19 period, all series accept the normality hypothesis. During the COVID-19 period, all series reject the normality hypothesis, except for both the Economic Policy Uncertainty (EPU) and the time-varying beta, which accept the normality hypothesis. In the Russia–Ukraine War period, all series accept the normality hypothesis.

In terms of stationarity, all series were stationary at level, except for the time-varying beta and the Economic Policy Uncertainty (EPU), which were stationary at the first difference during both the pre-COVID-19 and COVID-19 periods.

Table 2: Descriptive Statistics in the Full Period, Pre COVID-19 and Crisis Periods of COVID-19 & Russia–Ukraine War

	Full Period				
	NIFTY Financial Services	**VIX**	**EPU**	**GPR**	**Time varying beta**
Mean	0.012601	18.2675	74.90956	0.226901	0.522622
Min	-0.3132	10.4125	23.35276	0.079048	0.184356
Max	0.2284	64.4075	167.7502	0.506627	0.899445
SD	0.070449	7.48503	27.99233	0.09974	0.164640
Kurtosis	8.628195	21.32219	4.364625	3.023812	2.664757
Skewness	-0.896825	3.506207	0.968537	0.731427	0.092743
Jarque Bera	0.000000	0.000000	0.000220	0.040326	0.804825**
ADF p-value	0.000***	0.001***	0.0001***	0.000***	0.0000*** 1st difference
	Pre COVID-19 Period (01-01-2018 31-12-2019)				
Mean	0.01505	15.58625	65.06107	0.188573	0.543270
Min	-0.0974	11.6675	34.9232	0.079048	0.342934
Max	0.1173	21.8275	106.0355	0.363516	0.773863
SD	0.051154	2.575506	20.12906	0.087921	0.115077
Kurtosis	2.775201	2.77979	2.453277	2.457001	2.223568
Skewness	-0.274369	0.503422	0.352109	0.688451	0.255252
Jarque Bera	0.838765**	0.587950**	0.672055**	0.334421**	0.661172**
ADF p-value	0.0005***	0.0002***	0.0002*** 1st difference	0.0414**	0.0007*** 1st difference
	COVID-19 Period (01-01-2020 28-02-2022)				
Mean	0.010973	23.41183	79.74081	0.193029	0.445103
Min	-0.3132	12.8025	23.35276	0.097956	0.184356
Max	0.2284	64.4075	167.7502	0.430712	0.899445
SD	0.099559	9.931876	33.36785	0.07904	0.190580
Kurtosis	5.955101	12.31389	4.160925	4.419085	2.846306
Skewness	-0.886831	2.767268	1.008087	1.315433	0.640198
Jarque Bera	0.001606	0.000000	0.053297**	0.007908	0.406240**
ADF p-value	0.0001***	0.0231**	0.000*** 1st difference	0.0005***	0.0078*** 1st difference
	Russia–Ukraine War Period (01-03-2022 31-12-2023)				
Mean	0.011855	15.11284	79.94373	0.308745	0.592648
Min	-0.0608	10.4125	32.9094	0.195855	0.374860
Max	0.1269	21.84	128.5372	0.506627	0.856316
SD	0.045861	3.649255	26.71436	0.087254	0.142121
Kurtosis	2.955406	1.831562	2.362545	2.796873	2.027452
Skewness	0.525389	0.442118	0.454437	0.885509	0.341727
Jarque Bera	0.602316**	0.373777**	0.568445**	0.233056**	0.523297**
ADF p-value	0.0012***	0.000***	0.0168**	0.0014***	0.0014*** 1st difference

Note: ***, ** denote statistical significance at 1%, 5% respectively

The estimation results of Equation (1) under negative changes in VIX values are presented in Table 3. Throughout the overall period, the coefficient of the GPR is significantly negative at the 5% level during bullish market conditions (90%). The coefficients of the ΔVIX are significantly positive at both the 5% and 10% levels under bearish, normal, and bullish market conditions (10%, 25%, 50%, 75%, 90%). Additionally, the coefficient of the time-varying beta is significantly positive at the 1% level under bearish market conditions (10%). During the COVID-19 period, the coefficient of the time-varying beta is significantly positive at the 5% level under bearish market conditions (25%). In the context of the Russia–Ukraine War, the coefficient of the time-varying beta is significantly negative at the 1% level under bearish market conditions (25%).

Table 3: Quantile regression analysis: GPR, EPU, ΔVIX <0, Time varying beta

	GPR	**EPU**	**ΔVIX <0**	**Time varying beta**
Tau	**Overall Period**			
10%	0.166644	-0.000484	0.051565**	0.392204***
25%	-0.025112	-5.63E-05	0.031201*	0.119360
50%	-0.099507	-9.63E-05	0.032445*	-0.061699
75%	-0.129147	0.000359	0.034919*	-0.056848
90%	-0.367967**	-0.000310	0.051437**	-0.061265
Tau	**Pre COVID-19 Period (01-01-2018 31-12-2019)**			
10%	0.370834	0.001316	0.053197	0.080863
25%	-0.044784	0.000237	0.023582	0.001805
50%	0.048345	-6.55E-05	0.041817	-0.002711
75%	0.205447	-0.000418	0.019368	0.150061
90%	0.157691	-0.000755	0.053442	0.011944
Tau	**COVID-19 Period (01-01-2020 28-02-2022)**			
10%	0.454640	0.000447	0.010904	0.473139
25%	0.684526	0.000618	0.012394	0.514857**
50%	0.048402	-0.000680	0.017321	0.092535
75%	-0.353354	-0.001334	0.021680	-0.105844
90%	-0.695728	-0.002325	0.060675	-0.193804
Tau	**Russia–Ukraine War Period (01-03-2022 31-12-2023)**			
10%	-0.118605	0.000411	0.024569	-0.067710
25%	-0.241790	-2.46E-05	0.021029	-0.313082*
50%	-0.224095	0.000101	0.025231	-0.286336
75%	-0.277316	0.000278	0.027373	-0.089531
90%	-0.218384	-0.000118	0.066969	-0.312125

Note: ***, ** and * denote statistical significance at 1%, 5% and 10% level, respectively

The estimation results of Equation (1) under positive changes in VIX values are presented in Table 4. Throughout the overall period, the coefficients of the ΔVIX are significantly negative at the 1% level under bearish, normal, and bullish market conditions (10%, 25%, 50%, 90%). In the period preceding COVID-19, the coefficients of the ΔVIX were significantly negative at the 1%, 5%, and 10% levels under bearish, normal, and bullish market conditions (25%, 50%, 75%). In the context of COVID-19, the coefficients of the ΔVIX are significantly negative at the 1% and 5% levels under normal and bullish market conditions (50% and 75%). During the Russia–Ukraine war, the GPR coefficient was significantly negative, at the 10% level under bullish market conditions (75%).

Table 4: Quantile regression analysis: GPR, EPU, ΔVIX >=0, Time varying beta

	GPR	EPU	ΔVIX >=0	Time varying beta
Tau	**Overall Period**			
10%	0.022949	-0.000206	-0.172629***	-0.080392
25%	-0.021038	-1.88E-05	-0.193121***	-0.067082
50%	-0.104019	8.50E-05	-0.226414***	-0.122111
75%	-0.096604	0.000379	-0.140957	-0.044425
90%	-0.158730	3.98E-05	-0.249550***	0.014321
Tau	**Pre COVID-19 Period (01-01-2018 31-12-2019)**			
10%	0.036910	-8.86E-05	-0.250431	-0.088706
25%	-0.019219	0.000226	-0.292037*	-0.078633
50%	0.303849	9.26E-05	-0.387470**	-0.015967
75%	0.316100	-0.000211	-0.451606***	-0.026522
90%	0.332789	-0.000311	-0.473943	-0.020334
Tau	**COVID-19 Period (01-01-2020 28-02-2022)**			
10%	0.439407	0.000462	-0.028292	0.391759
25%	0.189501	0.000139	-0.154911	0.049025
50%	-0.167945	-0.000868	-0.224689**	-0.086619
75%	-0.264015	-0.000434	-0.275141***	-0.130497
90%	-0.705864	-0.002517	-0.314959	-0.186780
Tau	**Russia–Ukraine War Period (01-03-2022 31-12-2023)**			
10%	-0.294153	0.000138	-0.674944	-0.368863
25%	-0.202459	1.77E-05	-0.243703	-0.302988
50%	-0.151092	0.000139	-0.189116	-0.225167
75%	-0.311938*	0.000287	-0.271246	-0.144742
90%	-0.301525	5.02E-05	-0.543737	-0.351498

Note: ***, ** and * denote statistical significance at 1%, 5% and 10% level, respectively

Table 5 presents the estimation results of Equation (2) for four period under large changes in VIX values. The group with large changes includes months with unusually high positive and negative changes (10%) in VIX values. In the overall period, the coefficient of the ΔVIX is significantly positive at the 5% level under bullish market conditions (90%). In COVID-19 the coefficient of time-varying beta is significantly negative at the 5% level under bearish market conditions (25%).

Table 5: Quantile regression analysis: GPR, EPU, ΔVIX > 10%, Time varying beta

	GPR	EPU	ΔVIX > 10%	Time varying beta
Tau	**Overall Period**			
10%	0.101932	-0.000168	-0.006757	0.281919
25%	-0.019518	-0.000292	0.026164	0.065225
50%	-0.022199	0.000241	-0.009818	0.015192
75%	-0.087187	0.000421	0.048128	0.063785
90%	-0.124619	0.000581	0.102505**	0.061557
Tau	**Pre COVID-19 Period (01-01-2018 31-12-2019)**			
10%	-0.031370	0.000776	-0.158859	-0.149656
25%	-0.058150	0.000569	-0.094148	-0.098204
50%	0.151213	-9.34E-05	0.049250	0.249061
75%	0.207661	-0.000355	0.000299	0.226526
90%	0.349314	5.95E-06	-0.057071	0.048904
Tau	**COVID-19 Period (01-01-2020 28-02-2022)**			
10%	0.495295	0.000226	0.031855	0.471359
25%	0.507629	-0.000152	0.163278	0.475950**
50%	-0.096098	-0.000562	0.186696	-0.148773
75%	-0.149290	-0.000512	0.087854	0.051658
90%	-0.305964	-0.000277	0.098895	-0.155879
Tau	**Russia–Ukraine War Period (01-03-2022 31-12-2023)**			
10%	0.007004	0.000250	0.105435	0.017518
25%	0.027807	0.000424	-0.156137	-0.238013
50%	-0.189099	0.000100	0.018853	-0.252324
75%	-0.189656	0.000225	-0.047195	-0.113854
90%	-0.328821	0.000124	-0.123833	-0.403098

Note: ***, ** and * denote statistical significance at 1%, 5% and 10% level, respectively

Table 6 presents the estimation results of Equation (2) for four periods under small changes in VIX values. The group with small changes includes months with unusually small positive and negative changes (10%) in VIX values. In the overall period, the coefficient of ΔVIX is significantly positive at the 5% level under bullish market conditions (90%). In COVID-19 the coefficient of time-varying beta is significantly positive at the 5% level under bearish market conditions (25%). In the Russia–Ukraine war, the coefficient of the GPR is significantly negative at the 10% level under bullish market conditions (75%). and the coefficient of the time-varying beta is significantly negative at the 10% level under bearish market conditions (25%).

Table 6: Quantile regression analysis: GPR, EPU, ΔVIX < 10%, Time varying beta

	GPR	EPU	ΔVIX < 10%	Time varying beta
Tau	**Overall Period**			
10%	0.105983	-4.42E-05	0.010443	0.365981
25%	-0.011187	-0.000325	0.024609	-0.032403
50%	-0.064262	0.000396	0.018978	-0.029404
75%	-0.061303	0.000352	-0.011067	0.026377
90%	-0.176887	8.98E-05	-0.029798**	-0.075876
Tau	**Pre COVID-19 Period (01-01-2018 31-12-2019)**			
10%	0.211235	0.001913	0.039606	0.039094
25%	-0.033276	0.000284	-0.015809	0.065461
50%	0.163669	-0.000141	0.009809	0.231178
75%	0.241669	-0.000452	0.002732	0.227719
90%	0.235153	-0.000374	0.017874	0.102997
Tau	**COVID-19 Period (01-01-2020 28-02-2022)**			
10%	0.501938	0.000294	0.035219	0.469429
25%	0.728486	0.000688	0.015930	0.500375**
50%	0.148162	-5.88E-05	0.059121	0.056126
75%	-0.349495	-0.001284	-0.022570	0.001678
90%	-0.297507	-0.001257	-0.051980	-0.270866
Tau	**Russia–Ukraine War Period (01-03-2022 31-12-2023)**			
10%	0.012760	0.000463	-0.022547	0.052418
25%	-0.115135	6.31E-05	-0.012391	-0.298760*
50%	-0.169400	-0.000172	-0.026966	-0.282207
75%	-0.257374*	-0.000398	-0.040858	-0.122982
90%	-0.245700	-0.000971	-0.056482	-0.223367

Note: ***, ** and * denote statistical significance at 1%, 5% and 10% level, respectively

DISCUSSION AND CONCLUSION

DISCUSSION

In the overall period, both negative and positive changes in the VIX demonstrate directional symmetry across bearish, normal, and bullish market conditions. This indicates that when investors' fear increases or decreases, they respond to good, neutral, and bad news in all three market conditions. During the pre-COVID-19 period, directional asymmetry is evident, as significant effects are observed only with positive changes in the VIX across all market conditions. This suggests that as investor fear rises, they react to good, neutral, and bad news. In the COVID-19 period, directional asymmetry is again noted, with significant effects appearing only with positive changes in the VIX during normal and bullish conditions. This implies that as investor fear escalates, they respond to neutral and positive news in these two conditions. This finding contradicts the directional asymmetry described by McQueen, Pinegar, and Thorley (1996), who found that stocks typically react quickly to negative macroeconomic news. Similarly, Chang, Cheng, and Khorana (2000) observed that in the U.S., stocks respond quickly to negative news. According to McQueen, Pinegar, and Thorley (1996), there is no delay in reacting to bad news because investors tend to sell stocks rapidly when economic news is inadequate. Conversely, they quickly buy large, easily priced stocks but take more time to evaluate smaller, more volatile stocks when the news is positive. Kahneman and Tversky (1979) suggest that the certainty effect leads to risk aversion in choices involving sure losses, with the value function being more pronounced for losses than for gains. Additionally, research by Ellsberg (1961) and Fellner (1961) indicates that ambiguity reduces decision weights, making uncertainty more significant for ambiguous probabilities compared to clear ones. During the Russia–Ukraine War period, there is no significant impact from either negative or positive changes in the VIX across bearish, normal, and bullish market conditions. Consequently, investor fear does not significantly influence their responses to good, neutral, or bad news in these conditions.

In the overall period, both large and small changes in the VIX show directional symmetry during bullish market conditions. This observation suggests that investors' fear, whether increased or decreased, tends to respond

positively to good news in bullish conditions, which contradicts the findings of Kahneman and Tversky (1979). However, during the other three periods—pre-COVID-19, COVID-19, and the Russia–Ukraine War—there has been no significant response to large or small changes in the VIX across bearish, normal, and bullish market conditions. This indicates that investors' fear does not significantly react to good, neutral, or bad news during these periods. We conclude that Indian investor fear is absent during the war period but becomes evident when the fear index rises both before and during the COVID-19 period.

The Geopolitical Risk (GPR) shows a negative impact during bullish market conditions, particularly in the overall period and during the Russia-Ukraine War. This finding is consistent with Kumar and Rao (2024), who identified that geopolitical risks significantly affect the Indian financial sector.

Time-varying beta shows volatility transmission across all periods, except for the pre-COVID-19 era, primarily occurring under bearish market conditions. This finding aligns with the work of Chakrabarti and Das (2021), although it shows negative significance during the Russia-Ukraine War period. According to Thomas and Kumar (2014), Indian investors employing momentum strategies may favor stocks that have recently performed well, which can include low-beta stocks during certain periods. As more investors buy these stocks, their prices rise, leading to higher returns. Consequently, high-beta stocks may underperform in comparison to low-beta stocks.

Regarding Economic Policy Uncertainty (EPU), there is no significant impact of EPU measures on stock returns across the four different periods analyzed.

CONCLUSION

We analyze the impact of economic policy uncertainty, geopolitical risk, time-varying beta, and investor fear on the returns of the Nifty Financial Services sector using quantile regression across three market conditions and four distinct periods. Our findings highlight two key points: first, the importance of hedging against extreme risks in India's economy during periods of stress; and second, the necessity of addressing the asymmetric relationships between investor fear and the Nifty Financial Services sector to effectively manage overall portfolio risks. Consequently, investors should approach investment decisions with rationality and composure. Future research should focus on examining cross-autocorrelation between large and small stock returns, taking into account directional asymmetry in both rising and falling markets concerning current and lagged market proxy returns. Regular stress testing and scenario analysis, including geopolitical risk scenarios, are essential for enhancing the resilience of financial markets.

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MAKRO EKONOMİK FAKTÖRLERİN ENDEKS FIYATLARI ÜZERİNDEKİ ETKİSİNİN ARDL SINIR TESTİ ILE DEĞERLENDİRİLMESİ

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Özet

Bu çalışmada Borsa İstanbul 100 endeks fiyatı (HEF) ile döviz kuru (DVZK), enflasyon oranı (ENFO), faiz oranı (FAİZO) ve üretim endeksi (URTE) arasındaki uzun ve kısa dönemli ilişkiler değerlendirilmeye çalışılmıştır. Araştırmada 2003 Ocak ile 2024 Mart zaman aralığına ait çeyrek dönem verileri kullanılmıştır. Uzun dönemli ilişkinin değerlendirilmesi amacıyla birim kök testleri (ADF-PP) yapılmış ve sonuçlara göre ARDL sınır testi uygulanmıştır. Modelin varsayımlarının test edilmesi ve tüm varsayımların sağlanmasının ardından kısa dönemli ilişki tespiti amacıyla Hata Düzeltme modeli uygulanmıştır. ARDL sınır testi sonuçlarına göre, BIST 100 endeks fiyatı (HEF) bağımlı değişkeni ile enflasyon oranı (ENFO), faiz oranı (FAİZO) ve üretim endeksi (URTE) arasında pozitif yönlü anlamlı bir ilişki elde edilmişken, döviz kuru ile negatif yönlü bir ilişki olduğu sonucuna varılmıştır. Kısa dönemli ilişki analizinde de benzer bulgulara ulaşılmıştır. Enflasyon oranı (ENFO), faiz oranı (FAİZO) ve üretim endeksinde (URET) yaşanan artışlar belirli oranlarda BIST 100 endeks fiyatında (HEF) artışa neden olurken, döviz kurunda (DVZK) yaşanan bir artış BIST 100 endeks fiyatında (HEF) bir azalışa neden olmaktadır.

Anahtar Kelimeler: Makro Ekonomik Faktörler, Hisse Senedi Fiyatı, ARDL Sınır Testi

EVALUATION OF THE IMPACT OF MACROECONOMIC FACTORS ON INDEX PRICES BY ARDL BOUNDS TEST

Abstract

In this study, it is attempted to evaluate the long and short-term relationships between Borsa Istanbul 100 index price (HEF) and exchange rate (DVZK), inflation rate (ENFO), interest rate (FAIZO) and production index (URTE). Quarterly data for the period between January 2003 and March 2024 are used in the study. In order to evaluate the long-run relationship, unit root tests (ADF-PP) were performed and ARDL bounds test was applied according to the results. After the assumptions of the model were tested and all assumptions were met, the Error Correction model was applied to determine the short-term relationship. According to the ARDL bounds test results, a significant positive relationship was found between the dependent variable BIST 100 index price (HEF) and the inflation rate (ENFO), interest rate (FAIZO) and production index (URTE), while a negative relationship was found with the exchange rate. Similar findings were obtained in the short-run relationship analysis. Increases in inflation rate (ENFO), interest rate (FAIZO) and production index (URET) cause an increase in BIST 100 index price (HEF) at certain rates, while an increase in exchange rate (DVZK) causes a decrease in BIST 100 index price (HEF).

Keywords: Macroeconomic Factors, Stock Price, ARDL Bounds Test

GİRİŞ

Finansal piyasalar, küresel ve yerel makroekonomik gelişmelere hızlıca tepki verebilen, son derece karmaşık ve dinamik sistemlerdir. Bu piyasalar, yatırımcı beklentileri, risk iştahı ve stratejik kararlar üzerinde doğrudan etkili olan makroekonomik göstergelerden etkilenmektedir.

Finansal piyasalar, Etkin Piyasa Teorisine göre mevcut bilgi ve beklentilerin hızla fiyatlara yansıdığı karmaşık yapılar olarak kabul edilir (Fama, 1970). Ancak gelişmekte olan ülkelerde, makroekonomik faktörlerin yarattığı belirsizlik ve dalgalanma daha belirgindir. Döviz kuru, enflasyon ve faiz oranları gibi makroekonomik göstergeler, küresel gelişmelerin yansımaları olarak finansal varlıkların değerini doğrudan etkiler. Özellikle döviz kuru

dalgalanmaları, ithalata bağımlı ekonomilerde maliyetleri artırarak hisse senedi fiyatlarını baskılar (Chen, Roll ve Ross, 1986). Faiz oranları ve enflasyon artışı da yatırım kararlarını ve finansman maliyetlerini etkileyerek piyasalarda önemli değişikliklere neden olur (Fisher, 1930).

Döviz kuru, enflasyon, faiz oranları ve üretim endeksi gibi temel makroekonomik faktörler, hisse senedi piyasalarındaki fiyat hareketlerinin belirleyici unsurlarıdır. Özellikle gelişmekte olan ülkelerde bu göstergelerin hisse senedi fiyatlarına olan etkisi daha belirgin bir şekilde gözlemlenmektedir. Gelişmekte olan ekonomilerinde, finansal varlıkların fiyatlanmasında makroekonomik göstergeler kritik bir öneme sahiptir.

Türkiye'nin döviz kuru şokları yaşayan ve dış ticaret açığı olan ekonomik yapısı, küresel ekonomiye bağımlılığı arttırmaktadır. Bu nedenle Türkiye ekonomisi iç ve dış şoklara karşı gösterdiği kırılgan hale gelmektedir. Bu kırılganlık, makroekonomik değişkenlerin finansal piyasaları üzerindeki etkisini arttırmaktadır (Mundell, 1963). Dolayısıyla, Türkiye'de makroekonomik göstergeler ile finansal piyasalar arasındaki ilişkinin çözümlemesi, piyasa katılımcıları ve politika yapıcılar açısından önemi büyüktür. Bu bağlamda, BIST 100 endeksinin makroekonomik göstergelere verdiği tepkinin anlaşılması, finansal piyasaların dinamiklerini çözümlemek açısından stratejik bir öneme sahiptir.

LİTERATÜR ARAŞTIRMASI

Makroekonomik faktörlerin hisse senedi piyasaları üzerindeki etkilerini inceleyen çok sayıda çalışma, bu faktörlerin yatırımcı davranışlarını ve piyasa performansını belirleyen önemli unsurlar olduğunu ortaya koymuştur.

Makroekonomik faktörlerin hisse senedi piyasaları üzerindeki etkilerini ilk araştıranlardan olan Fama (1981), bu konuda öncü çalışmalardan birini yapmış ve ekonomik büyüme ile hisse senedi getirileri arasındaki ilişkinin pozitif yönlü olduğu tespit etmiştir. Fama, ekonomik temellerin hisse senedi fiyatlarını güçlü bir şekilde etkilediğini ve makroekonomik göstergelerin yatırımcı kararları üzerinde belirleyici olduğunu ortaya koymuştur. Bu çalışma, hisse senedi fiyatları ile makroekonomik faktörler arasındaki ilişkiye dair teorik ve ampirik temel oluşturan önemli bir referans olarak kabul edilmektedir.

Chen, Roll ve Ross (1986) ise hisse senedi getirilerinin enflasyon, faiz oranları, üretim büyümesi ve döviz kuru gibi makroekonomik faktörlerden doğrudan etkilendiğini ampirik olarak desteklemiştir. Özellikle enflasyonun hisse senedi getirileri üzerindeki olumsuz etkisini vurgulayan bu çalışma, makroekonomik değişkenlerin piyasa dinamikleri üzerindeki kritik etkisini ampirik olarak desteklemiştir. Hem Fama (1981) hem de Chen, Roll ve Ross (1986), ekonomik büyüme, enflasyon ve faiz oranları gibi makroekonomik değişkenlerin hisse senedi getirileri ile anlamlı ilişkiler sunduğunu göstermiştir.

Mukherjee ve Naka (1995), Japonya hisse senedi piyasasında döviz kuru, enflasyon oranı ve para arzı gibi makroekonomik göstergelerin hisse senedi endeks fiyatları üzerindeki uzun vadeli etkilerini incelemiştir. Johansen eşbütünleşme testi kullanılarak yapılan bu çalışmada, döviz kuru ve faiz oranlarının endeks fiyatları üzerinde önemli etkiler yarattığı tespit edilmiştir. Mukherjee ve Naka'nın bulguları, Chen, Roll ve Ross (1986) tarafından öne sürülen makroekonomik değişkenlerin hisse senedi piyasaları üzerindeki etkilerine dair bulgularla uyumludur ve bu etkilerin gelişmiş piyasalarda da gözlemlenebileceğini ortaya koymuştur.

Gelişmekte olan piyasalara odaklanan Ologunde, Elumilade ve Asaolu (2006) çalışmasında, faiz oranları ve enflasyonun hisse senedi fiyatları üzerindeki etkileri Nijerya piyasaları üzerinde incelenmiştir. Çalışmada, faiz oranlarındaki artışların hisse senedi fiyatlarını düşürdüğü, enflasyonun ise piyasa getirilerini olumsuz yönde etkilediği tespit edilmiştir. Bu bulgular, özellikle enflasyonun hisse senedi piyasası üzerindeki negatif etkisini vurgulayan Chen, Roll ve Ross (1986) ile benzerlik göstermektedir.

Türkiye piyasası üzerinde yapılan çalışmalarda ise Karaca, Koyuncu ve Çevik (2021), BİST Mali Endeksi (XUMAL) ile döviz kuru, faiz oranı, enflasyon oranı, altın fiyatları, kapasite kullanım oranı ve sanayi üretim endeksi gibi makroekonomik değişkenler arasındaki ilişkiyi ARDL sınır testi yöntemi ile analiz etmiştir. Sonuçlar, faiz oranları ve sanayi üretim endeksindeki artışların hisse senedi fiyatları üzerinde pozitif etkileri olduğunu, döviz kurundaki artışın ise hisse senedi fiyatları üzerinde olumsuz bir etkiye sahip olduğunu göstermiştir. Benzer şekilde, Altınbaş, Kutay ve Akkaya (2015) de BIST 100 endeksi ile döviz kuru, faiz oranı, enflasyon ve petrol fiyatları arasındaki ilişkiyi çok faktörlü regresyon modeli ile incelemiş ve döviz kurunun endeks fiyatlarını anlamlı şekilde etkileyen başlıca faktör olduğunu bulmuştur. Diğer makroekonomik faktörlerin etkileri ise sınırlı kalmıştır.

Albayrak, Öztürk ve Tüylüoğlu (2012), döviz kuru ve yabancı portföy yatırımlarının BIST 100 endeksi üzerindeki etkilerini incelemiş ve döviz kurundaki artışın endeks fiyatlarını olumsuz, yabancı portföy yatırımlarındaki artışın ise olumlu yönde etkilediğini tespit etmiştir. Ayrıca, altın fiyatlarındaki artışın da BIST 100 endeksi üzerinde pozitif bir etkisi olduğu saptanmıştır.

Tablo 1'deki literatür araştırmasında görüldüğü üzere genel olarak döviz kuru, faiz oranı ve enflasyon gibi makroekonomik faktörlerin hisse senedi piyasaları üzerindeki etkilerini ele alan bu çalışmalar, bu değişkenlerin piyasa performansı üzerinde önemli rol oynadığını ortaya koymaktadır. Özellikle gelişmekte olan piyasalarda bu etkiler daha belirgin olup, küresel ekonomik koşullara bağlı olarak farklılık gösterebilmektedir. Literatürde sıkça vurgulanan döviz kuru ve faiz oranlarının hisse senedi fiyatları üzerindeki etkileri hem gelişmiş hem de gelişmekte olan piyasalarda tutarlı sonuçlar vermektedir.

Tablo 1. Literatür Araştırması Tablosu

Araştırma	**Bağımlı Değişken**	**Bağımsız Değişkenler**	**Yöntem**	**Bulgular**
Demirkale & Can, 2021	BIST Turizm Endeksi	USD/TL, Faiz Oranı, Petrol Fiyatları	VAR Modeli, Granger Nedensellik Testi	Döviz kuru ve faiz oranındaki değişimler, turizm endeksi üzerinde güçlü bir etki göstermiştir.
Karaca & Koyuncu, 2020	BIST-100 Endeksi	Kredi Temerrüt Takasları, Faiz, Dolar Kuru	ARDL Yaklaşımı	Faiz oranı ve dolar kuru, BIST-100 endeksi üzerinde önemli ve negatif bir etki yaratmıştır.
Okşak & Sarıtaş, 2020	BIST-100 Endeksi	Enflasyon, İhracat, İthalat, Sanayi Üretim Endeksi	ARDL Sınır Testi, Hata Düzeltme Modeli	Enflasyon ve sanayi üretim endeksi, BIST-100 üzerinde anlamlı bir etki göstermiştir.
Haider, 2018	Karachi Meezan Index 30 (KMI 30)	Faiz Oranı, Enflasyon Oranı, Döviz Kuru, Altın Fiyatları	Çoklu Regresyon Analizi	Faiz oranı ve döviz kuru, Karachi Meezan Index 30 üzerinde önemli etkilere sahiptir.
Wahyudi, Hersugondo, Laksana & Rudy, 2017	Borsa Endeksleri (CSPI, KLCI, STI, PSE, SET)	Enflasyon, Faiz Oranı, Döviz Kuru, GSYH, Petrol Fiyatı, Ana Emtia Fiyatı, Ücretler	TARCH Analizi, GARCH, ADF, White Testi	Döviz kuru ve faiz oranları, Güneydoğu Asya borsa endekslerinde belirleyici faktörler olmuştur.
Duy, 2016	VN-Index	Enflasyon, Faiz Oranı, Para Arzı, Döviz Kuru, Petrol Fiyatı, Altın Fiyatı, Sanayi Üretim Endeksi	VECM, Johansen Eş Bütünleşme Testi, Granger Nedensellik Testi	Enflasyon ve döviz kuru, VN-Index üzerinde negatif bir etki yaratmıştır.
Omoruyi & Izekor, 2015	NSE All Share Index	Enflasyon, Faiz Oranı, Para Arzı, Sanayi Üretim Endeksi, Petrol Fiyatı, Döviz Kuru	Johansen Eş Bütünleşme Testi, Granger Nedensellik Testi, ECM	Döviz kuru ve enflasyonun borsa üzerinde negatif bir etkisi bulunmuştur.
Altınbaş, Kutay & Akkaya, 2015	BIST-100 Endeksi	Enflasyon, Döviz Kuru, Sanayi Üretim Endeksi, Petrol Fiyatları	Çok Faktörlü Regresyon, Johansen Eş Bütünleşme Testi, Granger Nedensellik Testi	Döviz kuru ve enflasyon oranları, BIST-100 endeksi üzerinde negatif etkiler göstermiştir.

Albayrak, Öztürk & Tüylüoğlu, 2012	İMKB-100 Endeksi	Faiz Oranı, ABD Dolar Kuru, Altın Fiyatları, Portföy Yatırımları, DYYT	Prais-Winston Regresyon Analizi	Faiz oranı ve dolar kuru, İMKB-100 üzerinde belirgin ve negatif bir etkiye sahiptir.
Naik & Padhi, 2012	BSE Sensex	Sanayi Üretim Endeksi, Toptan Fiyat Endeksi, Para Arzı, Faiz Oranı, Döviz Kuru	Johansen Eş Bütünleşme Testi, VECM, Granger Nedensellik Testi	Faiz oranı ve sanayi üretim endeksi, BSE Sensex üzerinde belirgin etkilere sahiptir.
Öztürk, 2012	İMKB-100 Endeksi	Mevduat Faiz Oranı, Döviz Kuru, Altın Fiyatları	Otoregresyon Yöntemi (CO, PW, ML)	Döviz kuru ve faiz oranları, İMKB-100 endeksinde güçlü etkiler yaratmıştır.

Bu çalışmalardan elde edilen bulgular, genel olarak makroekonomik göstergelerin hisse senedi fiyatları üzerinde önemli bir rol oynadığını ve bu etkinin hem gelişmiş hem de gelişmekte olan piyasalarda gözlemlendiğini ortaya koymaktadır.

Türkiye gibi gelişmekte olan ülkelerde ise bu faktörlerin etkileri dönemsel olarak değişiklik gösterebilmekte ve piyasa dinamikleri, küresel şoklar karşısında daha kırılgan bir yapıya sahip olabilmektedir.

Literatürdeki bu çalışmaların aksine, bu çalışma, Türkiye'de makroekonomik faktörlerin BIST 100 endeksi üzerindeki etkilerini hem kısa hem de uzun vadede incelemekte ve 2003-2024 zaman aralığındaki çeyrek dönem verilerini kullanarak daha kapsamlı bir analiz ve finansal piyasalara yönelik yeni bulgular sunmaktadır.

UYGULAMA

Araştırmanın Amacı ve Önemi

Türk finansal sistemi içerisinde sermaye piyasaları büyük önem arz etmektedir. Sermaye piyasalarında işlem gören en önemli finansal araçlardan bir tanesi hisse senedidir. Hisse senetleri hem kurumsal hem de bireysel yatırımcılar için önemli bir yatırım ve tasarruf aracı olarak değerlendirilmektedir. Ancak özellikle gelişmekte olan ülkelerde sermaye piyasaları her zaman etkin olmamakta ve bu durumda yatırımcılara normalüstü veya normalden daha düşük kazanç sağlamakta ve hatta bazı dönemlerde kayıplara yol açmaktadır. Hisse senedi fiyat ve getirileri birçok faktörden etkilenmektedirler. Bu faktörler işletme bazlı mikro faktörler olabileceği gibi aynı zamanda makro faktörler de olmaktadır. Bu çalışmada makroekonomik faktörlerin endeks getirileri üzerindeki etkileri uzun ve kısa dönemler için incelenmiş ve faktörlerin etki düzeyleri de değerlendirilmiştir. Bu çalışmanın önemi ise, hisse senedi fiyatını etkileyen firma bazlı faktörler yani sistematik olmayan risk şeklinde değerlendirilen bu değişkenler çeşitlendirme yoluyla azaltılabilirken, makroekonomik faktör bazlı olan ve sistematik riskler olarak değerlendirilen bu faktörler ise çeşitlendirme yoluyla azaltılamamaktadır. Bu açıdan çalışmada hisse senedi fiyatlarına etki eden makroekonomik faktörlerin neler olabileceği ve etki düzeyleri değerlendirilerek literatüre katkı sunması hedeflenmiştir.

Araştırmanın Değişkenleri ve Hipotezleri

Araştırmada BIST 100 endeksi dönemsel bazlı açılış fiyatları bağımlı değişken olarak değerlendirilmişken; makroekonomik değişkenler ise, dönemsel bazda reel döviz kurları, enflasyon oranı olarak tüketici fiyat endeksi, faiz oranı değişkeni için bir yıllık banka mevduat faiz ortalaması ve son olarak dönemsel bazlı üretim endeksi belirlenmiştir. Döviz kuru, enflasyon oranı, faiz oranı ve üretim endeksi değerleri *EVDS* (Elektronik Veri Dağıtım Sistemi)'den elde edilmişken, BIST 100 endeks fiyatları ise *investing.com* sitesinden sağlanmıştır. Çalışmada 2003: Q1-2024:Q2 çeyrek dönem verileri kullanılmıştır.

Çalışmanın Hipotezleri ise aşağıdaki gibi oluşturulmuştur.

H0a: Döviz kuru BIST 100 endeks fiyatını etkilemez

H0b: Enflasyon oranı BIST 100 endeks fiyatını etkilemez

H0c: Faiz oranı BIST 100 endeks fiyatını etkilemez

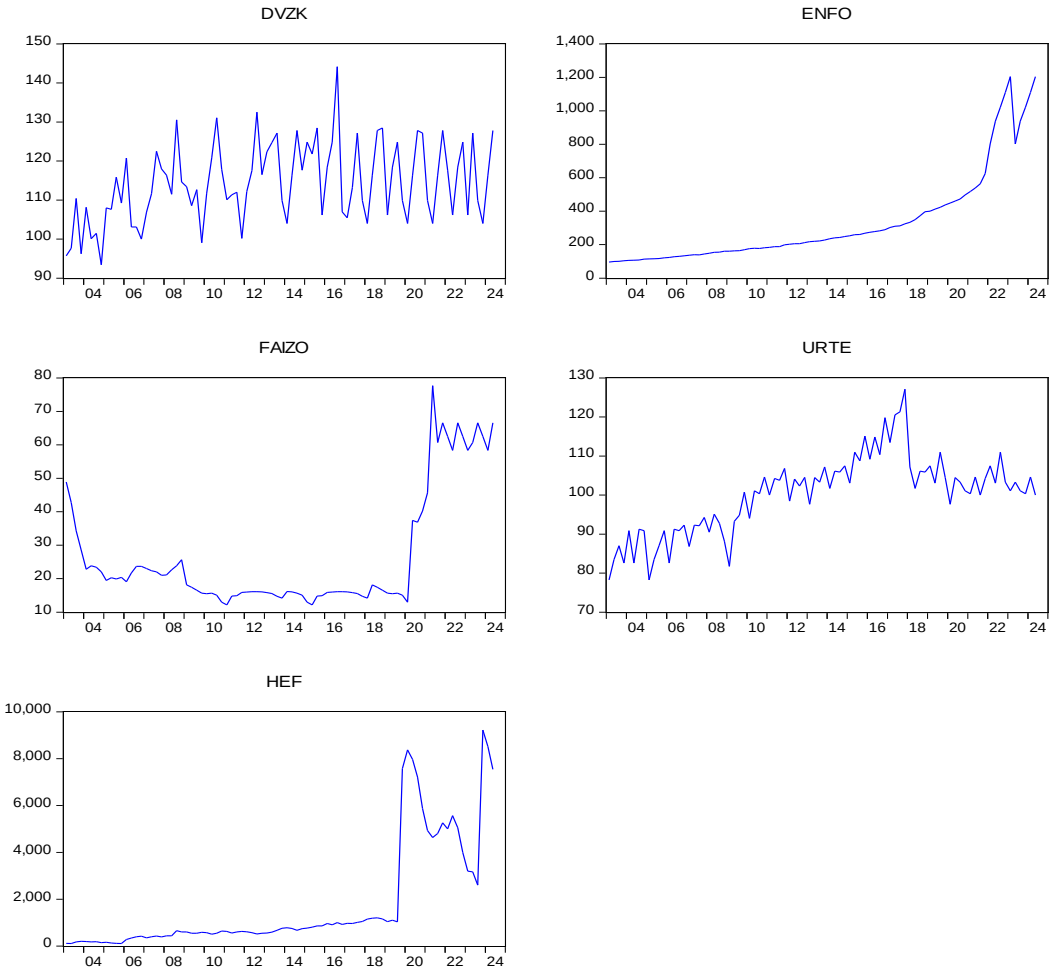
H0d: Üretim endeks değeri BIST 100 endeks fiyatını etkilemez

Veri Seti

Çalışmanın bu aşamasında bağımlı ve bağımsız değişkenlerin tanımlayıcı istatistik ve grafiklerine yer verilmiştir.

Tablo 2. Değişkenlerin Tanımlayıcı İstatistikleri

Değişkenler	Döviz kuru-DVZK	Faiz oranı-FAİZO	Enflasyon oranı-ENFO	Üretim endeksi-ÜRTE	BIST 100 endeksi- HEF
Ortalama	114.41	332.86	26.51	100.18	1755.91
Ortanca	113.30	225.57	17.79	101.70	674.06
Maksimum	144.16	1203.48	77.69	127.09	9218.30
Minimum	93.43	96.37	12.16	78.24	103.70
Standart sapma	10.10	280.48	17.47	9.93	2371.99
Gözlem	84	84	84	84	84



Şekil 1. Değişkenlerin Yıllar İtibariyle Değişimi

BULGULAR

Birim Kök Testi

Araştırmada kullanılacak analiz yöntemine karar vermek amacıyla öncelikle Augmented Dickey Fuller (ADF) ve Phillips Perron (PP) testleri yapılmış ve elde edilen değerler Tablo 3'te sunulmuştur.

Tablo 3. Birim Kök Testleri Sonuçları

Değişkenler		Phillips Perron- PP		Augmented Dickey Fuller-ADF	
		t-değeri	Olasılık	t-değeri	Olasılık
Döviz kuru-DVZK	Seviyede	-7.36	***0.00***	-4.17	***0.00***
	1. Fark	-24.51	***0.00***	-7.52	***0.00***
Enflasyon oranı-ENFO	Seviyede	-0.04	0.99	4.62	1.00
	1. Fark	-9.94	***0.00***	-4.45	***0.04****
Faiz Oranı-FAİZO	Seviyede	-2.03	0.58	-1.79	0.69
	1. Fark	-11.63	***0.00***	-11.58	***0.00***
Üretim Endeksi-URTE	Seviyede	-3.53	***0.042****	-1.37	0.86
	1. Fark	-30.08	***0.00***	-8.54	***0.00***
BIST 100 Endeks Fiyatı- HEF	Seviyede	-3.07	0.12	-2.91	0.17
	1. Fark	-9.33	***0.00***	-9.03	***0.00***

*Sabitli ve trendli model * %5 anlam düzeyi **%1 anlam düzeyi*

Tablo 3 incelendiğinde BIST 100 endeks fiyatı bağımlı değişkeninin her iki test değeri için seviyede durağan olmadığı ancak birinci farkta durağan olduğu görülürken, benzer şekilde enflasyon ve faiz oranları değişkenlerinin de birinci farkta durağan oldukları görülmüştür. Ancak döviz kuru değişkeninin her iki test değeri için hem seviyede hem de birinci farkta durağan oldukları, üretim endeksi değerinin ise PP test değerine göre hem seviye hem birinci farkta durağan ancak ADF testine göre sadece birinci farkta durağan olduğu sonucuna ulaşılmıştır. Elde edilen sonuçlara göre tüm değişkenlerin aynı seviyede durağanlaşmadığı görülürken bağımlı değişkenin birinci farkta bağımsız değişkenlerin ise farklı düzeylerde durağan olması durumunda kullanılan ARDL sınır testi uygulanması uygun görülmüştür. ARDL sınır testi analizi gerçekleştirilmeden önce uygun gecikme değeri belirlenmesi amaçlanmış ve VAR analizi yapılmıştır.

VAR Analizi

Uygun gecikme uzunluğunun belirlenmesi amacıyla Var analizi yapılmış ve sonuçlar Tablo 4'te belirtilmiştir.

Tablo 4. Uygun Gecikme Uzunluğu

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-2103.95	NA	1.06e+17	53.391	53.54	53.45
1	-1838.35	490.84	2.40e+14	47.30	48.19	47.66
2	-1794.06	76.248	1.48e+14	46.81	48.46	47.47
3	-1733.67	96.32	6.18e+13	45.91	48.31	46.87
4	-1711.03	33.23	6.81e+13	45.97	49.12	47.23
5	-1678.68	43.41	6.01e+13	45.78	49.68	47.35
6	-1564.48	138.76	6.91e+12	43.53	48.18	45.39
7	-1478.72	***93.36****	***1.71e+12****	***41.99****	***47.39****	***44.15****

LR: sıralı modifiye LR test istatistiği, FPE: Nihai tahmin hatası, AIC: Akaike bilgi kriteri, SC: Schwarz bilgi kriteri, HQ: Hannan-Quinn bilgi kriteri

Tablo 4 incelendiğinde %5 anlam düzeyi için LR, FPE, AIC, SC ve HQ bilgi kriterlerine göre değerlendirildiğinde uygun gecikme uzunluğunun 7 olduğu görülmüştür.

ARDL Sınır Testi

Bu test değişkenler arasındaki uzun dönemli eşbütünleşme ilişkisinin varlığının test edilmesi amacıyla kullanılmaktadır. ARDL testinde H0: Değişkenler arasında eşbütünleşme ilişkisinin olmadığını savunurken H0 hipotezinin reddedilmesi bize değişkenler arasında uzun dönemli bir eşbütünleşmenin var olduğunu gösterir. H0 hipotezinin reddedilebilmesi için F istatistiği değerinin kritik alt sınırdan yüksek olması gerekir. F istatistiğinin kritik alt sınırdan yüksek olması durumunda H0 hipotezi reddedilir ve değişkenler arasında uzun dönemli eş

bütünleşme ilişkisinin var olduğu söylenebilir. Değişkenler arasında uzun dönemli ilişkisinin test edilmesine dair sonuçlar ise Tablo 5'te sunulmuştur.

Tablo 5. ARDL Test Sonucu

F Testi ***H0: Değişkenler arasında eşbütünleşme yok***				
	Değer	**Olasılık**	**I(0)**	**I(1)**
Test İstatistiği		%10	2.45	3.52
		%5	2.86	4.01
	4.89	%1	3.74	4.49

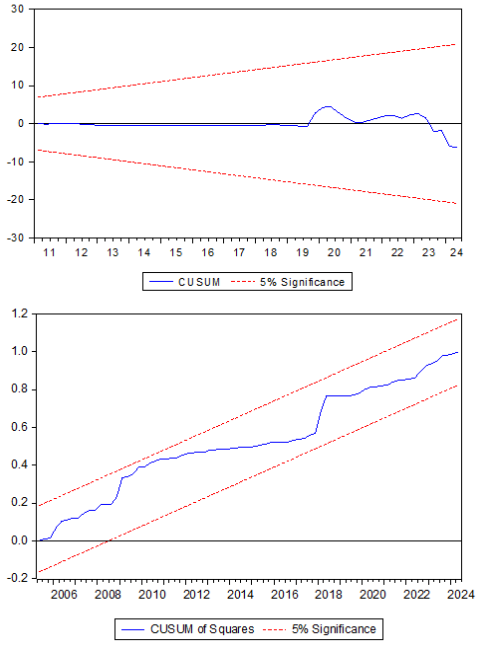
Tablo 5'e göre F testi kritik değeri 4.80 % 5 anlam düzeyi için hem I(0) hem I(1) değerlerinden (2.86-4.01) daha yüksek olduğu için H0 hipotezi reddedilmiş ve değişkenler arasında uzun dönemli eşbütünleşme olduğu görülmüştür. Bağımsız değişkenlerin uzun vadede bağımsız değişkenlerden ne denli etkilendiğini görmek için katsayı tahminlerinden yararlanmış ve elde edilen sonuçlar Tablo 6'da sunulmuştur.

Tablo 6. Uzun Dönem Katsayı Tahminleri

Denklem: HEF= 5.73-18.94*DVZK+ 38.74*ENFO+47.11*FAİZO-+35.07*URTE			
Değişkenler	**Katsayı**	**t testi**	**Olasılık**
Sabit	5.73	4.67	0.00
Döviz kuru-DVZK	-18.94	-1.69	0.04
Enflasyon oranı- ENFO	38.74	3.02	0.00
Faiz oranı- FAİZO	47.11	2.56	0.01
Üretim Endeksi- URTE	35.07	2.48	0.02
Varsayım Testleri			
Breusch-Godfrey Serial Correlation LM Testi (Otokorelasyon Testi): 0.8166			
Breusch-Pagan-Godfrey (Değişen Varyans Testi) : 0.0672			
Jarque- Bera (Normallik Testi): 0.08			
Ramsey RESET Testi (Model Kurma Hatası Testi): 0.08			

Tablo 6'da uzun dönemli katsayıların anlamlılıklarının sınandığı test sonuçları ve modelin varsayımları test edilmiş ve elde edilen bulgular sunulmuştur. Bu sonuçlara göre % anlam düzeyinde DVZK, ENFO, FAİZO ve URTE değişkenleri BIST 100 endeks fiyatı üzerinde %5 anlam düzeyinde anlamlı bir etkiye sahip oldukları görülmektedir. Değişken katsayılarına göre ise, enflasyon oranı, faiz oranı ve üretim endeksi ile hisse senedi endeks fiyatları arasında pozitif yönlü anlamlı bir ilişki söz konusuyken, BIST 100 endeks fiyatı ile döviz kuru arasında uzun dönemde negatif yönlü bir ilişki söz konusudur. Modelden elde edilen sonuçların anlamlı olabilmesi için varsayımların da sağlanması gerekmektedir. Modelin varsayımları değerlendirildiğinde modelde %5 anlam düzeyinde otokorelasyon ve değişen varyans sorunu olmadığı görülürken değişkenlerin normal dağılım özelliği gösterdiği görülmüştür. Aynı zamanda modelde %5 anlam düzeyinde model kurma hatası olmadığı da görülmüş ve elde edilen sonuçların geçerli olduğu kabul edilmiştir.

ARDL modelinin kararlı olup olmadığının araştırılması yani değişkenlerde yapısal kırılmanın olup olmadığının belirlenmesi amacıyla CUSUM ve CUSUMSQ testleri yapılmış ve elde edilen sonuçlar Şekil 2'de sunulmuştur.



Şekil 2. CUSUM ve CUSUM SQ Grafikleri

Şekil 2 incelendiğinde CUSUM ve CUSUMSQ değerlerinin % 5 anlam düzeyinde kritik sınırlar içerisinde kaldığı görülmüştür. Bu durumda da ARDL testi ile elde edilen uzun dönemli katsayıların istikrarlı olduğunu belirten H0 hipotezi kabul edilmektedir. Bu durumda yapısal kırılmayı belirten kukla değişken kullanılmasına gerek kalmamaktadır.

Değişkenler arasında kısa dönemli ilişkilerin değerlendirildiği ARDL Hata Düzeltme modelinden elde edilen veriler ise Tablo 7'de belirtilmiştir.

Tablo 7. Kısa Dönem Katsayı Tahmini Sonuçları

Denklem: HEF= -3.63*DVZK+ 4.56*FAİZO- 7.83*URTE			
Değişkenler	**Katsayı**	**T testi**	**Olasılık**
Sabit	12582.39	5.25	0.00
D Döviz kuru-DVZK	**-3.63**	**-3.96**	**0.00**
D Döviz kuru-DVZK (-1)	3.10	2.67	0.01
D Enflasyon Oranı-ENFO	1.21	0.70	0.48
D Enflasyon Oranı-ENFO (-1)	-2.16	-1.26	0.21
D Enflasyon Oranı-ENFO (-2)	-1.64	-9.93	0.00
D Enflasyon Oranı-ENFO (-3)	-4.88	-2.89	0.00
D Faiz oranı-FAİZO	**4.56**	**1.89**	**0.04**
D Faiz oranı-FAİZO (-1)	5.57	2.31	0.02
D Faiz oranı-FAİZO (-2)	6.05	2.71	0.00
D Faiz oranı-FAİZO (-3)	-9.87	-0.56	0.57
D Faiz oranı-FAİZO (-4)	3.51	1.50	0.13
D Üretim endeksi-URTE	**7.83**	**3.23**	**0.00**
D Üretim endeksi-URTE (-1)	6.17	2.53	0.01
D Üretim endeksi-URTE (-2)	5.58	2.41	0.01
D Üretim endeksi-URTE (-3)	7.44	3.08	0.00
D Üretim endeksi-URTE (-4)	2.20	0.90	0.36
ECM*(-1)	-0.21	-5.12	0.00
R2= 0.70 AR2=0.60	F istatistiği= 6.87(0.00)		Durbin Watson=2.01

Hata düzeltme modeli ile elde edilen kısa dönemli ilişki analizi değerlendirildiğinde enflasyon oranı-ENFO haricinde tüm değişkenlerin BIST 100 endeks fiyatını (HEF) etkilemektedir. ENFO değişkeninin ikinci dönem ve daha sonrası dönemlerde ise negatif anlamlı bir etkisinin olduğu görülürken, döviz kuru (DVZK)'nda yaşanacak %1 lik bir artışın HEF değişkenini %3,63 oranında azaltacağı görülmüştür. URTE değişkeninde yaşanan %1 oranındaki bir artışın HEF değişkeninde %7,83 oranında bir artışa neden olacağı görülmüştür. Faiz oranı (FAİZO) ile HEF arasında pozitif anlamlı bir ilişki olduğu görülmektedir. Faiz oranlarında (FAİZO) yaşanan %1 lik bir artışın HEF'de %4,56 oranında bir artışa neden olduğu görülmüştür. Modelin bir bütün olarak anlamlılığını sınayan F istatistik değeri olasılığının %5 anlam düzeyinde anlamlı olduğu görülürken (0.00<0.05) modelden elde edilen sonuçların anlamlı olduğu yorumu yapılabilmektedir. Aynı zamanda AR2 değeri değerlendirildiğinde DVZK, FAİZO ve URTE değişkenlerinin HEF bağımlı değişkenini açıklama gücünün %60 olduğu görülmektedir. Açıklanamayan kısmın ise modele dahil edilmemiş olan diğer makro ekonomik değişkenler kaynaklı olabileceği söylenebilmektedir.

Hata düzeltme katsayısı değerinin istendiği şekilde negatif (-0.21) ve %5 anlam düzeyinde anlamlı olduğu görülmektedir (0.00<0.05). Bu sonuç bize kısa vadede oluşabilecek sapmaların uzun dönemde denge değere yaklaştığını göstermektedir. Bu katsayı değeri, kısa dönemde yaşanan sapmaların bir sonraki dönemde %21 oranında giderilebileceğini göstermektedir.

SONUÇ

Bu çalışmada, BIST 100 endeks fiyatı (HEF) ile döviz kuru (DVZK), enflasyon oranı (ENFO), faiz oranı (FAİZO) ve üretim endeksi (URTE) arasındaki uzun ve kısa dönemli ilişkiler, 2003-2024 yılları arasındaki çeyrek dönem verileri kullanılarak incelenmiştir. ARDL sınır testi ve Hata Düzeltme Modeli yardımıyla yapılan analizlerde, makroekonomik değişkenlerin BIST 100 endeksine olan etkileri araştırılmıştır

Araştırma bulguları, BIST 100 endeksi ile enflasyon, faiz oranı ve üretim endeksi arasında uzun vadede güçlü pozitif bir ilişki olduğunu ortaya koymuştur. Bununla birlikte, döviz kurundaki değişimlerin endeks fiyatları üzerinde negatif bir etkisi olduğu gözlemlenmiştir. Kısa dönemli analizler de bu bulguları desteklemekte ancak kısa dönemde enflasyon etkisi bulunamamıştır.

Bu çalışmada kullanılan makroekonomik değişkenlerin literatürde finansal piyasalar üzerindeki etkileri vurgulanmış ve özellikle gelişmekte olan ekonomilerde güçlü bir etkiye sahip oldukları ortaya konmuştur. Döviz kuru, enflasyon oranı, faiz oranı ve üretim endeksi faktörlerinin BIST 100 endeksi üzerindeki etkilerinin incelenmesi, Türkiye'nin finansal piyasalarının makroekonomik dinamiklere verdiği tepkilerin daha kapsamlı bir şekilde anlaşılmasını sağlamaktadır. Bu nedenle, söz konusu değişkenlerin seçimi, Türkiye'nin finansal piyasalarının makroekonomik koşullara duyarlılığını daha derinlemesine analiz etmek için teorik ve metodolojik açıdan önem arz etmektedir.

Araştırma sonuçlarına göre, uzun dönemli analizlerde döviz kuru ile BIST 100 endeksi arasında negatif yönlü anlamlı bir ilişki tespit edilmiştir. Bu bulgu, literatürde Demirkale ve Can (2021), Karaca ve Koyuncu (2020) gibi araştırmalarda da görüldüğü üzere, döviz kurundaki artışların borsa fiyatları üzerinde baskılayıcı bir etki yarattığı yönündeki önceki çalışmaları desteklemektedir. Diğer yandan, enflasyon oranı, faiz oranı ve üretim endeksi ile BIST 100 endeksi arasında pozitif yönlü anlamlı ilişkiler bulunmuştur. Okşak ve Sarıtaş (2020) ve Naik ve Padhi (2012) gibi çalışmalar da enflasyon ve üretim endeksindeki artışların borsa endekslerini olumlu yönde etkilediğini göstermiştir. Bu sonuç, literatürdeki bulgularla paralellik göstermekte ve Türkiye ekonomisinin genel yapısına uygun sonuçlar vermektedir.

Kısa dönemli ilişkiler incelendiğinde, benzer bulgular elde edilmiştir. Döviz kuru ile borsa endeksi arasında negatif yönlü bir ilişki devam ederken, faiz oranı ve üretim endeksindeki artışların BIST 100 endeks fiyatlarında pozitif yönlü hareketlere neden olduğu tespit edilmiştir. Bu durum, Türkiye gibi gelişmekte olan piyasaların, makroekonomik dalgalanmalara duyarlılığını bir kez daha ortaya koymaktadır. Döviz kuru artışlarının, ithalata dayalı sektörler üzerindeki maliyet baskısını artırarak hisse senedi fiyatlarını düşürdüğü sonucuna ulaşılmıştır.

Bu çalışma, Türkiye'deki BIST 100 endeksi ile makroekonomik göstergeler arasındaki ilişkiye dair daha geniş bir zaman dilimini kapsayan bir analiz sunarak, literatüre katkı sağlamaktadır. Özellikle üretim endeksi gibi daha az incelenen bir değişkenin etkilerini derinlemesine inceleyerek, Türkiye'deki finansal piyasaların makroekonomik koşullara duyarlılığını anlamaya yönelik yeni bulgular sunmayı amaçlamaktadır.

Bu çalışma, farklı sektörlerin makroekonomik değişkenlere verdiği tepkiler incelenerek daha derinlemesine sonuçlar elde edilebilir. Ek olarak, ekonomik krizler ve pandemi gibi makroekonomik şokların finansal piyasalar üzerindeki etkileri analiz edilerek, kısa ve uzun vadeli etkileri araştırılarak geliştirilebilir.

Çalışmanın sonuçları, Türkiye ekonomisinin dinamiklerini anlamak için hem politika yapıcılar hem de yatırımcılar için önemli bilgiler sunmaktadır. Bu sonuçlar, Türkiye'nin finansal piyasaları ile makroekonomik yapısı arasındaki karmaşık etkileşimleri anlamak ve analiz etmek için değerli bir çerçeve sunmaktadır. Döviz kuru ve faiz oranı gibi temel makroekonomik göstergelerin, borsa performansı üzerindeki uzun ve kısa dönemli etkilerinin anlaşılması, ekonomik karar alma süreçlerinde daha bilinçli hareket edilmesini sağlayabilir.

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DO FINANCIAL INNOVATIONS CONTRIBUTE TO ECONOMIC GROWTH IN TÜRKİYE?

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Abstract

Financial innovations are one of the most critical dynamics of financial development and economic growth. This study aims to investigate the impact of financial innovations on economic growth in Türkiye from 2008: Q1-2024:Q2. For this purpose, firstly, a financial innovation index is created using the data of the number of active Internet banking customers, total number of customers, total transaction volume, electronic fund transfer transaction volume, credit card transaction volume, the ratio of broadly defined money supply to gross domestic product, and the volume of credit given to the private sector. Gross domestic product per capita data is used to indicate economic growth. According to the results of the Autoregressive Distributed-Lag (ARDL) model, it is concluded that financial innovations positively affect economic growth in both the short and long term during the period under review. An efficient financial system can be the driving force of economic growth. Therefore, policymakers should support policies that will encourage financial innovations.

Keywords: Financial innovation, financial innovation index, economic growth

INTRODUCTION

The first supportive idea about financial innovations came from Schumpeter, who stated that innovation could be in the form of a new product, market, raw material, or distribution method. While explaining the creative destruction process, he emphasized the effect of financial development on economic growth (Schumpeter, 1934). What financial innovations are and the importance of these innovations on economic growth has been a subject of debate for a long time (Leaven et al., 2015; Beck et al., 2016; Bernier and Plouffe, 2019). Financial innovation promotes economic activities and growth by increasing household participation in the financial system, enabling money transfers to facilitate financial transactions in international trade and ultimately increasing financial efficiency (Qamruzzaman and Jianguo, 2017).

The empirical literature on financial innovation and economic growth suggests a strong relationship between the two variables (Lumpkin, 2010; Orji et al., 2015; Bara et al., 2016). Financial innovation improves the quality of financial products, accelerates the financial development and improvement process, and increases the efficiency of financial institutions (Allen, 2011; McGuire and Conroy, 2013; Qamruzzaman and Jianguo, 2017). In addition, financial innovation contributes to financial development through improvements such as Internet and mobile banking services (Raffaelli and Glynn, 2013). Financial innovation introduces new financial instruments and institutions to the financial system and makes them popular (Sood and Ranjan, 2015). These innovations can contribute to economic growth and development by including more people in the financial system. Financial innovation is a continuous process linked to developing new financial institutions, improving financial services, creating new financial assets, and improving payment mechanisms (Velu and Khanna, 2013).

The financial development and innovation process has significant contributions to economic growth. It is impossible to measure the impact of financial innovation on economic growth by considering only one element; no single variable is calculated in the empirical literature. For this reason, researchers have used different indicators. Bernier and Plouffe (2019), who aimed to calculate a total measure of financial innovation, represented financial innovations with R&D expenditures in the financial services sector. According to the results of the analysis, financial innovations have a positive effect on economic growth through gross capital formation. According to Cheng and Degryse (2010), the diversification of financial intermediaries contributes to the development of economic activities by reducing the risk to investors. Bara et al. (2016) measured financial innovation with the M2/M1 ratio, the number of depositor customers of commercial banks, and the number of ATMs. Including people in the financial system and benefiting from financial innovations contributes to economic growth.

Bara and Mudzingiri (2016) investigated the causal relationship between financial innovation and economic growth in Zimbabwe. According to the results of the analysis, financial innovation promotes economic growth through financial development. Laeven et al. (2015) stated in their study that they used the private sector loans/GDP ratio as a proxy for financial innovations and that financial innovations to increase financial stability promote economic growth. Qamruzzaman and Jianguo (2017) explained financial innovation with the private sector loans/GDP and M2/M1 ratios. They found that financial innovation coefficients were positive and statistically significant both in the short and long term. Nazir et al. (2020) determined the domestic loans given to the private sector and the M2/M1 ratio as financial innovation indicators. The study found that financial innovations generally have a positive and statistically significant effect on short- and long-term economic growth. Adu-Asare Idun and Aboagye (2014) found a negative long-term and a positive short-term relationship between financial innovation and economic growth in Ghana. The results also prove the bidirectional Granger causality between financial innovation and economic growth. Oseni (2018) selected variables such as ATM banking, internet banking, and the number of POS as representatives of financial innovations for the Nigerian economy. Developments in all these variables positively affect economic growth. Yinusa et al. (2021) found that financial innovations significantly impact economic growth in 17 African countries in their study, where they represented financial innovation with the number of ATMs. Mollaahmetoğlu and Akçalı (2019) found that financial innovations contribute to economic growth through financial development in their study using financial innovation expenditures. Ozurumba and Charles (2019) stated that transactions made through the banking system contribute to economic growth in the Nigerian economy, but ATM transactions have a negative effect.

The subject of financial innovation has remained relatively limited for Türkiye. Financial development issues have been included in the literature rather than financial innovations, and the subject of innovation has been directly addressed. The only accessible study similar to the research question belongs to Ünal and Şahin (2021). The researchers measured financial innovation with the growth rate of gross capital formation, the growth rate of loans provided to the private sector, and the M2/M1 ratio. According to the results of the analysis, financial innovations cause economic growth. Karaçoban, Saltık, and Değirmen (2023) examined the relationship between financial innovation and economic growth in the banking sector in 81 provinces. The results support the idea that the banking sector's innovation-based products and services, under the leadership of technological developments and globalization, positively contribute to economic growth. Akyüz and Bekar (2023) used the ratio of domestic loans to the private sector to GDP, the ratio of Wide/Narrow Money Supply as financial innovation indicators, and the ratio of Gross Fixed Capital Formation to GDP as financial growth indicators. According to the results of the analysis, financial innovations have positive and negative effects on growth. Similar to this study, Özkan (2019) also created a financial innovation index from the variables he selected to represent financial innovations.

This study aims to investigate the impact of financial innovations on economic growth in Türkiye for the period 2008Q1-2024Q2. First, a financial innovation index will be calculated using a set of variables considered financial innovation in the literature. The study is expected to fill an essential gap in literature. Financial innovations have been examined in many developing countries, but innovation has been a more recent topic for Türkiye. Using the Autoregressive Distributed Lag (ARDL) model, the financial innovation index's short-term and long-term effects on economic growth can be determined.

The rest of the article is organized as follows: Section 2 explains the construction of the financial innovation index for Türkiye and the ARDL method. Section 3 presents the index's effects on growth. Section 4 comments on the analysis results in general and makes policy recommendations.

DATA AND METHODOLOGY

Data

Although financial innovation is a concept that is emphasized along with the developments in the real sector, there is no consensus on its definition and measurement. In many studies in literature, financial innovation has been represented and analyzed by one or more indicators. In this study, a financial innovation index will be created by combining multiple variables and included in the analysis. The financial innovation index to be created will consider the characteristics of financial innovation in the country and consist of variables commonly used in the literature. These are,

• Number of active customers in internet banking,

• Total number of customers in internet banking,

• Total transaction volume of digital banking,

• Electronic fund transfer (EFT) transaction volume,

• Credit card transaction volume,

• M2/GDP ratio,

• Private credit volume (Credits granted to the private sector/GDP)

The study period is determined as 2008Q1-2024Q2. The data are obtained from the Central Bank of the Republic of Türkiye, Interbank Card Center, and Turkish Banks Association data systems. In order to create the index, the time series must first be normalized. For this purpose, the empirical normalization method was used.

$$X_i^n = \frac{X_i - X^{min}}{X^{max} - X^{min}}$$

X_i^n represents the normalized time series, X^{min} and X^{max} represent the minimum and maximum observation values of the time series, respectively. The normalized time series takes values between 0 and 1, making it comparable to other series. Figure 1 shows the seasonally adjusted and normalized course of the financial innovation index's sub-indicators.

Figure 1. Financial Innovation Index Sub-Indicators

The number of active customers is critical for banks to implement financial innovations quickly and effectively, reduce costs, and increase customer loyalty. Therefore, increasing the number of active customers and ensuring that existing customers adopt financial innovations is a fundamental strategy for banks to offer innovative products successfully. Banks can reach groups that do not have access to financial services or have limited access and include them in the financial system thanks to their large customer base. The total number of customers is a critical factor for banks, as it helps them develop financial innovations, create cost advantages, reach a broad audience, and gain a competitive edge. The success of innovations can increase depending on the size and diversity of the customer base. Therefore, banks can gain a strong position by increasing their total number of customers and developing financial innovations suitable for a broad customer base. The total transaction volume in the banking system is considered an essential indicator for the development, adoption, and sustainability of financial innovations. The total transaction volume is based on many reasons that encourage banks and financial institutions to invest in new technologies and offer innovative solutions. The banking system's EFT (Electronic Fund Transfer) transaction volume is significant for developing and spreading financial innovations. EFT transaction volume increases the effectiveness of innovations such as payment systems and digital banking services and accelerates the transformation in the sector. The widespread use of EFT allows banks to strengthen their digital banking strategies, improve their infrastructures, and offer new solutions that increase customer experience. This volume is critical for cost-effectiveness, trust-building, and a broader customer base for financial innovations. High credit card transaction volume encourages the adoption of digital payment solutions and contactless payments. Since credit cards are one of the most widely used tools of digital payment systems, they pave the way for developments in this area. As the volume of credit card transactions increases, it becomes more profitable for banks to invest in new financial innovations. These additional revenues provide funds for banks to develop new products and services. The M2/GDP ratio is a critical indicator for the applicability and spread of financial innovations. A high M2/GDP ratio supports liquidity, financial deepening, and inclusiveness in the economy, enabling innovations to reach a wider audience. In addition, a balanced money supply allows financial innovations to develop in a safe and stable environment. For banks and financial institutions, the M2/GDP ratio is a critical parameter that increases the impact of financial innovations and ensures their sustainability. The credit/GDP ratio provided to the private sector is a critical indicator for developing and spreading financial innovations. A high credit ratio provides easier access to financing, supporting businesses to invest in innovative projects and develop new business models. This ensures the adoption of financial technologies, accelerating the digitalization process and increasing competition. It also ensures the sustainability of financial innovations by supporting an environment of economic stability and trust. Therefore, the credit/GDP ratio provided to the private sector plays an essential role in both the development of financial innovations and the overall growth potential of the economy.

To form the financial innovation index, each indicator needs to be weighted for the variables here. Each variable is included in the index calculation with equal weight (1/7). Based on this, the review period's financial innovation index (FII) will be in Figure 2.

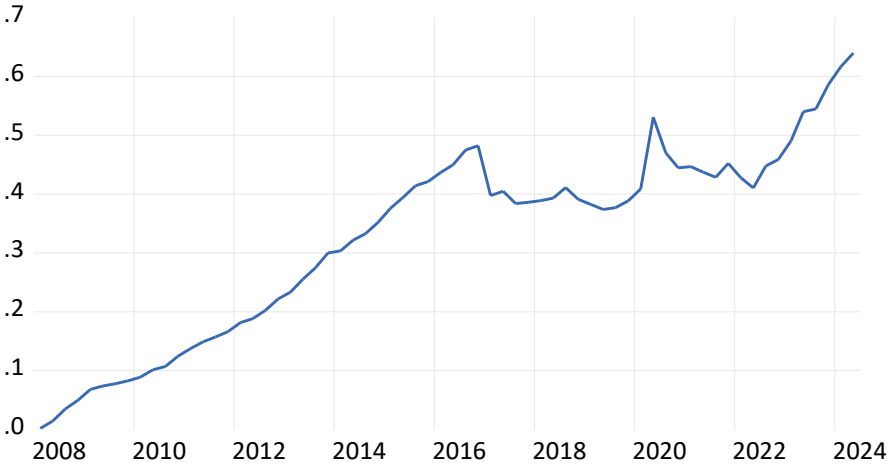

Figure 2. Financial Innovation Index

Since all sub-indicators used in the index calculation are distributed between 0 and 1, the financial innovation index also takes values between 0 and 1. An indicator value approaching 1 indicates an increase in financial innovations, while an indicator approaching 0 indicates a decrease in financial innovations. According to the graph, a continuous increase is generally observed in the financial innovation index. There was a regular increase between 2008 and 2016, and it can be said that financial innovations became widespread in the economy during this period. There was a slowdown in 2016, but it seems short-lived. A rapid increase was observed in 2020 due to the impact of the pandemic, and it can be said that innovations in the digital banking system have accelerated.

After the financial innovation index is created, the growth indicator must be determined to investigate its effect on economic growth. GDP per capita is one of the fundamental indicators of economic growth (İnal, 2013). An increase in GDP per capita in an economy means that the economy is growing. Increasing GDP per capita can indicate that the economy is expanding and that there is an improvement in the welfare level of individuals. For this reason, GDP per capita (GDPPC) was selected as the economic growth indicator. The change in the series during the review period is given in Figure 3.

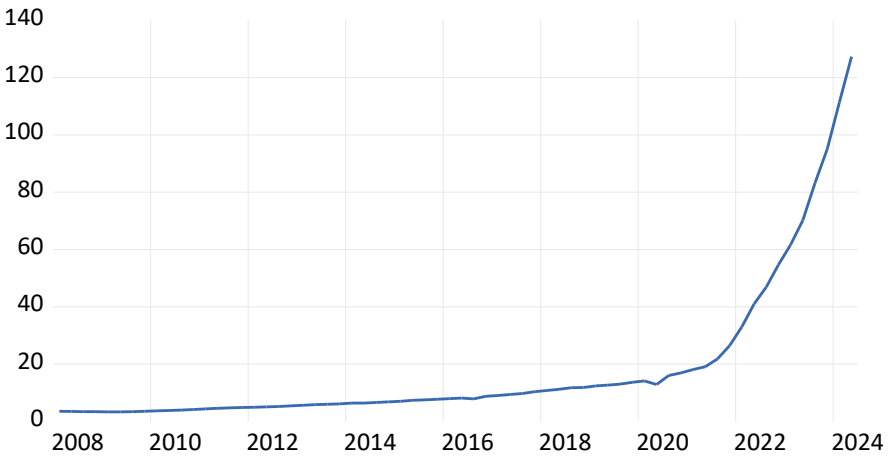

Figure 3. GDP per capita (thousand TL)

Autoregressive Distributed-Lag (ARDL) Model

In this study, the Autoregressive Distributed-Lag (ARDL) model, which is used in the analysis of both long-term and short-term cointegration relationships, was used. The ARDL model analyzes short-term and long-term effects using the dependent variable's lagged values and the independent variables' lagged values in the same model (Pesaran et al., 2001). The ARDL model can also be applied when dependent and independent variables have different unit roots. To apply the test, the dependent variable must be stationary at the first degree, but the explanatory variables can be stationary at the level or first degree.

In order to apply the ARDL test after the unit root tests, the series in the model must be normally distributed, there must be no heteroscedasticity problem, and there must be no autocorrelation problem (Pesaran et al., 2001). Assuming that all these conditions are met, the ARDL model is represented as follows:

$$Y_t = \alpha + \sum_{i=1}^{p} \beta_i Y_{t-i} + \sum_{j=0}^{q} \gamma_j X_{t-j} + \epsilon_t$$

where Y_t is the dependent variable, X_{t-j} is the independent variables and ϵ_t is the error term. The estimated model's Bounds Test results determine whether there is a long-term relationship between the variables. The error correction model coefficients can be interpreted if a long-term relationship is detected according to the F statistic critical values.

In the study, GDP per capita (*GDPPC*), financial stability index (*FII*), interest rate (*INT*), and consumer price index (*CPI*) variables were used as control variables. Based on this, the basic ARDL model to be used can be expressed as follows:

$$GDPPC_t = \alpha + \sum_{i=1}^{p} \beta_i GDPPC_{t-i} + \sum_{j=0}^{q} \gamma_j FII_{t-j} + \sum_{k=0}^{r} \delta_k INT_{t-k} + \sum_{l=0}^{z} \tau_l CPI_{t-l} + \epsilon_t$$

In the model, long-term coefficients show permanent effects between variables, while short-term coefficients show temporary effects.

FINDINGS

In the ARDL model developed by Pesaran et al. (2001), the dependent variable must be first-degree stationary, but the independent variables can be stationary at the level or first-degree. Table 1 shows the ADF, PP, and ADF with Break unit root test results.

Table 1: Unit Root Test Results

Variables	***ADF Test***	***PP Test***	***Breakpoint ADF***	
	t-stat (prob.)	*t-stat (prob.)*	*t-stat (prob.)*	*Break Date*
Level				
GDPPC	-4.4931 (1.0000)	3.2654 (1.000)	0.6880 (>0.99)	*2021Q3*
FII	-0.7299 (0.8314)	-0.7511 (0.8258)	-2.0592 (0.9788)	*2022Q3*
INT	-0.9881 (0.7526)	-0.0383 (0.9511)	-4.9900*** (<0.01)	*2018Q1*
CPI	2.5581 (1.0000)	16.7309 (1.0000)	-0.0002 (>0.99)	*2021Q1*
First Difference				
ΔGDPPC	-10.9998*** (0.0000)	-10.5075*** (0.0000)	-14.9145*** (<0.01)	*2023Q3*
ΔFII	-7.9028*** (0.0000)	-7.9132*** (0.0000)	-9.6719*** (<0.01)	*2020Q2*
ΔINT	-4.5928*** (0.0004)	-3.1797** (0.0258)	-	-
ΔCPI	-3.9458* (0.0708)	-0.8299*** (0.0057)	-13.0351*** (<0.01)	*2021Q4*
****, **, and * indicate statistical significance of 1%, 5%, and 10%, respectively. Δ is a difference indicator.*				

According to the unit root test results, all variables are stationary at the first difference I(1). This condition is compatible with the ARDL model stationarity conditions. The ARDL Bounds test results will be discussed in the next step. The null hypothesis (H_0) of the F-statistic obtained due to the ARDL bounds test is that there is no cointegration between the series. Therefore, the null hypothesis must be rejected for cointegration between the series.

Table 2: Bounds Test Results

F-statistics	**Significance Level**	**Critical Value**	
		Lower Limit I(0)	Upper Limit I(1)
	%10	2.37	3.20
13.51334***	%5	2.79	3.67
k=3	%1	3.65	4.66
**** Indicates that the H_0 hypothesis is rejected at 1% significance level, respectively. For the cointegration test, H_0: There is no cointegration.*			

As Table 2 shows, the value of the F statistic is above the upper limit at the 1% significance level. Therefore, the H_0 hypothesis is rejected and the existence of a long-term cointegration relationship between the series is proven.

Table 3: ARDL Results

Longterm coefficient				
Variables	*Coefficient*	*Std. hata*	*t-stat.*	*Prob.*
FII	1.3877	0.5537	2.5059	0.0153**
INT	0.0423	0.0191	2.2129	0.0312**
CPI	0.0011	0.2616	0.9318	0.0093***
Error correction model coefficient				
Variables	*Coefficient*	*Std. hata*	*t-stat.*	*Prob.*
D(GDPPC(-1))	-0.2790	0.1105	-2.5243	0.0146**
D(FII)	1.1281	0.1649	-6.8414	0.0000***
D(INT)	-0.0081	0.0019	-4.1692	0.0001***
D(INT(-1))	0.0041	0.0020	2.0598	0.0443**
D(CPI)	0.0006	0.0001	4.7226	0.0000***
D(CPI(-1))	0.0005	0.0001	3.2749	0.0019***
ECT(-1)	-0.0862	0.0101	8.5244	0.0000***
Descriptive test results	*t-stat.*		*Prob.*	
Heteroskedasticity test	1.0125		0.4455***	
Serial correlation test	1.1563		0.3227***	
Ramsey-Reset test	1.2763		0.2638***	
******, **, and * indicate statistical significance of 1%, 5%, and 10%, respectively.***				

Table 3 shows both long-term and short-term results. When we look at the long-term results, it is seen that the financial innovation index has a positive and significant effect (1.3877) on economic growth. The development of the digital banking system and the increase in new financial products in Türkiye facilitate capital access, reduce transaction costs, and expand investment opportunities. This accelerates economic growth. This effect is also positive and significant in the short term. The strong positive effect of financial innovations in the short term reveals that financial technologies rapidly contribute to the economy in a short time. The long-term impact of interest rates shows that interest rates play a complex role in economic growth. High interest rates encourage savings and increase capital accumulation, but this effect remains limited in the long term because high interest rates can also limit investments. Since interest rates in Türkiye change according to economic fluctuations and market confidence, their effect on growth does not give a direct and precise result. The instant negative effect of interest rates shows that high interest rates suppress consumption and investments in the short term. While the fluctuation of interest rates in Türkiye affects investors' short-term decisions, it can contribute to a more balanced growth in the long term. The positive but low impact of inflation indicates that a controlled level of inflation can stimulate growth. Low to moderate inflation can support economic growth in economies like Türkiye by buoying demand. However, high inflation can negatively affect long-term investment by reducing purchasing power and creating uncertainty. Inflation's immediate and delayed positive impacts indicate that low and predictable inflation positively impacts growth by keeping demand buoyant. In the short term, rising inflation may mean increased spending, but inflation expectations can negatively affect consumer confidence.

This model shows that financial innovations significantly support growth in Türkiye, interest rates have different effects in the short and long term, and inflation positively contributes at a controlled level. However, the slow pace of the economy returning to balance indicates that macroeconomic policies should be stable and effective. Short-term effects vary depending on economic shocks and market confidence.

CONCLUSION

In this study, the impact of financial innovations on economic growth in Türkiye was analyzed for 2008: Q1-2024. The ARDL model was created to examine the impacts of the financial innovation index, which was created using the number of active Internet banking customers, total Internet banking customers, total digital banking transaction volume, electronic fund transfer transaction volume, credit card transaction volume, M2/GDP ratio, and private sector credit volume data on GDP per capita.

The results reveal that financial innovations contribute positively to short- and long-term economic growth. Financial innovations promote growth by increasing access to capital, reducing transaction costs, and increasing efficiency. In particular, digital banking and payment system innovations have supported economic growth. In

addition, the effects of interest rates and inflation on growth have different dynamics. High interest rates suppress growth in the short term. Inflation, on the other hand, can support demand when it is at controlled levels, but high inflation can negatively affect growth by creating uncertainty.

These findings show that financial innovations in Türkiye offer significant potential for economic growth and that policy arrangements in this area can support growth. In order for financial innovations to create sustainable growth, the implementation of appropriate macroeconomic policies and regulatory frameworks is of critical importance. In this context, it is recommended that policy makers take measures that encourage financial innovations and monitor financial stability.

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WASTE MANAGEMENT IN TURKEY: THE ROLE AND IMPACTS OF NUDGE POLICIES

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Abstract

The growth in global population has resulted in a corresponding increase in consumption levels. This increase in consumption has resulted in a concomitant increase in waste, which has prompted the implementation of recycling and zero-waste policies in all countries. While these policies are rigorously implemented in some countries, others have not yet achieved sufficient levels of compliance. The deficiencies in the implementation of waste policies, which have far-reaching consequences for countries, particularly in economic terms, can be attributed to the inadequacy of the policies themselves, the lack of awareness among citizens regarding these policies, and the general lack of information among individuals. One of the most crucial strategies for enhancing citizen awareness and attaining more favorable outcomes in waste management is the use of nudge. The nudge policy, as developed by Richard Thaler and Cass Sunstein, argues that individual behaviors and choices can be influenced without the prohibition of any options, thereby guiding people toward more optimal, positive, and healthy outcomes. This policy, which is frequently employed by governments, is an effective means of addressing challenging public issues. Therefore, the present study focuses on waste management in Turkey and aims to demonstrate how waste management can be shaped by employing nudge, which is one of the key building blocks of behavioral economics. The study offers suggestions for providing more transparent solutions to the significant waste problems currently facing society and aims to achieve greater efficiency in waste policies. It is a valuable contribution to the field, as it presents information on how the nudge theory can be utilized in waste policies implemented in Turkey. Additionally, the study differs from the existing literature by discussing the influences of nudge policies in previous waste management and recycling efforts.

Keywords: Recycling, Waste Management, Nudge Theories

INTRODUCTION

The qualitative changes occurring in the components of the environment, coupled with the rising prevalence of environmental issues and their increasingly global impact, have led societies to adopt a more serious approach to addressing these challenges. Furthermore, the limited nature of resources and their accelerated depletion has highlighted the concept of sustainability, spreading the view that a balance between development and the environment must be maintained (Solak & Pekküçükşen, 2018:653). Furthermore, the finite nature of natural resources and the potential inability to meet future social needs necessitates the efficient utilization and effective management of these resources (Ömürbek et al., 2019, p. 124).

In light of the mounting environmental challenges, the importance of environmental management has been emphasized through the enactment of a series of legislative, regulatory, and procedural measures on pivotal environmental concerns, including climate change, recycling, and waste minimization. In this context, the focus on the concept of sustainability encourages the careful and efficient use of natural resources in order to meet the needs of future generations. Environmental management aims to ensure the effective and sustainable management of environmental resources in accordance with established regulations and environmental standards (Çavuş and Yıldırım Tancı, 2013: 73-82). Therefore, the present study examines waste management, a crucial aspect of sustainability and environmental awareness, in Turkey. It sheds light on the potential for behavioral economics to inform the shaping of waste management practices. In the first part of the study, the concept of waste management is introduced, and the waste management policies currently in place in Turkey are outlined. The second part of the study examines the impact of the concept of "nudge" on waste management in behavioral economics, as well as the waste management policies and behavioral economics strategies implemented around the world. The third part of the study presents the conclusions and policy suggestions.

WASTE MANAGEMENT

In the early 21st century, waste management was not perceived as a priority issue in comparison to other environmental concerns. Issues such as global climate change, forest fires, drought, water scarcity, and endangered species were of greater concern on the global political agenda (Vaughn, 2008, p. 22). However, the acceleration of industrialization and urbanization in parallel with the increase in population has resulted in a proportional increase in the amount of waste, as well as the emergence of new environmental problems. The mounting volume of waste has come to draw attention as a consequence of its negative impact on the environment and the economy. In order to prevent these adverse consequences, it is imperative to implement an effective waste management system (Karagözoğlu et al., 2009, p. 2). The issue of waste management has been a topic of concern throughout history for a variety of reasons. The primary motivations for waste management are the protection of public health, environmental concerns, and the economic potential of waste (Veral, 2018, p. 13). In accordance with the aforementioned reasons, countries have conducted significant studies in order to develop their own waste management strategies, with the ultimate goal of contributing to the advancement of sustainability.

Waste is defined as any substance that has become unusable, unwanted, and has the potential to harm the environment (Uzunoğlu, 2014, p. 26). Wastes can be classified in a number of ways, according to a number of criteria. These include their physical state (solid, liquid, or gas), their original use (packaging waste, food waste, etc.), their content (plastic, glass, paper, etc.), their physical properties (flammable, recyclable, etc.), and their safety level (hazardous, non-hazardous) (McDougall et al., 2008: 2). Waste management is an approach that aims to protect the environment and human health as well as all natural resources. This is achieved by preventing or reducing the generation of waste in production, consumption, and service processes. Prioritizing reuse, separating and collecting waste at the source, processing it through recycling and/or recovery methods, and thus reducing the amount of waste sent to disposal are key strategies in this regard. Therefore, waste management is of great importance for the environment and human health as well as wastage.

A considerable quantity of food is unnecessarily lost or wasted on a global scale. The environmental, economic, and social issues resulting from food loss and waste are of significant concern (Songür & Çakıroğlu, 2016, p. 25). In order to address these significant issues, it is necessary to prioritize waste management policies and implement them in a comprehensive and effective manner.

WASTE MANAGEMENT IN TURKEY

Turkey is experiencing rapid population growth, urbanization, and industrial and technological developments, which have led to the diversification of waste types and an increase in their quantities. This increase in waste necessitates the determination of methods to be followed from the generation to the processing of waste in a manner that does not pose a danger to living beings and nature. In Turkey, as in the rest of the world, the implementation of production and consumption processes to reduce waste generation has become a significant aspect of environmental protection policies (Gül and Yaman, 2021:1271). Article 56 of the Constitution of the Republic of Turkey (November 7, 1982) states that "*Everyone has the right to live in a healthy and balanced environment. It is the duty of the State and citizens to improve the natural environment, to protect the environmental health and to prevent environmental pollution*" (Constitution of the Republic of Turkey, 1982). This article underscores the significance of environmental improvement, prompting a heightened focus on waste management and the definition of the term "waste."

The term "waste" was initially defined in the Turkish legislative context within the framework of the Environmental Law No. 2872, which was adopted in 1983. This definition, as outlined in the aforementioned legislation, encompasses "*any kind of substance released or discarded into the environment as a result of any activity*" (https://www.resmigazete.gov.tr, accessed on October 15, 2024). Subsequent studies conducted in Turkey identified the relevant entities responsible for waste management, and legislation was enacted to address this issue.

The primary management unit tasked with the elimination of waste materials that pose environmental concerns is the municipal government, which is typically responsible for the collection and disposal of waste generated within its jurisdiction. Many international organizations and agreements hold city governments accountable for this matter. In Turkey, local governments, particularly municipalities, are the primary governmental unit responsible for waste management activities and the provision of related services. In light of the accelerated urbanization process, the scope of responsibilities and duties of municipalities with regard to environmental issues, particularly

those pertaining to waste management, has been specified through a series of legal instruments (Şiriner Önver, 2019:112). In accordance with the stipulations set forth in Law No. 5393 on Municipalities, the responsibility for "*the implementation and completion of all services pertaining to the collection, transportation, sorting, recovery, elimination, and storage of solid wastes*" falls upon the municipality.

BEHAVIORAL ECONOMICS AND NUDGE POLICIES

Behavioral economics is a field that emerged with the combination of economics and psychology and has been adopted by many economists in recent years as a preferred field of study (Mola, 2023:1274). Behavioral economics, which is highly valued by countries and economists alike, has been utilized for the public good in the form of policies that are created with the intention of promoting the public interest. An important policy of behavioral economics that is used in the public interest is the nudge policy.

From the perspective of behavioral economics, the nudge theory, as developed by Thaler and Sunstein in their 2008 book *Nudge: Improving Decisions about Health, Wealth and Happiness*, it is argued that prohibitive interventions to change individuals' behavior should be avoided. This theory emphasizes that structuring choices in a manner that avoids restricting preferences or imposing additional costs will prove an effective means of enabling individuals to make decisions that are more desirable and beneficial. In order to enhance individuals' decision-making abilities, the nudge theory proposes the implementation of a *choice architecture* that is designed to provide them with healthier and more efficient options (Aldemir & Kaya, 2020, p. 124). In light of these considerations, it is of great importance for policymakers to adopt incentive policies, such as those proposed by the nudge theory, that offer free choice and guide people, rather than coercive measures to encourage the participation of locals (Ökten, 2023:1546). While nudge policies have been employed in a number of domains, including health, education, finance, marketing, consumer behavior, politics, public administration, and organizational management, they have recently begun to be utilized in the context of the environment and sustainability, reflecting the growing importance of these issues. There are numerous examples of nudge policies in the context of recycling and waste management, particularly within the domain of environmental sustainability. A review of waste management policies in various countries reveals that some have adopted a highly prescriptive approach to regulation.

For example, the Netherlands has a more extensive regulatory framework pertaining to recycling and waste management than other countries. The country's reputation as an environmentally conscious nation is, in part, attributable to these laws and the Dutch awareness of environmental stewardship. The country has established a waste sorting and collection system with distinct bins for paper, plastic, and other materials, facilitating the recycling of these wastes (https://www.linkedin.com/pulse/waste-management-netherlands-plaex-3ompe, accessed on October 20, 2024). Furthermore, the Dutch government implemented an average increase of 20 Euros in waste tax in 2023 (https://www.sonhaber.eu/hollandada-belediye-vergileri-artiyor-cop-atmak-daha-pahali-olacak, accessed on October 20, 2024), representing an additional policy lever utilized in the domain of waste management. Another noteworthy country in the field of waste management is Sweden. In accordance with the provisions of the 2024 legislation, it is now obligatory for all individuals and entities to segregate food waste for collection. This regulation will be applicable to both residential and commercial entities, with all local governments obliged to collect food waste separately (https://sweden.se/climate/sustainability/swedish-recycling-and-beyond, accessed on October 17, 2024).

Japan employs a different set of policies in the domain of waste management. In Japan, a particularly noteworthy example, waste is not discarded on the streets in favor of a system whereby citizens transport their garbage to their residences. This facilitates the recycling process, as the waste is sorted into distinct receptacles designated for different materials. Moreover, informational posters are displayed in each city, indicating the appropriate disposal times and locations for specific types of waste. Such posters are called "*Gomi Guides*." As a result of these established practices, only 20 percent of non-organic waste goes to landfills (https://www.copunesahipcik.org/files/arastirmayeni/12_japonya_da_at_k_yoenetimi.pdf, accessed on November 1, 2024). These guides demonstrate that Japan employs a strategy of nudge policies in its waste management.

In Germany, the field of waste management has seen the emergence of legislation designed to eliminate waste in certain regions. Germany's Waste Management Act establishes a five-tier waste hierarchy, which includes waste prevention, reuse, recycling, energy recovery, and ultimately, waste disposal. This hierarchy is based on the principle that the most environmentally sustainable option should be selected in each case, with consideration

given to the ecological, technical, economic, and social impacts in a holistic manner. In this framework, waste management practices in Germany are designed with the objective of minimizing waste generation and maximizing recycling rates. Additionally, the remaining waste is disposed of in a manner that is compatible with social welfare (https://www.umweltbundesamt.de/en/topics/waste-resources/waste-management, accessed on October 20, 2024). In South Korea, waste management policies are implemented with the objective of reducing waste generation and maximizing the recycling of waste (https://en.wikipedia.org/wiki/Waste_management_in_South_Kore, accessed on October 20, 2024). Furthermore, the implementation of various campaigns in South Korea that encourage citizens to engage in more conscious recycling practices and, consequently, in more effective waste management, demonstrates that the country benefits from the application of nudge strategies in waste management.

In Turkey, the placement of recycling bins on streets by municipalities exemplifies a nudge strategy within the context of waste management. However, waste management policies are not yet widely implemented in Turkey, where notable advancements have been made in waste management and recycling in recent years. Additionally, the availability of garbage sorting bins in urban areas remains limited. Consequently, in the present era, where sustainability is of utmost importance, nudge policies can facilitate waste management and recycling by fostering awareness among citizens.

CONCLUSION

Effective waste management plays an important role in the context of sustainability, environmental awareness, economic sustainability, and social sustainability. The implementation of effective waste management strategies can also yield economic benefits. This is achieved through the reduction of environmental impacts and the safeguarding of natural resources, the enhancement of resource efficiency, and the recycling of waste. It is therefore crucial for countries to prioritize waste management and to leverage behavioral economics, which motivates individuals to engage in desired behaviors, particularly through the design of choice architectures that influence environmental decision-making.

Many countries worldwide have successfully implemented waste management and recycling practices and have benefited from nudge policies designed to enhance environmental awareness. Turkey has made notable advancements in waste management and recycling. However, inadequate awareness initiatives impede the efficacy of waste management and diminish its contribution to the national economy. In this context, it is imperative to leverage nudge policies that encourage environmentally conscious behaviors among citizens, drawing upon global best practices. In this context, the following measures could be implemented to increase the areas where waste sorting and recycling bins are placed in Turkey: firstly, to guide consumers to more conscious choices through green labeling; secondly, to provide financial incentives to citizens participating in recycling and waste reduction activities; thirdly, to provide training at all levels of education, starting from primary schools, in order to raise awareness among citizens; and finally, to implement a comprehensive waste management strategy. The implementation of nudge strategies, such as the establishment of platforms that reward environmentally friendly behaviors, the encouragement of citizens to utilize environmentally friendly packaging, the publicizing of recycling rates and the economic benefits obtained, and the creation of visuals and posters such as the "Gomi Guides" utilized in Japan, can contribute to the national economy. Therefore, the implementation of nudge policies for waste management in Turkey will result in the enhancement of environmental awareness at both the individual and social levels, while simultaneously increasing the efficacy of waste management.

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THE CULTURAL TOURISM POTENTIAL OF ALBANIA: AN ESSENTIAL DRIVER FOR GROWTH

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Abstract

This study assesses Albania's potential as a cultural tourism destination by examining its unique cultural assets and increasing global interest. Albania's rich heritage, characterized by both tangible and intangible cultural elements, provides a solid foundation for cultural tourism. The study draws on insights from fifteen semi-structured interviews with local tour operators, capturing an industry-based perspective on the opportunities and challenges within this sector. By synthesizing academic research with industry input, it identifies key factors that can help or hinder Albania's cultural tourism growth. The findings offer recommendations for fostering sustainable tourism, focusing on strategies that can boost Albania's appeal while safeguarding its cultural heritage. This study provides valuable guidance for policymakers, tour operators, and cultural heritage managers, aiming to support a balanced approach that maximizes Albania's tourism potential while prioritizing preservation.

Keywords: Cultural Tourism, Albania, Developing Destination, Potential, Sustainable Tourism.

INTRODUCTION

Cultural tourism has emerged as a significant segment within the global tourism industry, driven by an increasing interest in exploring the cultural heritage and traditions of diverse regions (Richards, 2007). As tourists seek experiences that go beyond leisure, countries with rich historical and cultural assets have become increasingly attractive. Albania, situated in the heart of the Balkan Peninsula, offers a distinctive blend of cultural, historical, and natural attractions that are yet to be fully recognized on the global stage (Knowlton & Nevins, 2020). With its complex history, diverse traditions, and unique geographical location, Albania has great potential to establish itself as a prime destination for cultural tourism. However, the country faces a range of challenges in promoting and managing this potential, including infrastructure development, sustainable tourism practices, and the preservation of its cultural heritage.

Albania's cultural tourism potential is rooted in its rich and diverse history, which spans centuries of various civilizations, including the Illyrians, Romans, Byzantines, Ottomans, and more recently, the Communist era (Fermor, 2008). This complex historical tapestry has left behind a wealth of tangible cultural assets such as archaeological sites, castles, religious monuments, and Ottoman-era towns, alongside intangible cultural heritage in the form of traditions, music, folklore, and language. Despite these resources, Albania remains relatively underexplored as a cultural tourism destination compared to its neighboring countries like Greece and Croatia, which have successfully capitalized on their cultural heritage to attract international visitors. Thus, understanding and harnessing Albania's cultural assets presents both an opportunity and a challenge for the country's tourism sector.

In recent years, Albania has experienced a steady increase in international tourist arrivals, driven in part by its natural landscapes and coastal beauty (Kadiu, 2024). However, the focus on nature-based tourism has often overshadowed the country's rich cultural offerings. As the global tourism market shifts towards more specialized and experience-driven forms of travel, there is a growing demand for cultural tourism, which Albania is well-positioned to satisfy. The development of this niche within Albania's tourism sector could significantly enhance the country's international profile while contributing to its economic growth and cultural preservation efforts.

This study aims to examine Albania's potential as a cultural tourism destination by analyzing both academic literature and industry insights. A comprehensive literature review will outline the current state of cultural tourism

in Albania, identifying key cultural assets and examining previous efforts to promote these assets to international audiences. In addition, interviews with Albanian tour operators will provide an on-the-ground perspective of the challenges and opportunities in the sector, particularly in terms of marketing, infrastructure, and sustainable tourism practices. By exploring the intersection of Albania's cultural heritage and its tourism industry, this study seeks to identify actionable strategies for enhancing the country's appeal as a cultural destination. The findings will contribute to a better understanding of the role that cultural tourism can play in Albania's broader tourism strategy, emphasizing the importance of sustainable practices and heritage preservation. Ultimately, the study aims to offer recommendations for policymakers, tour operators, and other stakeholders to promote Albania's cultural tourism in a way that respects and preserves its rich historical and cultural legacy, while fostering economic development.

Objectives of this study are:

1. To evaluate Albania's cultural tourism potential by examining its unique cultural assets and global appeal.
2. To identify key opportunities and challenges in promoting Albania's cultural tourism.
3. To recommend strategies for sustainable tourism that enhance Albania's appeal while preserving its cultural heritage.

LITERATURE REVIEW

Defining Cultural Tourism

Cultural tourism can be broadly defined as tourism that focuses on a destination's cultural assets, including its historical sites, traditions, art, and ways of life (Wasela, 2023). The United Nations World Tourism Organization (UNWTO, 2017) defines cultural tourism as "a type of tourism activity in which the visitor's essential motivation is to learn, discover, experience, and consume the tangible and intangible cultural attractions/products in a tourism destination."

Cultural tourism, a growing segment of the global tourism industry, thrives on the distinct cultural attributes that destinations offer (Carrillo & Barbieri, 2024). These attributes play a pivotal role in shaping the attractiveness, image, and satisfaction tourists derive from visiting cultural destinations (Nian et al., 2023). Through various studies (Arumugam et al., 2023; Azmi et al., 2023), key cultural elements have been identified that enhance the overall experience for cultural tourists, helping destinations stand out in a competitive market.

Foundational research by Ritchie and Zins (1978) identified essential elements such as handicrafts, traditions, gastronomy, art, history, architecture, and traditional clothing, which collectively offer authentic cultural experiences. Subsequent studies have highlighted regional variations in these attributes. Peleggi (1996) emphasized Thailand's traditional villages, monuments, museums, and temples as central to its cultural tourism appeal. Andersen et al. (1997) noted Denmark's historical buildings, theaters, and festivals, while Sofield and Li (1998) explored China's rich traditions of historical sites, architecture, and folk arts. In Vietnam, Bui and Jones (2022) identified heritage sites, exotic cuisine, and cultural festivals as key draws. Collectively, these studies demonstrate the critical role of cultural attributes in shaping competitive tourism experiences.

These studies clearly show that a destination's cultural features—both tangible elements like historical sites, architecture, and monuments, and intangible aspects like traditions, festivals, and music—play a vital role in enriching the tourist experience. As Kruja and Drishti (2020) note, "tourist experience is increasingly recognized as a key research theme." Cultural tourists, in particular, are drawn to places where they can engage deeply with local customs, history, and art, fostering a meaningful connection with the destination they explore (Jing & Loang, 2024). Albania's cultural tourism offerings fall within this broad definition, as the country possesses a wealth of tangible and intangible cultural heritage (Laurìa et al., 2020). From its UNESCO-listed historical sites to its unique polyphonic music traditions, Albania offers a diverse range of cultural experiences for visitors.

Table 1: Overview of Sources Highlighting Cultural Attributes

Study	Key Cultural Attributes Identified
Ritchie and Zins (1978)	Handicrafts, traditions, gastronomy, art/music, history, architecture, traditional clothing
Peleggi (1996)	Traditional villages, monuments, museums, temples
Andersen et al. (1997)	Historical buildings, museums, theaters, festivals, events, castles, gardens
Sofield and Li (1998)	Historical sites, architecture, traditional festivals, folk arts (music, dancing, craftwork), scenic heritage
Bui & Jones (2022)	Historical relics, world heritage sites, exotic food, beautiful landscapes, cultural festivals

Global Trends in Cultural Tourism

In recent years, cultural tourism has experienced substantial growth, driven by a global trend toward experiential travel (Mundet et al., 2024). Modern travelers increasingly seek immersive, authentic experiences that connect them with the culture, history, and lifestyle of the destinations they visit (Dridea & Dobrotă, 2024). This shift has led to a rise in demand for cultural tourism offerings, prompting destinations worldwide to invest in heritage preservation, museum development, and cultural festivals to attract visitors (Raffa, 2024).

Increasing Demand for Authentic Experiences

Travelers today, particularly Millennials and Generation Z, are no longer satisfied with surface-level sightseeing (Pricope Vancia et al., 2023). They crave deeper, more authentic experiences that allow them to immerse themselves in the local history, traditions, and culture of their destinations (Liberato et al., 2022). This trend presents significant potential for countries like Albania, which offers unique cultural experiences through its traditional music, local crafts, and historical sites (Kasmollari & Kanani, 2024).

Rise of Sustainable and Responsible Tourism

Sustainability has become a critical concern in tourism, with both travelers and destinations increasingly prioritizing responsible practices (Roxas et al., 2020). Cultural tourism aligns well with this trend, as it often involves efforts to preserve heritage and foster community engagement (Rahman & Baddam, 2021). Travelers now seek out destinations committed to preserving their cultural and environmental assets (Kyriakaki & Kleinaki, 2022). Albania, with its well-preserved heritage sites and traditional communities, offers a distinct charm (Jaeger-Klein et al., 2019). However, infrastructure development must carefully balance progress with sustainability to protect these cultural treasures (Hall, 2000).

Growth of Digital Platforms in Cultural Tourism

Digital platforms have revolutionized cultural tourism, making it easier for travelers to discover and engage with cultural attractions (Pencarelli, 2020). Virtual tours, social media, and online booking have become crucial tools, especially in the wake of the COVID-19 pandemic (El-Said & Aziz, 2022). Cultural institutions increasingly offer virtual experiences, allowing them to maintain global engagement (Shipman & Vogel, 2024). Albania can benefit by adopting digital marketing strategies that showcase its cultural heritage and improve accessibility for international travelers (Csesznek, 2024).

Increased Interest in Intangible Cultural Heritage

Intangible cultural heritage, such as traditions, music, and rituals, is gaining more attention alongside physical heritage like monuments and museums (Zandieh & Seifpour, 2020). This reflects UNESCO's focus on safeguarding intangible cultural assets (Lazaro Ortiz & Jimenez de Madariaga, 2022). Tourists now seek experiences that allow them to engage with living cultural traditions (Seyfi et al., 2020). Albania's rich traditions, including polyphonic singing, folk festivals, and local craftsmanship, make it particularly well-positioned to attract this type of cultural tourist (Bakiu & Baum, 1999).

Albania's Position in the Global Cultural Tourism Market

Despite its rich cultural heritage, Albania remains a relatively under-the-radar destination compared to its Balkan neighbors, such as Greece and Croatia (Çela, 2007). However, this is gradually changing, as Albania's tourism sector continues to grow, and international travelers discover its unique cultural offerings (Marku, 2014). The country's history, which spans from ancient Illyrian civilizations to the Ottoman Empire and Communist rule, provides a compelling backdrop for cultural tourism (Porfido & Resta, 2022). Albania's distinct cultural identity, shaped by its blend of East and West, makes it an attractive destination for those seeking authentic and less-commercialized cultural experiences (Zhelyazkova, 2000).

Heritage and History

Albania is a country rich in history, with numerous historical sites, monuments, and castles that reflect its diverse cultural past (Bashi, 20115). World heritage sites like Butrint, an ancient city that dates back to the Greek and Roman periods, and the Gjirokastër and Berat historic towns, showcase unique examples of Ottoman-era architecture (Eaton, 2011). Visitors can explore museums and archaeological sites such as the National History Museum in Tirana and the Apollonia Archaeological Park, offering deep insights into the country's long-standing civilization (Dollma, 2010).

Architecture and Urban Landmarks

Albania's urban landscape is dotted with historic buildings, temples, and palaces that highlight its rich architectural heritage (Gloyer, 2018). Tirana's Et'hem Bey Mosque and Kruja Castle are prime examples of the country's Islamic and medieval history (Elsie, 1998), while Berat's 2400-year-old castle presents an impressive blend of Byzantine, Ottoman, and Albanian styles (Hadrovic, 2023). Famous landmarks like the Skanderbeg Square and Pyramid of Tirana reflect Albania's modern architectural evolution, marking different eras of the nation's history (Pojani, 2015; Peter & Janku, 2015).

Art and Cultural Expressions

Albania has a vibrant tradition of art, music, dance, and folk arts that is central to its cultural identity (Kelmendi & Nimani, 2024). Polyphonic singing, a unique vocal tradition recognized by UNESCO, is a key part of Albanian culture (Nika, 2020). Theaters, galleries, and performance spaces like the National Theatre of Opera and Ballet in Tirana and the Marubi National Museum of Photography in Shkodra showcase the nation's artistic contributions (Jonka & Stamatiou, 2023; Aimar, 2024).

Traditions and Local Culture

Albania's traditions, customs, and local lifestyles remain deeply rooted in everyday life (Doja, 2015). Visitors can experience traditional clothing at festivals such as the Gjirokastër National Folklore Festival, which celebrates Albania's vibrant cultural diversity (Novik, 2020). Cultural festivals, like Dita e Verës in Elbasan, offer a glimpse into the country's ancient rituals and customs that are still practiced today (Myftaraj & Hasrama, 2023).

Craftsmanship and Local Products

Albania is renowned for its handicrafts and artisan products (Qosja &Zeka, 2015). According to Kruja and Berberi (2020), the most known handicrafts in Albania are works in wood, iron, copper, and precious materials like gold, silver, leather, wool, etc. Local markets in towns like Kruja, Scutari and Gjirokastër provide opportunities to purchase unique, handcrafted items made by skilled artisans, preserving ancient techniques passed down through generations (Kotollaku & Margariti, 2015; Bushati, 2017)

Gastronomy and Cuisine

Albanian cuisine offers a rich array of local food, traditional dishes, and culinary experiences (Brokaj, 2014). According to Uğurlu (2015), staples include vegetables, meat, and seafood, with spices like garlic, parsley, and mint. Regional specialties include qumështor custard, ballakum Elbasani cake, fërgesë Tirana, and kukurec. Dairy is prevalent, especially yogurt and sheep's milk cheese. Desserts such as baklava, petulla, and fig pudding are common. Popular drinks include boza, wine, and raki. Ingredients are minimally processed, preserving natural flavors, and local herbs are used selectively to enhance each dish's taste. Visitors can enjoy culinary experiences that highlight the use of fresh, local ingredients in traditional cooking methods (Dosti et al., 2021).

Natural and Scenic Heritage

Albania's gardens, parks, and scenic landscapes are not only beautiful but hold cultural significance as well (Laurìa et al., 2020). Valbona Valley and Theth National Park are renowned for their natural beauty and link to Albania's rural traditions (Qiriazi, 2020). Lake Ohrid, a UNESCO World Heritage Site, is both a natural wonder and a cultural landmark, shared with neighboring North Macedonia, embodying centuries of history and natural significance (Klosi, 2020).

Challenges in Competing with Neighboring Destinations

While Albania's cultural tourism potential is immense, it faces several challenges in competing with more established destinations in the region (Poshi, 2017). Countries such as Greece, Italy, and Croatia have long been popular cultural tourism hubs, with well-developed infrastructure, extensive marketing campaigns, and global recognition (Brnić, 2014). In contrast, Albania is still developing its tourism infrastructure, and many of its cultural sites lack the necessary facilities to accommodate large numbers of visitors (Caca et al., 2016)

Additionally, Albania's image as a tourism destination is still evolving (Nientied et al., 2018). For years, the country was associated with its Communist past and political instability, which deterred many potential visitors (Hall, 2017). However, as Albania continues to open up to the world, it has the opportunity to rebrand itself as a cultural tourism destination that offers authentic and off-the-beaten-path experiences (Jojic, 2017). The challenge lies in raising international awareness of Albania's cultural assets while ensuring that tourism development does not compromise the preservation of its heritage (Allkja & Dhrami, 2021).

To solidify its position in the global cultural tourism market, Albania must address critical areas that enhance its appeal and ensure sustainable growth. One pressing challenge is the development of infrastructure at cultural sites, particularly in rural regions, where facilities such as visitor centers, accommodations, and reliable transportation are lacking (Proda & Koçeli, 2017). Sustainable infrastructure improvements are vital for enhancing the visitor experience and boosting the country's attractiveness to cultural tourists (Seidl, 2014).

Equally important is the need for targeted marketing and promotion strategies that emphasize Albania's rich heritage and traditions. Leveraging digital platforms and social media can amplify global awareness and attract a broader audience (Lerario et al., 2017; Kordha et al., 2019).

As cultural tourism grows, adopting sustainable tourism practices is imperative. These efforts should focus on preserving heritage sites, managing visitor impact, and involving local communities in tourism planning to ensure long-term benefits (Mulita, 2024; Brokaj, 2014; Pasko, 2016). Collaborative efforts between government agencies, the private sector, and local stakeholders are equally critical. Strengthened partnerships can foster a more inclusive approach to tourism development, balancing the needs of visitors and local populations (Hysa & Kruja, 2022; Dollani et al., 2016).

Albania's cultural tourism sector is poised for growth, but realizing its full potential will require a concerted effort to address these challenges while capitalizing on its unique cultural assets. By investing in infrastructure, marketing, and sustainability, Albania can position itself as a leading destination for cultural tourism in the Balkans and beyond.

MATERIALS AND METHODS

This qualitative study investigates the perspectives of Albanian tour operators on the potential, challenges, and sustainability strategies for cultural tourism. A qualitative approach enabled an in-depth exploration of the unique insights of these operators, who have extensive experience within Albania's tourism landscape. Semi-structured interviews were chosen to facilitate both focused and flexible discussions aligned with the study's objectives.

Fifteen tour operators from Albania were selected through purposive sampling, ensuring respondents had significant experience in cultural tourism promotion and management. All participants were kept anonymous, and responses were attributed to broader themes rather than individuals to protect confidentiality.

Data collection involved semi-structured interviews, which allowed for adaptability in exploring emerging topics while maintaining a focus on key areas. Each interview, lasting 30–45 minutes, was conducted either in person, via phone, or video conferencing. With participants' consent, interviews were recorded and transcribed for analysis. The interview questions were developed based on key themes and insights from academic and industry

literature on cultural tourism, sustainable practices, and tourism policy, with a focus on emerging destinations like Albania. Drawing on foundational works such as The Routledge Handbook of Cultural Tourism by Smith & Richards (2013) and insights from the World Bank's report on Albania's tourism potential (2024), these questions explore Albania's cultural assets, promotional challenges, and opportunities within cultural tourism. Sustainable tourism practices are guided by principles outlined in Weaver's Sustainable Tourism (2007) and other research on environmentally friendly tourism policies. The questions also address government roles in tourism, supported by Dredge & Jenkins' Tourism Planning and Policy (2007), and provide recommendations for enhancing Albania's appeal based on established destination marketing strategies (Buhalis, 2000). This literature provided a strong foundation for framing questions that capture both practical and strategic elements of promoting cultural tourism in Albania.

Ethical considerations were paramount in this study, with strict measures to ensure participant privacy and data confidentiality. Informed consent was obtained, and a coding system (e.g., Operator 1, Operator 2) was created to anonymize identities. Responses were securely stored, protecting privacy and encouraging open, unbiased feedback.

Thematic analysis was conducted, following Braun and Clarke's six-phase approach, which includes familiarization, initial coding, theme identification, review, refinement, and reporting. This structured process ensured consistency and rigor in analyzing patterns within the data.

Table 2: Six Phases of Thematic Analysis (Braun & Clarke, 2006)

Phase	Description
Phase 1: Familiarization of data	Rereading data and transcribing initial ideas.
Phase 2: Initial coding	Coding interesting features of the data and collating data relevant to new codes.
Phase 3: Generating themes	Checking if emerging themes work in relation to codes.
Phase 4: Reviewing themes	Refining the thematic map and reviewing the validity and reliability of themes.
Phase 5: Defining and naming themes	Generating names and definitions for themes and refining them accordingly.
Phase 6: Producing the report	Reporting your analysis and final interpretation.

This study's small sample size limits generalizability to the wider tourism industry. Self-reported data and translation nuances may also introduce bias. Nonetheless, this methodology provides critical insights into Albania's cultural tourism and informs future research and policy development.

FINDINGS

The annex presents insights from semi-structured interviews conducted with 15 Albanian tour operators, providing a nuanced understanding of the opportunities and challenges within Albania's cultural tourism sector. To ensure confidentiality, the operators are anonymized and referred to using unique identifiers (e.g., Operator 1, Operator 2). These responses form the basis for a thematic analysis addressing Albania's cultural tourism potential, challenges in promotion and infrastructure, and strategies for sustainable tourism development.

The findings highlight Albania's unique cultural assets as central to its appeal. Key attractions include UNESCO World Heritage sites in Berat and Gjirokastër, Ottoman and Roman ruins, traditional cuisine, and folk traditions such as music and dance. Operators emphasized the role of religious diversity and local craftsmanship in enriching the country's cultural landscape (Operators 1, 5, 7, 8, 14). These tangible and intangible heritage elements position Albania as a distinctive destination for travelers seeking immersive cultural experiences. The operators also noted Albania's potential to attract international audiences interested in off-the-beaten-path Mediterranean destinations. Scenic landscapes and cultural authenticity further enhance its global appeal, particularly for niche tourism markets. However, the need for targeted digital marketing strategies and a cohesive brand identity was frequently highlighted as crucial for expanding Albania's reach in the global market (Operators 1, 3, 8, 10).

Despite its assets, the cultural tourism sector faces significant challenges. Limited infrastructure, including inadequate transportation to rural areas, a lack of preservation resources, and insufficient multilingual guides, restricts Albania's ability to capitalize on its tourism potential (Operators 1, 5, 6, 10, 12). Seasonality compounds these challenges, with tourism heavily concentrated in the summer months, leading to overcrowding in some areas

and underutilization of cultural sites in others (Operator 4). Addressing these infrastructure and promotional gaps is essential for enhancing accessibility, diversifying tourism offerings, and sustaining year-round tourism.

Opportunities for growth lie in developing niche and immersive experiences that align with global travel trends. Operators identified traditional crafts, culinary tours, and rural village visits as key attractions for tourists seeking culturally rich experiences (Operators 2, 12, 13). Expanding these offerings through initiatives like cultural festivals, artisanal workshops, and scenic tours could position Albania to attract heritage and adventure travelers, while simultaneously supporting local economies. The operators stressed the importance of leveraging these unique experiences to create a sustainable tourism model that caters to emerging demands for meaningful cultural engagement.

Sustainability remains a critical component of Albania's cultural tourism development. Current practices, such as low-impact tours, partnerships with eco-friendly accommodations, and the promotion of local artisans, reflect an emerging focus on environmental responsibility (Operators 1, 2, 4, 7, 11). However, limited resources and the absence of unified government support hinder the broader implementation of sustainable practices. Structured incentives, such as tax benefits and certifications for eco-friendly operators, are essential to advancing sustainability goals. Moreover, government-backed campaigns to promote eco-conscious tourism and raise awareness among visitors could further bolster these efforts.

Strategic recommendations from the operators include enhancing digital marketing, fostering collaborations with local communities, and improving infrastructure in rural areas to support sustainable tourism growth. Training programs for guides on sustainable practices, coupled with incentives for operators adopting eco-friendly initiatives, were identified as key measures to reinforce Albania's commitment to preserving its cultural heritage. Additionally, the development of a cohesive national branding strategy, supported by government initiatives, would strengthen Albania's position as a leading cultural tourism destination while ensuring the long-term preservation of its unique assets.

DISCUSSION AND CONCLUSION

This study has underscored the rich potential of Albania's cultural tourism sector, as well as the pressing challenges that must be addressed to elevate its appeal to international audiences. Through a comprehensive exploration of Albania's cultural assets—including UNESCO World Heritage sites, unique historical architecture, deep-rooted traditions, and diverse religious heritage—it is clear that Albania has a strong foundation to attract travelers in search of authentic and immersive experiences. Nevertheless, several factors have constrained Albania's capacity to fully realize this potential. The limitations in infrastructure, pronounced seasonal tourism patterns, and insufficient, fragmented marketing efforts have left the sector underdeveloped. To compete effectively in the global tourism market, it is evident that Albania must adopt a strategic and sustainable approach, addressing both infrastructural and promotional gaps to better position itself as a prime cultural destination.

From this analysis, several recommendations stand out. First, infrastructure development is fundamental to unlocking Albania's cultural tourism assets. Improving road conditions, expanding public transportation options, and enhancing accommodations in more remote, culturally rich areas could significantly ease access to Albania's diverse attractions. These upgrades could also support a transition to year-round tourism by mitigating the current seasonal dependency. A second vital area of focus is digital marketing. Albania's cultural identity and appeal lie in its uniqueness as an "off-the-beaten-path" Mediterranean destination. By leveraging digital channels to communicate this positioning, Albania can reach international tourists who seek genuine, less commercialized experiences. Through targeted digital campaigns and partnerships with major international travel platforms, Albania can enhance its visibility, attracting travelers interested in cultural exploration and discovery. Sustainability also emerges as a critical component for Albania's tourism growth strategy. To ensure the preservation of its cultural heritage, Albania should promote eco-friendly tourism practices. Low-impact tours, support for local artisans, and the encouragement of sustainable accommodations can enhance the appeal to environmentally conscious travelers. Additionally, government-backed incentives, such as tax benefits and eco-certifications for operators adhering to sustainable practices, could foster a responsible tourism sector that aligns economic growth with cultural preservation. Lastly, enhancing the visitor experience through the training of local guides is key. Providing language and cultural interpretation training would enrich the experience for tourists and position Albania as a competitive player in heritage tourism. Skilled local guides would not only support visitor

satisfaction but also enhance the authenticity of the experience, promoting deeper connections to Albania's cultural narrative.

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ANNEX

Annex Table 1: Findings from Interviews with Albanian Tour Operators

1. What is Albania's main cultural tourism assets?	Operator 1: UNESCO sites like Berat and Gjirokastër. Operator 2: Folk traditions and music. Operator 3: Traditional cuisine. Operator 4: Historic towns. Operator 5: Ottoman and Roman ruins. Operator 6: Bunkers as WWII remnants. Operator 7: Local craftsmanship. Operator 8: Religious diversity. Operator 9: Mediterranean culture. Operator 10: Hospitality and family-centered culture. Operator 11: Diverse architecture. Operator 12: Unique festivals. Operator 13: Rural villages. Operator 14: Traditional dances. Operator 15: Mountain traditions.
2. What challenges do you face in promoting cultural tourism?	Operator 1: Lack of infrastructure. Operator 2: Low marketing funds. Operator 3: Limited tourist awareness. Operator 4: Seasonality. Operator 5: Need for preservation funds. Operator 6: Lack of skilled guides.

	Operator 7: Language barriers. Operator 8: Overcrowding at peak sites. Operator 9: Lack of digital resources. Operator 10: Limited transportation options. Operator 11: Low awareness internationally. Operator 12: High preservation costs. Operator 13: Few cultural events. Operator 14: Low community involvement. Operator 15: Limited resources for rural areas.
3. What opportunities do you see for cultural tourism in Albania?	Operator 1: Rising global curiosity. Operator 2: Untapped market. Operator 3: Demand for unique experiences. Operator 4: Undiscovered heritage. Operator 5: Appeal to niche markets. Operator 6: Heritage tourism appeal. Operator 7: Traditional foods. Operator 8: Off-season demand growth. Operator 9: Media interest. Operator 10: Untapped historic sites. Operator 11: Immersive festivals. Operator 12: Storytelling and cultural tours. Operator 13: Cultural crafts tourism. Operator 14: Growing visitor interest in Albania. Operator 15: Scenic routes for cultural tours.
4. How could cultural tourism be better promoted within Albania?	Operator 1: Digital marketing campaigns. Operator 2: Government support. Operator 3: Cultural festivals. Operator 4: Community partnerships. Operator 5: Improved accessibility. Operator 6: Investing in ads. Operator 7: Use influencers. Operator 8: Accessible website resources. Operator 9: Collaborate with locals. Operator 10: Increase language resources. Operator 11: Develop unique brand identity. Operator 12: Offer immersive tours. Operator 13: Support small tourism businesses. Operator 14: Improve visibility abroad. Operator 15: Enhance rural site promotions.
5. What sustainable practices does your company implement?	Operator 1: Small-group tours. Operator 2: Local guides only. Operator 3: Use of eco-friendly materials. Operator 4: Promote local artisans. Operator 5: Plastic reduction. Operator 6: Eco-friendly travel options. Operator 7: Low-impact hiking tours. Operator 8: Limit waste generation. Operator 9: Use reusable containers. Operator 10: Promote local cuisine. Operator 11: Partner with green hotels. Operator 12: Support community projects. Operator 13: Minimize paper use. Operator 14: Encourage eco-friendly practices. Operator 15: Offer educational tours on ecology.
6. How can sustainable tourism practices be encouraged across the industry?	Operator 1: Eco-friendly incentives. Operator 2: Raise awareness. Operator 3: Train local guides. Operator 4: Partner with eco-hotels. Operator 5: Government support. Operator 6: Educate tourists.

	Operator 7: Reward sustainable operators. Operator 8: Environmental campaigns. Operator 9: Sustainable tourist behavior. Operator 10: Industry-wide guidelines. Operator 11: Funding for sustainable projects. Operator 12: Promote eco-friendly initiatives. Operator 13: Use local products. Operator 14: Industry collaboration. Operator 15: Sponsor eco-projects.
7. What types of cultural experiences are most popular among your clients?	Operator 1: Food tours. Operator 2: Heritage sites. Operator 3: Village visits. Operator 4: Historical storytelling. Operator 5: Traditional music. Operator 6: Traditional crafts. Operator 7: Cultural festivals. Operator 8: Religious sites. Operator 9: Nature and culture tours. Operator 10: Dance performances. Operator 11: Artisanal workshops. Operator 12: Wine and food tastings. Operator 13: Walking tours. Operator 14: Cooking classes. Operator 15: Architectural tours.
8. How do you see the future of cultural tourism in Albania?	Operator 1: Promising, with better resources. Operator 2: Growth potential. Operator 3: More year-round tourism. Operator 4: Steady expansion. Operator 5: Increased demand if infrastructure improves. Operator 6: Rising appeal to niche markets. Operator 7: Increased cultural interest. Operator 8: Greater off-season visitors. Operator 9: More international visitors. Operator 10: Growing curiosity about Albania. Operator 11: Gradual development. Operator 12: More immersive experiences. Operator 13: Continuous growth. Operator 14: Broadening of target market. Operator 15: Steady increase with promotion.
9. What role should the government play in supporting cultural tourism?	Operator 1: Fund preservation efforts. Operator 2: Invest in marketing. Operator 3: Build better infrastructure. Operator 4: Train local guides. Operator 5: More financial support. Operator 6: Collaborate with operators. Operator 7: Promote rural tourism. Operator 8: Improve digital resources. Operator 9: Provide grants for eco-projects. Operator 10: Sponsor cultural festivals. Operator 11: Protect historic sites. Operator 12: Support small businesses. Operator 13: Tax incentives for operators. Operator 14: Fund cultural events. Operator 15: Preserve heritage sites.
10. What recommendations do you have to improve Albania's appeal as a cultural destination?	Operator 1: Develop more events. Operator 2: More online promotion. Operator 3: Improve site access. Operator 4: Train guides better. Operator 5: Offer multilingual resources. Operator 6: Market internationally.

	Operator 7: Preserve rural culture. Operator 8: Increase road access. Operator 9: Eco-friendly initiatives. Operator 10: Digital advertising. Operator 11: Expand tourism calendar. Operator 12: Encourage off-peak visits. Operator 13: Promote local crafts. Operator 14: Boost event visibility. Operator 15: Collaborate with influencers.

ENDÜSTRI 5.0 SÜRECİNDE TÜRKİYE'DE İŞSİZLİK VE NİTELİKLİ ELEMAN EKSİKLİĞİNE ÇÖZÜM ÖNERİSİ: KARİYER PLANLAMASI

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Özet

Su ve buhar gücünün geliştirilerek mekanik üretim sistemlerinde kullanılması, iktisadi evrim sürecinde tarım toplumundan sanayi toplumuna geçişe yol açtı. Geçişten sonraki süreçte elektrik gücünün seri üretimde kullanılmasıyla ikinci sanayi devrimi ve bilgi teknolojilerinin gelişmesiyle üretimin daha da otomatikleştiği üçüncüsü yaşanmıştı. Bu gelişmelerin hızlandırıcı etkisiyle çağdaş üretim teknolojilerini, veri alışverişini ve modern otomasyon sistemlerini içeren Endüstri 4.0 insanlığın hayatına girdi. Çoğu ülkede bu değişim henüz başlamadan ortaya çıkan Endüstri 5.0 ise insanı, çevreyi, sosyal ve kurumsal yönetimi çeşitli nedenlerle odağına almak zorunda kalmıştır ve kalacaklardır.

Gerçekleşen endüstri devrimlerinin her bir aşamasında, üretimde yer alan; talep edilen emeğin değişen nicel değerlerine, rollerine rağmen niteliksel önemi artmıştır. Özellikle dijital üretimden dijital topluma geçişi ifade eden Endüstri 5.0 döneminde, insan-robot iş birliğinin ve emeğin kapasitesini artırmak için yapay zekânın insanlarla birlikte hayatın her anına artarak nüfuz edeceği öngörülmektedir. Bu süreçte iş birliğinin oluşabilmesi, emeğin sahip olması gereken özellikleri kazanabilmesi için gerekenler yanında; işsizlik ve nitelikli eleman eksikliği sorunları, gelişmiş ve Türkiye gibi gelişmekte olan ülkelerde çeşitli nedenlerle gittikçe önemini artırmaya başlamıştır.

Endüstri 5.0, insan ve makine arasındaki iş birliğini vurgulayan, kişiselleştirilmiş ve sürdürülebilir üretimi hedefleyen bir devrim niteliğindedir. Çalışanların bu süreçlere uyum yeteneklerini en üst düzeylere çıkarması amaçlanır. Ancak bireylerin bunu tek başlarına gerçekleştirmeleri zordur. Dolayısıyla üretimde en önemli faktör olan beşerî sermayenin niteliksel ve niceliksel özelliklerinin ulusal ölçekte planlanması gerekmektedir. Bunu sağlamak için eğitim sisteminin yenilenmesi, kariyer danışmanlığı hizmetlerinin geliştirilmesi, iş piyasası ve eğitim arasındaki ilişkinin güçlendirilmesi, ekonomik destek programları ve kültürel değişim gibi faktörler bu sürecin anahtar unsurlarıdır. Bunun nasıl olacağı bu kuramsal çalışmanın konusudur. Çalışma sonuçlarına göre verilecek önerilere uyulabilmesi durumunda, Endüstri 5.0 sürecinde Türkiye'de ekonomik ve sosyal kalkınmada önemli kazanımlar sağlanacaktır.

Anahtar Kelimeler: Endüstri 5.0, İşsizlik, Nitelikli Eleman Eksikliği, İktisadi Evrim, Kariyer Planlaması

A SOLUTION PROPOSAL FOR UNEMPLOYMENT AND LACK OF QUALIFIED PERSONNEL IN TURKEY IN THE INDUSTRY 5.0 PROCESS: CAREER PLANNING

Abstract

The development of water and steam power and its use in mechanical production systems led to the transition from agricultural society to industrial society in the process of economic evolution. In the period following the transition, the second industrial revolution was experienced with the use of electric power in mass production and the third one in which production was further automated with the development of information technologies. With the accelerating effect of these developments, Industry 4.0, which includes modern production technologies, data exchange and modern automation systems, entered the life of humanity. Industry 5.0, which emerged before this change even started in most countries, has had to and will have to focus on people, the environment, social and corporate management for various reasons.

At each stage of the industrial revolutions, the qualitative importance of the labor demanded in production has increased despite the changing quantitative values and roles. Especially in the Industry 5.0 period, which refers to the transition from digital production to digital society, it is predicted that artificial intelligence will increasingly penetrate every moment of life with humans in order to increase the capacity of human-robot cooperation and labor. In this process, in addition to the requirements for cooperation to occur and for labor to gain the necessary

characteristics, the problems of unemployment and lack of qualified personnel have become increasingly important for various reasons in developed and developing countries such as Turkey.

Industry 5.0 is a revolution that emphasizes the cooperation between man and machine and aims at personalized and sustainable production. It aims to maximize the adaptability of employees to these processes. However, it is difficult for individuals to realize this alone. Therefore, the qualitative and quantitative characteristics of human capital, which is the most important factor in production, need to be planned on a national scale. In order to achieve this, factors such as renewal of the education system, development of career counselling services, strengthening the relationship between labor market and education, economic support programs and cultural change are the key elements of this process. How this will be achieved is the subject of this qualitative and quantitative study. If the recommendations to be given according to the results of the study can be followed, significant gains will be achieved in economic and social development in Turkey in the Industry 5.0 process.

Keywords: Industry 5.0, Unemployment, Lack of Qualified Personnel, Economic Evolution, Career Planning

GİRİŞ

İnsanlık tarihinde, üretim faktörü olarak emeğin niteliksel ve niceliksel boyutları, içinde olunan ekonominin yapısal özelliklerine bağlı olarak hem etkileyen hem de etkilenen boyutlarıyla sürekli değişmiştir ve kaçınılmaz olarak değişmeye devam edecektir. Öncelikle tarımdan elde edilen birikimler ve tecrübeler sonucunda su ve buhar gücü kullanılarak geliştirilen mekanik üretim şekilleriyle; tarım toplumundan sanayi toplumuna geçiş gerçekleşmiştir. Bu süreç diğer bir ifadeyle "Birinci Sanayi Devrimi (1.0), 1780'lerde su buharı ve fosil yakıtların kullanımına dayanan enerji üretimiyle başlamıştır. Bu dönemde, buhar gücüne dayalı makinelerin icadı ve fabrikalarda kullanılmasıyla üretim süreçleri önemli değişikliğe uğramıştır. Endüstriyel üretimlerin artışıyla birlikte özellikle tekstil, kömür madenciliği ve demir-çelik sektörleri gelişmiş ve büyük bir ekonomik dönüşüm yaşanmıştır" (Güdek, 2023: 1130).

İlk Sanayi Devrimi (1.0) sonrasında İkinci Sanayi Devrimi, "1870'lerde elektrik enerjisinin kullanılması ile ortaya çıkmıştır. Bu dönemde ise elektrikli motorlar, aydınlatma sistemleri ve iletişim teknolojileri gibi yeni teknolojilerin gelişimi, üretim süreçlerinde; montaj hatlarının ve seri üretimin yaygınlaşmasıyla üretim verimliliğini artırmış, endüstriyel üretim hız kazanmıştır. Bu gelişmeler ile otomotiv, çelik üretimi ve kimya sektörleri gibi endüstriler ön plana çıkmıştır" (Güdek, 2023: 1130).

Bilgi teknolojilerinin 1970'lerde gelişmesiyle üretimin daha da makineleştiği, otomatikleştiği Üçüncü Sanayi Devrimi'nde, "Bilgisayarlar ve otomasyon sistemleri, üretim süreçlerinin mevcut verimini ve ürün kalitesini artırmış, maliyetlerini düşürmüştür" (Güdek, 2023: 1130). Buradaki teknolojik avantajların gelişmesi ve kullanımının hızlanmasıyla Endüstri 4.0 veya Dördüncü Sanayi Devrimi, otomatikleşen makinelerin kullanımının yaygınlaşmasını; verilerle yönetilen bir dönüşümü ifade etmektedir. "Bu dönemde sanal ve fiziksel ortamlar arasında gerçek zamanlı etkileşimin oluşturulması amacıyla Nesnelerin İnterneti (IoT) bileşenleri ve bulut bilişim, gelişmiş analitikler ile entegre edilmiştir. Gelişmelerin sonucunda ortaya çıkan siber-fiziksel sistemler, üretim süreçlerini daha akıllı ve otomatik hale getirmiştir. Üretimin siber-fiziksel sistemlere dönüştürülmesi üretim maliyetlerinde tasarrufun sağlanmasına, kalite yönetiminin artırılmasına ve lojistik süreçlerinin iyileştirilmesine imkân vermiştir. Süreçlerde elde edilen büyük verilerin analitiği sayesinde daha verimli değer zincirleri oluşturulmuş ve organizasyonlar rekabet gücü kazanmıştır" (Güdek, 2023: 1130).

Gelişmiş ekonomilerde gündeme gelse de çoğunluğun farkında olmadığı Endüstri 5.0 ise insan ve makine arasındaki iş birliği ve uyumu artırmayı; kişiselleştirilmiş ve sürdürülebilir üretim şekilleri başta olmak üzere birçok alanda devrim niteliğinde uygulamaları içeren bir paradigma değişikliğidir. Endüstri 5.0 fikri "endüstri" ile sınırlı değildir. Akla gelebilecek her sektör ve kuruluş için geçerlidir. Bu da uygulanabilirliğinin Endüstri 4.0'dan çok daha geniş olduğu anlamına gelmektedir. Bu nedenle tüm sektörler için geçerli olan geniş ve genel bir bakış açısına sahip olunması gerekmektedir. Avrupa Komisyonu'nun belirttiği gibi, Endüstri 5.0'ın üç temel ayağı vardır: insan merkezlilik, esneklik ve sürdürülebilirlik. Her üçünün de iş stratejisi üzerinde önemli etkileri vardır (Seymenler, 2023).

İş stratejilerinin, Endüstri 5.0'a uygun amaçlarına ulaşılabilmesi için öncelikle insan odaklı stratejiye diğer bir ifadeyle yetenekleriyle bu süreci ve kendisini geliştirebilecek nitelikli elemanlara diğer bir ifadeyle dijital dünyaya uyum sağlama yeteneğini ifade eden dijital yakalılara ihtiyaç vardır. Bunun nasıl olabileceğini inceleyen bu kuramsal çalışma sürecinde, ilgili literatür gözden geçirilerek, elde edilen bulgulara göre öneriler geliştirilmiştir.

Bu kapsamda çalışmanın ilk ana başlığında temel kavramlar ve literatüre yer verilmiştir. İkinci kısmında Türkiye'de işsizlik ve nitelikli eleman eksikliği sorununa genel bakış başlığında istihdam piyasasının günümüz ve Endüstri 5.0 sürecindeki nicel ve nitel özellikleri verilmiştir. Sonraki başlıkta Endüstri 5.0 sürecinde nitelikli eleman eksikliğinin temel nedenleri ve çözüm önerilerine değinilmiştir. Çalışmanın son başlığında kariyer planlamalarında rehberlik ve danışmanlık hizmetlerinin önemi verilmiştir.

TEMEL KAVRAMLAR VE LİTERATÜRE BAKIŞ

Genel ifadesiyle kariyer kavramı; bireysel ve kurumsal anlamda iş hayatı, ömür, meslek, ödül, tecrübe, daha iyi bir yaşam gibi ifadeleri içerir. Literatürde çeşitli tanımlamalar vardır bunlardan bazıları şöyledir (Bayram, 2010: 19):

Kariyer, bir insanın çalışabileceği yıllar boyunca herhangi bir iş alanında adım adım ve sürekli olarak ilerlemesi, deneyim ve beceri kazanmasıdır. Geniş anlamda kariyer; kişinin çalışma yaşamı boyunca üstlendiği işlerin bir bütünü olarak tanımlanırsa da kariyer kavramı bu tanımın ötesinde daha geniş bir anlam ifade etmektedir. Bir kişinin sahip olduğu kariyeri, sadece onun sahip olduğu işler değil, işyerinde kendisine verilen iş rolüne ilişkin beklenti, amaç, duygu ve arzularını gerçekleştirebilmesi için eğitilmesi ve böylece sahip olduğu bilgi, beceri, yetenek ve çalışma arzusu ile o işletmede ilerleyebilmesi anlamını taşır.

Çalışanların kariyer hedeflerini belirlemelerine yardımcı olan kariyer planlaması, kurumsal anlamda şirketlerin veya rehberlik ve danışmanlık hizmeti verenlerin; çalışanların kariyer planlamalarına yol gösterici olmalarını ifade eder. Kısaca ifade etmek gerekirse kariyer planlaması, bireylerin ve iş dünyasının geleceğini şekillendiren önemli hizmetlerdir. Bu hizmetler hem insanların refahını hem de evrenin sürdürülebilirliğini sağlamak için daha verimli iş modelleri sunmayı; çalışanların, kişisel hedeflerine odaklanırken ekonomide tüm paydaşların haklarının iyileştirilmesini amaç edinir.

Kariyer planlama teorisi (Savickas, 2005), değişen iş dünyasında mesleki davranışları tanımlamak için bir model sunar. Teoriye göre insanlar, kariyerlerini topluma entegre olmak için kullanırlar. Bunu sağlamak için bireyler, kariyerlerinde ilgilerini, becerilerini, iş deneyimlerini ve psikolojik özelliklerini sosyal ortamlara uydurmaya çalışırlar. İş dünyasındaki değişimlerin, üretim dönüşümünün bir sonucu olarak mesleklerdeki gelişimleri; kariyerleri için fırsat veya tehdit olarak görerek, bu değişikliklere uyum için gerekenleri yeniden değerlendirebilirler. Bu fırsat veya tehditlere tepki olarak, çalışanlar daha iyi kişi-çevre uyumu yaratmak için mesleki davranışlarda bulunmaya motive olurlar (Zacher, 2014). Zira fırsat ve tehdit algılarının, kişinin iş kurma davranışı ve uzun vadeli kariyer uyum planı ile ilişkili olduğu ve bu ilişkilerin otomasyon teknolojileriyle ilgili kariyer uyumluluğu ve iş deneyimi tarafından önemli ölçüde yönetildiği görülmektedir (Zhang ve Diğerleri, 2019).

Kariyer planlaması ve yönetimi konularını aktif olarak yürüten işletmelerdeki bireyler, kariyer hedeflerine ulaşarak hem maddi hem de manevi açıdan tatmin olmaktadırlar. Çalışanlar sadece yapılması gereken işleri değil, kendisine verilmeyen işleri de yapmaya çalışarak hem kendisini geliştirmiş hem de işletmenin hedef ve amaçlarına daha kolay ulaşabilmesini sağlamıştır. Kendini bir ileriki noktaya götüren kariyer olanaklarını işletmesinde bulan çalışan, örgüte bağlı olmanın yanında yüksek performans düzeyini de yakalamaktadır. Çalışanların amaçları örgütün amaçları ile kesiştiğinde her iki tarafta bundan tatmin olur ve çalışanın örgüte olan bağlılığı artarak devam eder (Ece ve Esen, 2017: 129).

Özetle kariyer planlaması, bireylerin, kariyer hedeflerini belirlemeleri ve bu hedeflere ulaşmaları için gerekli adımları atmaları sürecidir. Endüstri 5.0'da işgücünün niteliklerini artırmak ve işsizlik oranlarını azaltmak için etkin bir kariyer planlaması şarttır.

TÜRKİYE'DE İŞSİZLİK VE NİTELİKLİ ELEMAN EKSİKLİĞİ SORUNUNA GENEL BAKIŞ

İşsizlik ve nitelikli eleman eksikliği sorununun temel nedenleri arasında; nüfus, göç ve eğitim sistemi ile iş piyasasının dinamikleri arasındaki plansızlığın-uyumsuzluğun yer aldığı bilinir. "Türkiye'de genç işsizlik oranının fazla olmasının temelde beş nedeni vardır. Bunlar nüfus kaynaklı, eğitim kaynaklı, işgücü piyasası (göç vs.) kaynaklı (Murat ve Şahin 2011: 325), küreselleşme kaynaklı ve devlet yapısından kaynaklı (Toprak ve Demir 2001: 11) sorunlar olarak sıralanabilir" (Akcan, 2018: 39).

Literatürdeki çalışmalarda, eğitimin yetersizliği ve piyasa taleplerini karşılamamasına, staj eksikliğine, sosyo-ekonomik politikaların oluşturulmasında kurumlar arası koordinasyon eksikliği gibi sorunlara dikkat çekilmektedir. "Ancak, gelişmekte olan ülkelerdeki eğitimli bireyler için pozisyon darlığından ve yüksek eğitimli;

mühendisler, denetçiler, yöneticiler, teknik elemanlar, muhasebeciler…vb. bireylerin istihdamı için katma değer üreten yatırımların eksikliğinden bahsedilmemiştir. Ancak, hiçbir çalışmada gelişmekte olan ülkelerde yaşanan işsizliğin yapısal işsizlik olduğu ve söz konusu işsizliğin sadece eğitim düzeyi ile ortadan kaldırılamayacağı, yatırımların gerçekleşmesi ve girişimciliğin artması için gerekli hukuksal düzenlemelerin ve emek, sermaye ve mal piyasalarının şeffaflığı üzerinde durulmamıştır. Gelişmekte olan ülkelerde yetişmiş bir genetik uzmanının, uzay bilimcinin, bilgisayar mühendisinin, matematikçinin, fizikçinin, biyoloğun, vb. iş bulabileceği çalışma alanlarının ve iş ortamının yetersizliği eğitimli bireylerin işsizliğinin en temel nedenidir. Bu nedenle, gelişmekte olan ülkelerde, eğitim sistemi ile ekonomik politikalar birlikte ele alınmalıdır. Özellikle 4.0 sanayi devrimiyle gelecekteki on yılları meşgul edecek yapay zekâ ile teknolojik gelişmeler Türkiye dahil tüm gelişmekte olan ülkelerin eğitim ve ekonomik politikalarını ciddi düzeyde etkileyecektir" (Bağcı, 2018: 355).

İstihdam Piyasasının Özellikleri

İstihdam piyasası, işverenler ve iş arayanlar arasında işgücü arz ve talebini belirleyen dinamik bir yapıdır. Bu piyasada, işgücünün niteliksel ve niceliksel özellikleri, ekonomik koşullar ve teknolojik gelişmeler büyük rol oynar.

İstihdam Piyasasının Niteliksel Özelliklerini Belirleyen Faktörler

Özellikle gelişmekte olan ve genç nüfusa sahip ülkelerin dinamik işgücünün nitelik düzeyi, o ülkelerin ekonomik gelişiminin önemli göstergelerindendir. Bu potansiyelin "etkin kullanılamaması, önemli sosyal ve ekonomik maliyetleri de beraberinde getirmektedir. Günümüz dünyasında, uluslararası alanda etkinliğin aracı rekabet gücü yüksek, bilgiye açık, üretken bir ekonomik potansiyele sahip olmaktır. Küreselleşen dünyada buna ulaşmanın en önemli yolu ise insan kaynaklarının sürekli geliştirilmesi olarak görülmektedir. Artık işsizliğin önlenmesi ve işsizlikle mücadele politikaları, olumsuz sosyal etkilerden korunmaktan çok, ekonomik gerekliliklerden kaynaklanmaktadır. İşsizlikle mücadele ve istihdam yaratma sorunu gelişmişlik düzeyi ne olursa olsun tüm ekonomik yapıları önemli arayışlara itmiştir" (Özaydın, Metin ve Kurnaz, 2009: 142).

İşverenler, yüksek düzeyde eğitim almış, spesifik alanlarda özellikle dijital becerilere ve teknolojiyi kullanma yetkinliklerine sahip olabilen çalışanların kısaca, değişen koşullara ve farklı görevlere hızlıca uyum sağlayabilmelerini beklerler.

Bu beklentilere özetle şu nedenlerle cevap verilememektedir: Okul tabanlı istihdam alanlarının yetersizliği, vasıf uyuşmazlığı, asgari ücret uygulaması ve staj ve benzeri uygulamaların yetersizliği (Kabaklarlı ve Gür, 2010:5). Eğitim politikasının kısa vadede işsizliği azaltmak için kullanılması, bu durumun uzun vadede eğitimli işsizlerin sayısını arttırması (Erdem ve Tugcu, 2012: 299-309). Gelişmekte olan ülkelerde yüksek eğitim düzeyi gerektiren iş pozisyonlarının yetersizliği, nitekim yapılan bir çalışmada, kalifiyesiz iş pozisyonları için eğitim düzeyi hiç önemli görülmez iken, teknik personel pozisyonu için eğitim kısmen önemli görülmüştür. Çalışmada, eğitim düzeyi sadece yönetim ve mühendislik pozisyonları çok önemli görülmüştür (Özaydın, Metin ve Kurnaz, 2009: 141 – 170).

İstihdam Piyasasının Niceliksel Özelliklerini Belirleyen Faktörler

Özellikle gelişmekte ve genç nüfusa sahip olan ülkelerin dinamik işgücünün nicelik düzeyi de bu ülkelerin ekonomik gelişiminin veya gelişememesinin önemli göstergelerindendir. Dolayısıyla:

İnsan kaynaklarının geliştirilmesi meselesi hiç kuşkusuz sayısal ve niteliksel bir gelişimi içermektedir. İşgücü piyasasında talep edilen niteliklerin neler olduğu, bunların nasıl kazanılabileceği ve eğitimsel niteliklerin bireyin piyasadaki yerini ne ölçüde belirlediği gibi konular, eğitim-istihdam ilişkisinin kurulmasında ve insan kaynaklarının geliştirilmesinde talep cephesinin yaklaşımlarının esas alınması gerekliliğini ortaya koymaktadır. Piyasaya sunulan eğitimsel niteliklerin kullanıcısı olan firmaların sahibi ya da yöneticisi konumundaki işverenlerin eğitimsel nitelikler ile istihdam edilebilirlik arasındaki ilişki konusundaki görüşleri, ulusal düzeydeki insangücü politikalarını da belirlemektedir (Özaydın, Metin ve Kurnaz, 2009: 143).

Türkiye'de işsizlik oran yüksek seviyelerdedir, bu da nitelikli işgücüne duyulan ihtiyacı artırmaktadır. TÜİK'in 18 Kasım'da açıkladığı İşgücü İstatistiklerine göre, Eylül 2024 Mevsim etkisinden arındırılmış işsizlik oranı %8,7 seviyesinde gerçekleşti. İşgücünü oluşturan kişi sayısının çalışma çağındaki nüfusa oranını ifade eden İşgücüne Katılım Oranı da ekonomik koşullar ve demografik faktörler tarafından etkilenmektedir. Mevsim etkisinden

arındırılmış işgücüne katılma oranı %54,3 olarak gerçekleşti. Mevsim etkisinden arındırılmış (zamana bağlı eksik istihdam, potansiyel işgücü ve işsizlerden oluşan) atıl işgücü oranı %27,2 oldu.

İstihdam Piyasasının Endüstri 5.0 Sürecinde Değişecek Özellikleri

Endüstri 4.0 sürecinin hızla değişen iş dünyasında, bireysel ve kurumsal düzeyde başarılı olanlar, sadece finansal performansta değil, aynı zamanda bilgi yönetimi ve iş zekâsı yetkinliklerinde de öne çıkıyor. Dijitalleşme, büyük veri (big data) ve yapay zekâ gibi teknolojilerin ön plana çıktığı bu dönemde ve Endüstri 5. Sürecinde; yöneticilerin, şirket sahiplerinin iş zekâsı ve bilgiye dayalı karar alma süreçleri, rekabet avantajı elde etmenin temel yollarından biri haline geldi ve bu önem daha da artacaktır.

Bu konuda McKinsey'nin (2024) The Next Big Arenas of Competition başlıklı çalışması durum tespiti ve planlama yapılması için önemlidir. Raporda iş dünyasının mevcut yapısını değiştirecek ve dönüştürecek sektörler ele alınıyor. Bu sektörlere "arenalar" olarak adlandırılıyor. Arenalar iki özellik ile tanımlanan benzersiz bir endüstri kategorisidir: yüksek büyüme ve dinamizm. Bu arenalar ekonominin büyümesinden çok büyük bir pay almakta ve içlerindeki oyuncuların pazar payları çok büyük ölçüde değişmektedir. Küresel ekonomiyi yeniden şekillendirebilecek ve 2040 yılına kadar 29 trilyon ile 48 trilyon dolar arasında gelir yaratabilecek geleceğin 18 potansiyel alanı; yapay zekâ, yazılım ve hizmetlerinden siber güvenliğe, gelecekteki hava hareketliliğinden, obezite ve ilgili durumlara yönelik ilaçlara ve robotikten tıbbi olmayan biyoteknolojiye kadar uzanmaktadır. Bu alanların küresel GSYİH içindeki toplam payı 2040 yılına kadar %4'ten, %10 ile %16'ya yükselebilir.

Gelecekteki bu beklentilere, Endüstri 5.0'ın amaçlarına ulaşılabilmesi için öncelikle insan odaklı bir stratejiye ihtiyaç vardır. Bu "yetenekleri, çeşitliliği ve güçlendirmeyi teşvik eden bir stratejidir. Bunun önerdiği en önemli değişim, insanları araç olarak görmekten (örneğin insan kaynaklarında olduğu gibi) amaç olarak görmeye doğru bir değişimdir. Ya da başka bir deyişle, insanların kurumlara hizmet etmesinden, kurumların insanlara hizmet etmesine doğru bir bakış açısı değişimi. Bu ilk bakışta göründüğünden daha keskin bir yaklaşımdır. Ve iş piyasasındaki güncel gelişmelerle de uyumludur. Birçok sektörde ve ülkede yetenekleri bulmak, onlara hizmet etmek ve onları elde tutmak, müşterileri bulmak, onlara hizmet etmek ve onları elde tutmaktan çok daha büyük bir zorluk haline gelmiştir. Bu gelişme devam ederse, iş stratejisinin buna uygun bir yer vermesi gerekir ve Endüstri 5.0 da bunu hedeflemektedir" (Seymenler, 2023).

Kısacası Endüstri 5.0 ile dijital yakalılara diğer ifadesiyle yapay zekâ, robotik ve otomasyon teknolojilerine hâkim bireylere olan talep artacaktır. Endüstri 5.0'da insan ve makine iş birliği, koordinasyon becerileri kritik olacaktır. Geleneksel meslekler yerini yeni veya dijital yakalılara bırakacağı için işgücü talebinde önemli değişiklikler meydana gelecektir. Yeni teknolojilere entegrasyonu sağlayabilen sektörlerde istihdam oranlarında artış beklenirken, bazı sektörlerde azalabilecektir. Dolayısıyla çalışanların bu süreçlere uyum yeteneklerinin en üst düzeylere çıkarılması kadar eğitim sisteminin yenilenmesi, kariyer danışmanlığı hizmetlerinin geliştirilmesi, iş piyasası ve eğitim arasındaki ilişkilerin güçlendirilmesi, kültürel değişim gibi faktörler bu sürecin anahtar unsurlarıdır. Çalışanların kariyerleri boyunca sürekli öğrenme ve gelişim olanaklarına erişmeleri, kariyer danışmanlığı hizmetlerinin geliştirilmesi gerekmektedir.

ENDÜSTRI 5.0 SÜRECİNDE NİTELİKLİ ELEMAN EKSİKLİĞİNİN TEMEL NEDENLERİ VE ÇÖZÜM ÖNERİLERİ

Tablo 1'de işsizlik veya nitelikli eleman eksikliğinin temel nedenleri ve çözüm önerileri özetlenmiştir. Türkiye'de iş gücü piyasasında oluşan işsizlik ve nitelikli eleman eksikliğinin temel nedeninin; eğitim sistemi ile iş gücü piyasası arasındaki uyumsuzlukla bağlantılı olduğu; literatürde yer alan bazıları yukarıda verilen çalışmalarda görülmektedir. Bu bağlamda çözüm önerileri olarak Endüstri 5.0 kapsamında eğitimin revizyonu; iş gücü planlaması ve mesleki eğitim programlarının iyileştirilmesine dikkat çekilmektedir. Mezun öğrencilerin, piyasada talep edilen yetkinliklere sahip olabilmesi için eğitim sistemlerinin, iş gücü piyasasının taleplerine uyum sağlayacak şekilde güncellenmesi gerekmektedir.

Tablo 1: İşsizlik veya Nitelikli Eleman Eksikliğinin Temel Nedenleri ve Çözüm Önerilerine Genel Bakış

Nedenler	Çözüm Önerileri
Eğitim ve Öğretim Sisteminin Yetersizliği	Eğitim sisteminin Endüstri 5.0 kapsamında revizyonu geleceğin temel yapı taşını oluşturur.
Kariyer Danışmanlığı Hizmetlerinin Eksikliği	Kariyer danışmanlığı hizmetlerinin geliştirilmesi ve yaygınlaştırılması.
İş Piyasası Dinamikleri ve İhtiyaçlarına Uyum Eksikliği	İş gücü piyasası ve eğitim arasındaki ilişkinin güçlendirilmesi.
Ekonomik Faktörler	Durgunluk dönemlerinde işsizliğin artmasını önleyecek ekonomik destek ve teşvik programlarının oluşturulması.
Sosyal Faktörler	Bölgesel dengesizliği ve toplumsal cinsiyet eşitsizliği gibi uygulamaları azaltmaya yönelik politikaların geliştirilmesi.

Tablo, yazar tarafından hazırlanmıştır.

Güncellenme sağlanamadığı sürece bireylerin iş bulma süreçlerinde zorluk yaşamaları kadar; iş dünyasının da pratik becerilere sahip, nitelikli eleman ihtiyacının karşılanması zor gözükmektedir. Bu sorunun nedeni ve/veya çözümü, Tablo 1'in ikinci satırında yer alan kariyer danışmanlığı hizmetlerinin eksikliğinin giderilmesinde yatmaktadır. Birçok gencin doğru kariyer yolu konusunda bilinçlenmesi için kariyer danışmanlığı hizmetlerinin yaygınlaştırılması gerekmektedir. Bu eksikliğin giderilmesi durumunda bireylerin kendi yeteneklerine uygun alanlarda kariyer yapmaları kolaylaşacaktır. Bunun için eğitim öncesi programlarda başlayacak kariyer danışmanlığı hizmetlerinin yaygınlaştırılması, iş dünyası ile kariyer danışmanlığı sistemlerinin entegre edilmesi, öğrencilere beceri geliştirme ve kendilerini tanıma fırsatları sunacak programların artırılması gerekmektedir.

KARIYER PLANLAMALARINDA REHBERLIK VE DANIŞMANLIK HİZMETLERİNİN ÖNEMİ

Kariyer planlaması, bireylerin, kariyer hedeflerini belirlemeleri ve bu hedeflere ulaşmaları için gerekli adımları atmaları sürecidir. Endüstri 5.0'da işgücünün niteliklerini artırmak ve işsizlik oranlarını azaltmak için etkin bir kariyer planlaması şarttır.

İşsizlik ve nitelikli eleman eksikliğinde; eğitim ve işgücü piyasası arasındaki uyumsuzluklar, istihdam yaratmadaki yetersizlikler ve mesleki yönlendirme eksiklikleri başlıca sebepler olarak görülmektedir. Dolayısıyla gençlere yönelik kariyer planlama hizmetlerinin artırılması gerekmektedir.

Kariyer planlaması ve yönetimi, örgütlerde verimliliği etkileyen en büyük faktör beşerî sermaye olduğunun anlaşılması üzerine, insanın motivasyonuna yönelik yaklaşımlar sürekli olarak geliştiriliyor. Bu kapsamda danışmanlık atölyeleri, kendini geliştirme kaynakları ve eğitim seminerleri, en yaygın yöntemlerdendir. Bunlara ilave olarak örgütler, kendi kimliğine ve kültürüne ilişkin özgün yayınlar, beceri, yetenek ve ilgi testleri yapabilir. Böylesi çalışmaların temel amacı, insanların yeteneklerini kullanarak hak ettikleri yere gelmelerine yardımcı olmaktır. Bu yardım, örgütler bünyesinde olabileceği gibi kişinin kendi kariyerini yönetmesi ve planlamasında bireysel yeteneğini kullanmasıyla da mümkündür (Uzun, 2003).

Bireyin kariyer yolunu seçmesi ve bu yolda ilerlemesi veya başka bir kariyer yolunu seçmesi üzerinde etkisi olan birçok faktör vardır. İnsanlar, yetenekleriyle birlikte kariyer fırsatları aramakla kalmaz, aynı zamanda kariyerlerinde ilerlemenin yollarını aramaktadırlar. Bir kişinin kariyer belirleyicisi, çoğunlukla bireyin kendisi olmakla birlikte, birey dışındaki faktörler tarafından da olumlu ya da olumsuz etkilenir. Kariyer engeli ve kariyer sorunu olarak tanımlanan ve kişinin hem seçeceği kariyeri hem de gelişim sağlayacağı kariyeri şekillendiren ve bireysel kariyer planının dışına çıkmaya neden olan faktörler vardır. Bunlar bireyin kendisinden, örgütten veya toplumsal yapıdan kaynaklanabilir (Bozkurt, 2019: 63-64).

Aile, ön yargı, kişisel tercihler, stres, tükenmişlik, örgüt kültürü, işten çıkarma, gözden düşme, işletme politikaları, yetersiz yetenekler gibi birçok faktör bireyler için kariyer engeli olabilir. İşletme yöneticileri tarafından belirlenen politikalar, bireylerin ilerlemesini yavaşlatıcı ya da tamamen durdurucu olabilir. İstihdam politikalarının yanlışlığı, yeteneklerin yanlış belirlenmesi nedeniyle, özellikle maddi kazanç güdüsü ile kişinin başarılı olamayacağı alanlara yönelmesi de kariyer engelidir. Aynı şekilde kendisine birden fazla kariyer yolu çizen bireylerin zamanla karşılaşabileceği stres ve tükenmişlik, kariyerlerinde engeller oluşturma potansiyeline sahiptir. Bireyler, işletmelerde cinsiyet ayrımcılığı nedeniyle birden fazla kariyer alanına yönelme, düzleşme ve eşlerinin kariyer sorunları gibi birçok kariyer sonunu yaşarlar. Özetle kişinin ailesi, iş yeri ve kendisi, kariyerindeki zorluklara

neden olabilir ki, bu sorunların giderilebilmesi veya etkilerinin azaltılabilmesinde kariyer danışmanlığı gerekmektedir (Yazıcı, 2024).

Kariyer Danışmanlığı Uygulamalarının Önemi

Endüstri 5.0 sürecinde nitelikli eleman eksikliğini gidermek ve işsizliği azaltmak için Türkiye'de beşikten mezara kariyer planlaması ve danışmanlığı, hayatın her aşamasında bireyleri destekleyerek kapsamlı bir yaklaşım gerektirir.

İş Hayatı Öncesinde Kariyer Danışmanlığı Önerileri

- Erken Çocukluk Dönemi STEM (Science, Technology, Engineering, Mathematics) Eğitimi: Erken yaşlardan itibaren bilim, teknoloji, mühendislik ve matematik eğitimine ağırlık verilmelidir. Bu, çocukların teknolojik ve analitik düşünme becerilerini geliştirmelerine yardımcı olur.
- Okul öncesi eğitimde yaratıcı ve eleştirel düşünme becerileri teşvik edilmelidir.
- İlk ve Orta Öğretimde öğrencilere çeşitli meslekler ve kariyer yolları hakkında bilgi verilmeli, ilgi alanlarına göre yönlendirmeler yapılmalıdır.
- Öğrencilerin gerçek dünya deneyimi kazanmaları için projeler ve staj programları düzenlenmelidir. Bireylerin, kariyer hedeflerini belirlemelerine ve hedeflerine ulaşmalarına yardımcı olmak için kariyer danışmanlığı hizmetleri ve mentörlük hizmetleri sunulmalıdır.
- Lise döneminde öğrencilere kariyer planlamasında rehberlik edecek kariyer danışmanları atanmalıdır.
- Bu rehberlerin yönlendiriciliğinde, sanayi ile iş birliği yaparak öğrencilerin iş dünyasıyla tanışmaları sağlanmalıdır.
- Öğrencilere girişimcilik eğitimi verilerek, kendi işlerini kurmaları teşvik edilmelidir.
- Çalışanların meslek hayatları boyunca sürekli eğitim ve gelişim imkanlarına erişimleri sağlanmalıdır.

İş Hayatında Kariyer Danışmanlığı ve Mentörlük Önerileri

- İş hayatında deneyimli profesyoneller ile yeni başlayanlar arasında mentör-mentee ilişkileri kurularak, bilgi ve beceri transferi sağlanmalıdır.
- Çalışanların yeni beceriler öğrenmeleri ve mevcut becerilerini geliştirmeleri için sürekli eğitim programları sunulmalıdır.
- Çalışanların dijital becerilerini ve teknolojik yeniliklere uyum sağlamaları için eğitim ve oryantasyon programları oluşturulmalıdır. Bu sürecin temel amacı, yeni çalışanların şirket kültürünü, iş süreçlerini ve beklentileri anlamalarını sağlamaktır.
- İşverenler, nitelikli eleman eksikliğini gidermek için stratejik işsizlik programları ve işe alım kampanyaları düzenlemelidir.
- Çalışanların motivasyonunu artırmak ve iş tatminini sağlamak için pozitif bir çalışma ortamı oluşturulmalıdır.
- Çalışanların iş tatminini değerlendirmek ve geliştirmek için düzenli araştırmalar yapılmalıdır.
- Yapay zekâ ve otomasyon teknolojileri ile çalışanların iş süreçlerini optimize etmeleri için destek sağlanmalıdır.
- Çalışanların yaşam boyu öğrenme ve iş-yaşam dengesi sağlamaları için esnek çalışma modelleri uygulanmalıdır.
- Emeklilik döneminde de aktif olmayı sürdüren bireyler için yaşam boyu öğrenme programları düzenlenmelidir.
- Emekli bireylerin bilgi ve deneyimlerini toplumla paylaşmaları için ortamlar oluşturularak teşvik edilmelidir.

SONUÇ VE ÖNERİLER

Günümüzün gelişmiş ekonomilerinde geçerli Endüstri 4.0 paradigmasının niceliksel ve niteliksel özelliklerinin hızla değişen dünyasında, bireysel ve kurumsal düzeyde başarılı olanlar; sadece finansal performansta değil, aynı zamanda bilgi yönetimi ve iş zekâsı yetkinliklerinde de öne çıkıyor. Dijitalleşme, büyük veri (big data) ve yapay zekâ gibi teknolojilerin ön plana çıktığı bu dönemde ve Endüstri 5.0 sürecinde; yöneticiler ve/veya şirket sahipleri için bilgi ve iş zekâsı, sürdürülebilir büyüme ve rekabet avantajı elde etmek için vazgeçilmez yetkinliklerdir. Dijitalleşen dünyada veri analizi, yapay zekâ, müşteri ilişkileri yönetimi ve risk değerlendirme gibi faktörler, yöneticilerin karar alma süreçlerini daha verimli ve etkili hale getirmektedir. Şirketler bu yetkinlikleri, iş süreçlerine entegre ederek; hızlı değişen iş dünyasında ayakta kalabilir ve geleceğe hazırlanabilirler. Dolayısıyla bu süreçteki işsizlik ve nitelikli eleman eksikliği gibi sorunların temelinde; eğitim ve işgücü piyasası arasındaki uyumsuzluklar, istihdam yaratmadaki yetersizlikler ve mesleki yönlendirme eksiklikleri başlıca sebepler olarak görülmektedir.

Endüstri 5.0, insan ve makine arasındaki iş birliğini vurgulayan, kişiselleştirilmiş ve sürdürülebilir üretimi hedefleyen bir devrim niteliğindedir. Çalışanların bu süreçlere uyum yeteneklerini en üst düzeylere çıkarması amaçlanır. Ancak bireylerin bunu tek başlarına gerçekleştirmeleri zordur. Dolayısıyla üretimde en önemli faktör olan beşerî sermayenin niteliksel ve niceliksel özelliklerinin ulusal ölçekte planlanması gerekmektedir. Bunu sağlamak için eğitim sisteminin yenilenmesi, kariyer danışmanlığı hizmetlerinin geliştirilmesi, iş piyasası ve eğitim arasındaki ilişkinin güçlendirilmesi, ekonomik destek programları ve kültürel değişim gibi faktörler bu değişim sürecinin kilit unsurlarıdır.

Endüstri 5.0 sürecinde bu kilit unsurlara uyulması, gerekenlerin acilen devreye alınması, Türkiye'de ekonomik ve sosyal kalkınmada önemli kazanımlar sağlayacaktır. Endüstri 5.0 sürecinde nitelikli eleman eksikliğini gidermek ve işsizliği azaltmak için Türkiye'de kariyer danışmanlığı ve mentörlük, çalışanların kariyer gelişimine ve iş tatminine önemli katkılarda bulunacaktır. Bu süreçte, işverenler ve çalışanlar arasında etkili iletişim ve iş birliği sağlanmalıdır. Beşikten mezara kariyer planlaması ve danışmanlığı uygulamaları ile de bireylerin her yaşta ve kariyer basamağında desteklenmesi sağlanmalıdır. Bu süreçte erken yaşlardan başlayacak sürekli eğitim, kariyer danışmanlığı ve mentörlük programları önemli rol oynayacaktır. Kısacası Türkiye, Endüstri 5.0 sürecinde nitelikli eleman eksikliğini gidermek ve işsizliği azaltmak için bu kapsamlı yaklaşımları benimsemelidir, gecikmeden uygulamaya geçmelidir.

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POLİTİK EKONOMİ'DEN NEO-KLASİK İKTİSATA: TEMEL FARKLILIKLAR VE DÖNÜŞÜMLER

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Özet

Üretim sürecinde insanlar, içinde bulundukları toplumdan bağımsız değildirler. Üretime, birbirleriyle ilişkili olarak katılmakta ve üretken faaliyetlerinin doğada meydana getirdikleri değişiklikler, kendi doğalarında da değişime neden olmaktadır. Politik ekonomi, bu üretim ilişkileri sürecinde gözlemlenen tüm değişim ve dönüşümleri incelerken, günümüzde üniversitelerin ekonomi bölümlerinde öğretilen modern (neo-klasik) iktisat genellikle *"sınırlı kaynaklarla sonsuz talepleri karşılama"* üzerine dar bir odaklanma sergilemektedir. Bu dar yaklaşım, ekonomiyi formüller ve nicel analizler dizisine indirgemekte ve ekonomik teoriler ile bunların ortaya çıktığı sosyal koşullar arasındaki zengin etkileşimi göz ardı etmektedir. Sosyal alanlardan yapılan bu soyutlama, ekonomiyi toplumsal çelişkilerden de ayırarak yalnızca bireysel eylemler ve ihtiyaçları karşılama süreçlerine indirgemektedir. Neo-klasik ekonomide, politik ekonominin odaklandığı sosyal ilişkiler, bireylerin ihtiyaçlarını karşılamak için kullandıkları nesnelerle ilişkileriyle değiştirilmiştir. Bu çalışma, politik ekonomiden iktisada geçişi daha geniş bir tarihsel bağlamda ve ekonomik teorilerin evrimini şekillendiren sosyal ve politik etkilerin eleştirel bir incelemesini içerecek şekilde aydınlatmayı amaçlamaktadır.

Anahtar Kelimeler: politik ekonomi, iktisat, neo-klasik iktisat, ekonomik dönüşüm

FROM POLITICAL ECONOMY TO NEO-CLASSICAL ECONOMICS: FUNDAMENTAL DIFFERENCES AND TRANSFORMATIONS

Abstract

In the production process, individuals are not independent of the society in which they live. They participate in production in relation to one another, and the changes their productive activities bring about in nature also result in transformations in their own nature. While political economy examines all the changes and transformations observed during this process of production relations, modern (neo-classical) economics taught in university economics departments today generally exhibits a narrow focus on "meeting infinite demands with limited resources." This narrow approach reduces economics to a series of formulas and quantitative analyses, overlooking the rich interplay between economic theories and the social conditions from which they arise. This abstraction from social contexts also separates economics from social contradictions, narrowing the focus to individual actions and the processes of meeting needs. In neo-classical economics, the social relations that political economy emphasizes have been replaced by the relationships individuals have with the objects they use to satisfy their needs. This study aims to illuminate the transition from political economy to economics within a broader historical context and to critically examine the social and political influences that shape the evolution of economic theories.

Key words: political economy, economics, neo classical economics, economic transformation

Jel Codes: B11, B12, B13, B14, P16

GİRİŞ

İhtiyacı gidermeye yönelik nesneler, doğada her zaman hazır olarak bulunmazlar. Bu sebeple doğanın, ihtiyaçları gidermeye yönelik dönüştürülmesi gerekir. İnsan, üretici etkinliğiyle doğayı kendi ihtiyaçları doğrultusunda şekillendirmektedir. Fakat elbette ki yine insan, üretim sürecinde içinde yaşadığı toplumdan bağımsız değildir. Birbirleriyle ilişki içinde üretim sürecine katılırlar ve üretici etkinlikleriyle doğada meydana getirdikleri değişimlerin sonucunda kendi öz niteliklerinde, dolayısıyla kendi doğalarında da değişime sebep olurlar. Politik ekonomi işte bu üretim ilişkileri süresince gözlenen tüm değişim ve dönüşümlerle ilgilidir.

Politik ekonomi kapsamına tüm bu ilişkileri alırken bizler, bugün üniversitelerin "iktisat" bölümlerinde okutulan "iktisat" kitaplarında, *kapsamın "sınırlı kaynaklarla sonsuz isteklerin en uygun şekilde karşılanması"*na

indirgendiğine şahit olmaktayız. Bu yönüyle iktisat, yani *"kaynakların sınırsız ihtiyaçlar iyin en uygun tahsisinin sağlanması çabası"*, üzerinde durulan konunun üretimden çok değişim olduğunu göstermektedir. Ana akım neo-klasik iktisat olarak adlandırılan, politikadan bütünüyle soyutlandığı ölçüde, matematiksel yöntemler kullanarak pozitif bilimlere yaklaşan bu disiplin, politik ekonominin kapsam ve yöntemini reddetmektedir. İlerleyen bölümlerde bu reddedişin bileşenleri irdelenecektir. Fakat belki de giriş bölümü olması itibariyle burada sözü edilmesi gereken ilk şey, makale boyunca aynı disiplini "iktisat" ya da "politik ekonomi" olarak ifade ederken yaptığımızın, iktisadi konulara farklı bakışları ve koşullarına tabi olunan dönemi vurgulamak olduğudur. Zira dönemlerin içerdiği toplumsal olgu ve süreçler, bilimlerin (özellikle sosyal bilimlerin) yöntemlerini ve kapsamlarını kuşkusuz etkilemektedir. Döneme ait değer yargıları, güç ilişkileri, din gibi belirleyiciler bilimin ortaya koydukları (yöntemi ve kapsamı da) ve var olan gerçeklik arasındaki mesafeye dairdir. Yani toplumsal içeriği olan bilimler tüm bu güç ilişkileri ve değer yargılarından bağımsız değildir. Bu yönüyle bilimlerin de toplumsal yönünün olduğu akılda tutulmalıdır.

Bu makalede genel olarak politik ekonomi, literatürdeki Klasik ve Ricardo'cu iktisadın iktisadi konulara yaklaşımının bir ifadesi olarak kullanımından öte, bütün bir politik ekonomi için kullanılacaktır. Ekonomik olan politiktir. Lenin, ekonomi politik için "toplumsal üretimin tarihsel sistemlerinin gelişmesini ele alan bilimdir" demiştir (Eaton, 1978, s.17). Tarihsel süreçte toplumlar ve ekonomilerinin (ve bu ikisinin ilişkisinin) farklılaştığı ölçüde politik ekonominin içeriği gelişecek ve değişecektir. Bu yüzden makale boyunca, Antik Yunan'dan başlanarak günümüz neo-klasik iktisadına değin politik ekonominin çeşitli tanımları verilecektir. Böylelikle hem politik ekonominin evrensel ve tek bir tanımını yapma uğraşının manasız olduğu ortaya konacak hem de tarihsel süreçte politik ekonominin kapsam ve metodunun değişimi izlenebilecektir.

ANTİK YUNAN: OIKOS VE NOMOS

İnsanlar arasındaki ekonomik ilişkiler, basit bir mekanizma ile işliyor da olsa, insanlık tarihinin başlangıcından itibaren var olmuştur. Dolayısıyla politik ekonomiden insanlık tarihinin ilk aşamalarından itibaren bahsetmemiz mümkündür. Bu yönüyle iktisadi düşünceye bir başlangıç noktası tanımlamak oldukça güç bir iştir. Buna ek, yazının icadından öncesini inceleme olanağımız da yoktur. Ancak biz burada, makale sınırlılıkları dolayısıyla bir başlangıç noktası seçmek zorunluluğu duymaktayız. Bu başlangıç noktası da iktisadi düşüncenin felsefi kaynaklarının çıkış noktası olan Yunan toplumlarından başkası olamazdı.

"Eski Yunan tarihinin M.Ö.1000-700 tarihleri arasındaki dönemi, halkın sınıflara ayrılması ve bir soylular sınıfının ortaya çıkması, şehir devletlerinin kurulması ve soylular sınıfının kralları devirerek siyasal iktidarı ellerine almaları gibi çok önemli ekonomik, sosyal ve siyasal değişmelerin yer almasıyla belirgindir. İlk zamanlar toprak üzerinde özel mülkiyet yoktur, mülkiyet kolektiftir. Özel mülkiyet bazı gelişmeler sonucu ortaya çıkmıştır (Selik, 1974, s.9)."

Özel mülkiyetin ortaya çıkması, toplumun topraksız ya da az topraklı yoksullar ve toprak sahibi soylular olarak iki sınıfa ayrıldığını gösterir. Soylu zenginler, bir kısım özgür kendi toprağını işleyen halk, bir kısım kira karşılığı toprağı işleyen halk, toprağa bağlı ve ürettiği ürünün bir kısmını toprak sahibine veren halk, zanaatkârlar ve sahiplerinin malı olmaktan öte bir değeri olmayan köleler bu sınıfların temsilcileridir (Kollektif, 1976, s.42).

"Ekonomi politik, toplumsal üretim ilişkilerinin, insanların ekonomik ilişkilerinin bilimidir. Ekonomi politik, insan toplumunun çeşitli gelişim aşamalarında maddi malların üretimi, değişimi, dağılımı ve tüketimine hâkim olan ekonomik kanunları tespit eder. (Selik, 1974, s.32-33)"

Ekonominin kavram olarak ilk kullanılışı Aristo'da görülmektedir. Aristo, yaşadığı toplumsal gerçekliğe paralel olarak, ekonomiyi oikos (ev idaresi) ve nomos(kanun) arasındaki ilişkileri göstermek ve ev ekonomisinin kanunlarını açıklamak için türetmiştir. Burada ekonomi hane halkı içinde gerçekleşen üretimin yasalarıdır. İş bölümünün henüz gelişmediği, üretim ve dağıtımın site içerisinde ihtiyaç odaklı yapıldığı, ekonomik birimin hane halkı olduğu bu tür bir ekonomide, tüm bunlar dolayısıyla ekonomik ilişkiler ve toplumsal ilişkiler birbiriyle iç içedir. Yani burada ekonomik anlamda bir gelişim toplumsal yeniden üretim demek olacaktır. Günümüz kapitalist toplumlarında görülen iktisat ve toplum ayrımı burada görülmemektedir.

Aristo, ev idaresi biliminin içinde olmak üzere bir de elimizde olan her şeyin iki kullanılışı olduğundan söz eder. Bunlardan biri o şeyin doğrudan kullanımı iken, diğeri ise zorunlu olmayan kullanışıdır. Yani bir ayakkabı hem giymek için hem de değişim için kullanılabilir (Selik, 1978, s.32-33). Buradan Aristo'nun ekonomi politiğin değer teorisinde kullanılan kullanım değeri ve değişim değeri kavramlarının öncülü olduğunu görmekteyiz.

Yunan toplumlarını anlamaya çalışan Aristo'nun ekonomisinin kapsamında hane halkı ve politik kurumlar bulunur. Ticaretin ihtiyaç odaklı yapıldığı ve henüz gelişmediği bu dönemde, kişisel kazanç için üretim de söz konusu değildir (Buğra, 1989, s.27). Site devleti ve hane halkının(oikos) ihtiyaçlarını gidermek esastır. Aristo, Yunan toplumlarında iş bölümünün sosyolojik bir temeli olduğunu, genel ve meşru bir şekilde köle kabul edilen kol işçilerine ekonomik faaliyeti gerçekleştirme görevi verilirken, özgür seçkin tabakanın site yönetimi, korunması gibi görevleri olduğunu belirtir (Lajigue, 1971, s.11).

Devlet müdahalesi meselesi ise Yunan toplumlarında, nüfusu dengede tutabilmek için evlenmeleri, yurttaşlığa alınmaları, zorla sürgün edilmeleri, hatta çocukların öldürülmesini savunacak kadar filozofların desteğini almıştır (Lajigue, 1971, s.12).

İmtiyazlı seçkinlerin olduğu ve üretimin aşağılık bir iş olarak görüldüğünden köleler vasıtasıyla gerçekleştirildiği bu toplumsal yapıda, toplumsal tabakalardan söz edip ekonomik ilişkilerin politik olmadığını iddia etmek anlamlı olmayacaktır.

MERKANTİLİST DÖNEM: DEVLETİ YÖNETME SANATI OLARAK POLİTİK EKONOMİ

15.yüzyılın ortalarından, 18.yüzyılın ortalarına kadar olan dönem ticari kapitalizm ya da merkantilizm olarak adlandırılmaktadır. Bu dönemde toplumda, dinde ve politikada devrim dönemidir. Doğal bilimlerin geliştiği, akılcılığın önem kazandığı, Rönesans ve Reform hareketlerinin gerçekleştiği, Amerika kıtasının keşfedildiği (kolonicilik ve sömürünün ortaya çıktığı) ve değerli madenlerin Avrupa'ya aktığı, icatların fazlalaştığı (pusula, matbaa gibi), ulusal devletlerin kurulduğu ve ticaretin geliştiği bir dönemdir. Bu dönemin ticaretten elde ettiği zenginlik, ilerleyen dönemlerde sanayi sermayesine ve sanayi kapitalizmine yol açacaktır.

Politik ekonominin atılım yaşadığı 17.yüzyılın ikinci yarısında merkantilistlerin iktisat ve politik ekonomi ayrımına dair bir tespitleri vardır.

"Merkantilistlere göre "iktisat" bir bireyi yönetme sanatı, "politik ekonomi" ise bir devleti yönetme sanatıdır. Ulusal devletlerin tarih sahnesinde ilk defa görülmeye başlandığı bu dönemde, merkantilistlerin bütün gayreti, devletin izlediği politikaları savunmak ve ulusal devlete ihtiyaç duyduğu kaynakları sağlama yöntemlerini göstermekti (Savaş, 1986, s.7)."

Yani ekonomi politik terimi burada ekonominin devletle bağlantısını vurgular. Zenginliğin kaynağını değerli maden miktarının fazlalığında gördüklerinden, ulus devletler ellerinde en fazla altın ve gümüşü tutmak konusunda çaba göstermelidirler. Bunun için ihracat her zaman ithalattan fazla olmalı ve bu değerli madenler ülke içinde tutulmalıdır. Bu hedefi gerçekleştirme yönündeki tedbirleri alacak ve uygulayacak olan ise devlettir (Selik, 1974, s.115). Güçlü devlet bu dönemde, milliyetçi ve sömürgeci amaçların gerçekleştirilmesi için aynı zamanda zorunlu bir ön koşuldu (Selik, 1974, s.115). Fakat burada zenginliğin küçük bir azınlığın elinde olduğu unutulmamalıdır. Halk, asker ve işçi olduğu ölçüde fonksiyonel olarak anlama sahiplerdi.

"Ekonomi politik, kendileri için hayati önem taşıyan malların üretimi sırasında insanlar arasında ortaya çıkan toplumsal ilişkileri inceler. Bu ilişkilere üretim ilişkileri denir. Üretim ilişkileri diğer bütün toplumsal ilişkilerin temelidir. İnsanlar arasındaki hukuki, siyasi ve diğer ilişkiler üretim ilişkilerine göre belirlenir (Kolektif, 1976, s.27)."

Ekonomi politiğin içeriği bu dönemde karı öne çıkaran yapıların ortaya çıkmasıyla değişmeye başlamaktadır. Ekonomik birim Yunan toplumlarındaki "hane halkı"ndan farklı olarak "birey"dir. Kullanım değerinin egemen olduğu bir toplumdan, yavaş yavaş değişim değeri egemenliğindeki topluma geçilmektedir.

KLASİK POLİTİK EKONOMİ: ZENGİNLİĞİN BİRİKİMİ VE BÖLÜŞÜMÜ ÜZERİNE

Klasik politik ekonomide araştırma nesnesi olan bireyler, kendi başına bireysel çıkarları için çabalayan insanlardır. Sermaye biriktirmek için lüks tüketimden yeri geldiği zaman kaçınır, rekabet eder, giderek daha fazla üretmeye çabalar ve çok çalışırlar. Burada sözü edilmesi gereken ilk husus, Adam Smith'in Enqurity into The Nature and Causes The Whealth of Nations (Ulusların Zenginliğinin Doğası ve Nedenleri Üzerine Bir İnceleme) adlı eserinde sık sık vurguladığı üzere özel mülkiyet isteğinin bir güdü olduğu ve doğuştan geldiğinin düşünülmesidir. Şöyle ki "Koşullarımızı iyileştirme arzusu ana rahminden başlar ve mezara kadar sürer", "Her birey, sürekli olarak elindeki sermayeyi en iyi biçimde kullanmaya çalışır" gibi açıklamalar sınırsız bir özel mülkiyetin kapılarını, doğuştan gelen bir güdü ile meşrulaştırmaya yaramaktadır (Weiskopt, 1996, s.51).

"Yiyeceğimizi kasabın, biracının ya da fırıncının yardımseverliği dolayısıyla değil, onların kendi çıkarlarını gözetmeleri dolayısıyla elde ederiz. Onların insancılıklarına değil bencilliklerine sesleniriz ve kendi ihtiyaçlarımızdan değil onların kazançlarından söz ederiz (Smith, 2006, s.26)"

Buradan da anlaşılacağı üzere Smith, kişisel çıkar üzerinden örgütlenen bir yapı kurgular. Laisses Faire(bırakınız yapsınlar) düsturuyla kişisel çıkarının peşinde koşan insanların ülkeyi ekonomik refaha ulaştıracağını düşünüyordu. "Görünmez bir el"in, ki bundan devletin bütünüyle gerisinde durduğu serbest piyasa ekonomisi dinamiği anlaşılmalıdır, toplumun kaynaklarını efektif bir biçimde dağıtacağını ve sınıflar arasında uyumun etkin olacağını ileri sürmüştür.

Smith merkantilist politikaları merkezine ticareti aldığı için ve devlet planlaması içerdiği için eleştirmektedir. Çünkü iş bölümünün geliştiği değişim amaçlı ekonomide, yaratılan değerin büyümesi için piyasanın gelişmesi gerekir, devlet de bu hususta bir engeldir, ekonomiye müdahale etmemelidir. Doğal düzen toplum için en iyiyi sağlayacaktır. Devletin rolü yalnızca ülkenin güvenliğini sağlamak, yasaların uygulanmasını sağlamak, piyasanın ilgi alanında olmayan bayındırlık işlerini yürütmek olmalıdır (Güriz,1995, s.135). Bunun yanında devlet sınıf çıkarları konusunda da tarafsız olmalıdır. Her sınıftan vatandaşına adalet ve özgürlük borçludur ve bir sınıfın çıkarını diğer sınıfın zararına desteklemek bu borcun ödenmesi önünde önemli bir engeldir (Denis,1997, s.216).

Tarif ettiği ulusal ekonomi "emek" merkezli olmalıdır. Çünkü zenginliğin kaynağı emektir. Ekonomik bolluk ve refah da iş bölümüyle birlikte gelir. Çünkü iş bölümü iş süreçlerini hızlandırır. Örneğin, bir insanın hammaddesini de topraktan çıkarmak suretiyle üretimini 1 yılda gerçekleştirdiği 1 toplu iğneyi, iş bölümü uygulanan bir ekonomide aynı sürede 2000 adet olarak üretmek mümkündür (Denis,1997, s.193). Diğer yandan "Ulusların Zenginliği" kitabının bilimsel bir ekonomi kitabı olmasının yanında, siyasi bir program özelliği taşıdığını da belirtmemiz gerekir (Güriz,1995, s.132). Smith, sanayi devriminin başlangıcında olan İngiltere'de, serbest piyasa ekonomisinin zenginliğin ve politik özgürlüğün güvencesi olduğunu düşünmektedir.

Değer teorisinde ise Smith'in söylediği, "bir malın değişim değerini belirleyen şeyin, o malın üretiminde harcanan emek, katlanılan zahmet" olduğudur. Tabi bu noktada kullanım değeri ve değişim değeri ayrımını vermek anlamlı olacaktır. Ürünün ürünü elinde bulundurana sunduğu değer kullanım değeri aynı ürünün başka ürünleri satın alabilme durumu ise değişim değeri demektir. Smith, değeri değişim değeri üzerinden açıklamıştır.

Smith'e göre dış ticaret serbest olmalıdır. Çünkü bu ülkenin kendi dinamiklerine göre uzmanlaşması gerekli alanı bulmasına olanak tanıyacak, verimlikle birlikte zenginlik artacaktır (Kazgan,1968, s.115).

David Ricardo ise Smith'i gelişmeyi sağlayan sermaye birikimi olgusunu sistemine olması gerektiği gibi oturtamadığı için eleştirir ve tam da bundan ötürü yanlış sonuçlara ulaştığını belirtir. Smith'i eleştirisi üzerinden kurduğu kendi sisteminde ise yaratılan değerin farklı kesimler arasındaki "bölüşüm"üne odaklanır. Bunu Malthus'a yazdığı mektuptan kısa bir pasajla aktaralım.

"Politik ekonomi, size göre, servetin niteliği ve nedenleri üstüne yapılan bir inceleme, bana göre ise üretim faaliyetinde yaratılan ürünün, bunun meydana gelişine katılan sınıflar arasında bölüşümünü belirleyen kurallar üstüne yapılan bir incelemedir… İlk yoldaki incelemenin boş ve beyhude, ikincininse, bilimin tek gerçek hedefi olduğuna dair inancım tamdır (Akt Kuluç, 1970, s.5)."

"On the Principles of Politicial Economy and Taxation (Ekonomi Politiğin ve Vergilerin İlkeleri)" kitabında ulusal hasılanın toprak sahipleri, sermaye sahipleri ve işçiler arasında nasıl bölüşüleceğine yönelik yasalar bulmaya çalışır. Ricardo'nun ekonomi politik tanımı da buradan gelir, s. Ekonomi politik, yeryüzünün toplam ürününün, rant, kar ve ücretler olarak sınıfların her birine bölüştürülmesi yasalarını belirleyen bilimdir.

Ricardo da Smith gibi ulusların zenginliğinin kaynağını "emek"le açıklar ama Smith'ten ayrıldığı nokta temel meselesinin emek sonucu ortaya çıkan zenginliğinin hangi mekanizmalarla bölüşüldüğünü açığa çıkartmaktır. Zenginliğin kaynağını belirtmekten ziyade, gelişmeyi olumsuz etkileyen bölüşüm ilişkilerinde yoğunlaşmıştır (Ercan,1998, s.220). Burada vurgulanması gerekli bir başka nokta şudur, s.

"Toplumun başka başka aşamalarında, yeryüzünün tekmil ürününün bu sınıfların her birine kar, rant ve ücret adı altında dağılma oranları esas olarak birbirinden farklı olur. Bunun böyle oluşu, en başta, toprağın gerçek bereketine, sermaye birikimine ve nüfusa, tarımda uygulanan bilgiye, ustalığa ve kullanılan araçlara bağlıdır (Kuluç, 1979, s.86)."

Bu pasaj bize, Ricardo'nun zaman içinde değişime uğrayan, yani evrensel, tek örnek olmayan bir gelişme hareketi sunduğunu gösterir. Onun tahlili, üretim imkânlarının geliştiği aşamada, sınıfların bölüşümden alacakları payların değişip değişmeyeceğini incelemesi yönüyle klasik iktisatçılar arasında özgün bir yere sahiptir. Ricardo'nun bu gelişme çizgisi ve teorisinin tarihsel koşullara bağlılığı noktası, "political economy" ve "economics" kavramlarında da gözlenen bir farklılığa işaret etmektedir (Kuluç,1976, s.7). Political economy, üretim ilişkilerindeki tarihsel koşulları ve çoklu ilişkileri hesaba katarken, economics iktisadi süreçleri açıklamak için evrensel, herhangi bir zamanda herhangi bir yerde geçerli olabilecek(!) teoriler üretmektedir. Bunu "Politik İktisat'tan (Neo-klasik) İktisat'a" başlığında detaylı olarak ele alacağız.

MARX'IN POLİTİK EKONOMİ ELEŞTİRİSİ VE KATKILARI

Marx'ın politik ekonomi eleştirisi, onun düşünce sisteminin kilit noktasıdır. Genel olarak Marx'ın düşüncesi ve kapitalizm analizinin temelleri bu eleştiri üzerine inşa olunmuştur. Bu yüzden kapitalizmi anlamak için, klasik politik ekonomi ve Marx'ın politik ekonomi eleştirisini bilmek gereklidir.

Marx, Klasikler'in doğal olduklarını iddia ettikleri yasaları reddetmiş ve kapitalist toplumsal biçimin de diğer ilkel üretim biçimleri gibi "geçici" olma özelliğini vurgulamıştır. Ona göre klasikler, belirli toplumsal ilişkilerin ve belli bir üretim tarzının ürünü olan şeyi insanın doğasına/özüne atfederek tarihsel olanı doğallaştırmışlardır (Colin, 2008, s.52). Örneğin, Adam Smith, ticaret toplumunun insan doğasına uyduğunu ve mübadele eğiliminin insanın içsel bir özelliği olduğunu savunarak kapitalist ilişkileri evrenselleştirir. Marx'a göre toplumdan topluma değişmekle birlikte, toplumun bireylerde yarattığı özelliklerdir bunlar ve insan doğasına atfedilemezler (Fine, & Filho, 2012, s.29). Benzer biçimde, David Ricardo da sınıfların çıkarları, ücret ile kâr, kâr ile rant arasındaki çelişkileri toplumsal bir doğa yasası olarak değerlendirir. Ancak Marx'a göre, kapitalizm, tarihsel olarak belirlenmiş bir üretim tarzıdır ve kendisinden önce gelen üretim biçimleri kadar özgün ve önemlidir. Belirli tarihsel koşullar altında ortaya çıkan kapitalizm, bu koşullar ortadan kalktığında yerini yeni toplumsal ilişkilere bırakacaktır (Savran, 1979, s. 41).

Kapitalist ilişkilerin doğal kabul edilmesinin teorik dayanaklarından biri "meta fetişizmi"dir. Marx'a göre, kapitalist ekonomilerde emek ürünleri "meta" haline gelir ve bu metaların toplumsal üretim ilişkilerinden kaynaklanan yapısı gizlenir. Meta fetişizmi, malların yalnızca ekonomik değer taşıyan nesneler olmadığını, aynı zamanda toplumsal ilişkilerin bir yansıması olduğunu vurgular. Bu durum, emeğin yabancılaşmasının bir sonucudur. İşçiler hem üretim sürecinden hem de ürettikleri ürünlerden kopar; çünkü emeğin sonuçları sermaye sahiplerinin kontrolünde birikir (Marx, 1867/1976; Harvey, 2010).

Oscar Lange, politik ekonomi kavramı kullanımının ilk olarak Marx tarafından öne sürüldüğünü yazmıştır (Lange, 1974). Marx, klasik politik ekonomi eleştirisini yapabilmek için öncelikle bu yapıyı inşa etmek durumunda kalmıştır. Fakat temelde arzu ettiği, klasik politik ekonomiyi bir disiplin olarak geliştirmekten ziyade eleştirisini yapmaktır.

"Marx, ciddi bir şekilde klasik ekonomi üzerine çalıştı. Çünkü ekonomi çalışmasını, kapitalizme özgü sosyal ilişkileri temellendirmek için örtülü olsa bile, ilk girişim olarak gördü. Yalnızca bu şekilde ve ancak bu temel metodolojik gerekliliği titizlikle yerine getirdiği takdirde, teknik ekonomik analizin alaka veya geçerliliği olduğunu iddia edebileceğini savundu (Howard ve King, 1986, s.64)."

Marx, bu düşünceyle giriştiği klasik ekonomi politikle, kapitalizme içkin mekanizmaları açık etmiştir. Bu da onun kapitalist toplumu anlamasına, güçlü ve zayıf yönlerini kavrayarak onun sosyalist bir topluma dönüşebilme potansiyelinin olup olmadığını görmesine olanak tanıyan sağlam bir zemin işlevi görmüştür.

"Marx, klasik politik ekonominin kapitalist toplumun ortaya çıkışından ziyade, onun gerçekliğine yoğunlaşmasıyla vulgar (kaba) iktisattan ayırt edildiğini düşündü ve bu dürüst ve entelektüel bir kopuş oldu (Howard ve King, 1986, s.63)."

Marx'ın politik ekonomiye yönelik eleştirisi, modern burjuva toplumunun ekonomik işleyiş yasalarını açığa çıkarmaya odaklanır. Bu amaçla sivil toplumu analiz eder ki burada kastettiği, kapitalist modern toplumdur (Desai, 2019, s. 204; Üşür, s. 233). Marx'ın bu eleştiriyi gerçekleştirmesini mümkün kılan en temel unsur ise maddeci tarih anlayışına dayanan eleştirel perspektifidir (Savran, 1979, s. 45; Desai, 2019, s. 201). Marx'a göre, toplumların tarihsel gelişimi, üretim ilişkileri ve bu ilişkilerdeki sınıf çatışmalarının sonucudur. Tarihsel materyalizme göre her toplumsal sistem, üretim araçlarına sahip olan sınıf ile bu araçlara sahip olmayan ve geçimlerini sağlamak için

emek gücünü satmak zorunda kalan sınıf arasında sürekli bir çatışma barındırır. Kapitalist toplumda bu çatışma, sermaye sahipleri (burjuvazi) ile emekçi sınıf (proletarya) arasında en keskin haliyle yaşanır (Marx & Engels, 1848/1978).

Diğer yandan, A. Smith ve asıl olarak D. Ricardo'nun eserlerinden hareketle emek-değer teorisine ulaşmıştır. Bu noktada klasik politik ekonomiye yönelttiği, sözü edilmesi gerekli bir diğer eleştiri değerin, Ricardo'da olduğu gibi yalnızca üretimde harcanan emek-zaman olmadığıdır. Marx, Ricardo'nun emek-değer teorisini temel alarak kapitalist üretim ilişkilerindeki sömürü mekanizmasını ortaya koymuştur. Bir malın değeri, o malın üretiminde harcanan emek miktarına bağlıdır; ancak kapitalist, işçiye emeğinin tam karşılığını ödemez ve işçinin ürettiği değerin bir kısmını kendine alır. Marx, bu el konulan değeri "artı-değer" olarak adlandırır ve kapitalistin kârı bu artı-değerden gelir. İşçi, yalnızca kendi yaşamını sürdürebilecek kadar bir ücret alırken, kapitalist, işçinin fazladan ürettiği değeri kâr olarak cebine koyar (Marx, 1867/1976).

Bir diğer eleştiri, tarihsel bağlamdan kopartılmış bulunan üretim ilişkileridir. Marx bunun için toplumun örgütleniş biçimini açığa çıkarmak istemiştir. Çalışırlarken lord ya da serf, köle ya da efendi, sermayedar ya da işçi olan insanların kendi aralarındaki toplumsal ilişkilerine dikkat çekmiştir. Kuşkusuz ki bu insanların yaşayış tarzları da bireysel seçimden ziyade üretim süreci içerisinde bulundukları konumla bağlantılı olarak belirlenmektedir.

Peki Marx tüm bu analizi yaparken, nasıl bir yöntemle toplumsal gerçekliği anlamaya çalışmaktadır? Hegel diyalektiğinin baş aşağı edilmesi ile elde ettiği diyalektik materyalizm (maddeci diyalektik) Marx'ın toplumsal gerçeği anlama ve sergileme yöntemidir.

"Hegel için bütün olup bitenler, yalnızca kendi kafasının içinde olanlardan ibarettir. O, düşünce hareketi ile dünyayı inşa ettiğini sanıyor, oysa herkesin kafasında var olan düşünceleri yalnızca sistematik olarak yeniden inşa etmekle ve mutlak yönteme göre sınıflandırmakla kalıyor (Marx, s.2007, s.108)."

Marx'ın materyalizmi, Hegel'in tersine, fikirlerin bağımsız varoluşlarının olamayacağını, insanlığın bir ürünü olarak toplumdan ortaya çıktığını, insandan önce var olan ve onun sonrasında da var olmaya devam edecek doğayla ayrılmaz bir bütün olduklarını belirtir (Sweezy,2010, s.21).

Diyalektik yöntem ise "şeyleri ve kavramları, karşılıklı bağlantıları, karşılıklı etkileri ve bundan kaynaklanan değişiklikleri; doğuşları, gelişmeleri ve yok oluşları içinde göz önünde tutar (Engels,1995, s.481)". Bu yönüyle tamamen metafiziğin karşıtı olan diyalektik, gerçekte her şeyin birbirine bağlı olduğunu, kendi aralarında birbirini etkilemekte olduğunu söyler (Politzer,2004, s.48).

Marx, sorunların tespitinde klasik ekonomi politiği kullanır, ancak çözümü için gerekli çerçeveyi burada bulamaz. O iktisatta sınıf mücadelesini aramaktadır. Ekonomi politik ise bir sis perdesiyle bu mücadelenin üstünü örtmektedir. Bu şu şekilde gerçekleşir: Emek gücünün değeri ücret olarak kabul edilir ve bu inanç iki sınıf tarafından da paylaşılır. Emekçi emek gücünün karşılığını ücret olarak aldığına göre üretimdeki artış sermayeden kaynaklanıyor gibi görünür. Emek gücü ücret olarak başkalaşınca, artık değer de kar olarak başkalaşır. Emekçi için ortada bir sorun görünmemektedir. İstemediği bir işi yapmışsa bile karşılığını ücret olarak almıştır. (Fine ve Hardach ve Karras, 1979)

Marx'ın ekonomik kriz teorisi, kapitalist üretimin içsel çelişkilerine dayanır. Ona göre, kapitalizm sürekli genişleyen bir sistemdir ve üretim araçlarının yoğunlaşması işsizliği artırır. Bu "yedek işçi ordusu" olarak adlandırılan işsizler sınıfı, kapitalistlerin işçileri daha düşük ücretlerle çalıştırabilmelerini sağlar ve işçi sınıfını sürekli olarak baskı altında tutar (Marx, 1867/1976). Ancak bu durum aynı zamanda kapitalizmin krizlerini de tetikler. Çünkü artı-değer üretme çabası, üretim fazlası yaratır ve talep yetersizliği (ücretlerin düşüklüğünden) sonucu ekonomik krizlere yol açar.

Diğer taraftan tam da bu noktada işçinin bu algılayışını temellendirecek ve Marx'ın politik ekonomi eleştirisini derinleştirecek bir başka konuya değinmemiz gerekir: Kapitalizm analizinde oldukça önemli bir yeri olan, artı değerin yaratılması sürecinde meydana gelen, özel mülkiyet ve iş bölümü kurumuyla birebir ilişkili yabancılaşma kuramının.

"Emeğinizin meyveleri elinizden alınırsa yaratıcılığınızdan koparılırsınız, benlik hissinizi kaybedersiniz (Hughes, 2016)."

Marx, emeğin yabancılaşmasının gerçeklikle ilişkisini şu şekilde ifade eder ve ardından yabancılaşmanın çözümlemesine geçer. Marx, ilk olarak üretici etkinliğe yabancılaşmayı ele alır. Bu durum, çalışma faaliyetinin dışsal bir niteliğe sahip olmasından kaynaklanmaktadır.

"Emeğin yabancı niteliği, fizik ya da başka bir zorlama ortadan kalkar kalkmaz çalışmadan veba gibi kaçılması olgusunda açıkça görünür. Dışsal emek, insanın içinde kendine yabancılaştığı emek, bir kendini kurban etme, bir onur kırılması çalışmasıdır. Son olarak emeğin işçiye dışsal niteliği, onun işçinin kendi öz malı değil ama bir başkasının malı olması, işçiye ilişkin (ait) olmaması, işçinin emekte (çalışmada) kendine değil ama bir başkasına ilişkin olması olgusunda da görünür (Marx,2013, s.25)."

İşçi, kendi çıkarları doğrultusunda değil, başkalarının çıkarları için çalışmaktadır ve bu çalışma, kendi denetiminden ziyade başkalarının denetimi altındadır. İşçinin çalışması gönüllü olmadığından hem fiziksel hem de zihinsel olarak serbest değildir. İşçi, ihtiyaçlarını karşılayabilmek için zorunlu olarak çalışmakta ve bu çalışma onun için sadece bir araç niteliğindedir (Marx, 2013, s. 78). Çalışmanın işçiye dışsal olması ve üretici etkinliğin bir başkası için gerçekleştiriliyor olması nedeniyle, işçi kendini gerçekleştirememekte ve emeğine yabancılaşmış durumda kalmaktadır.

Emeğin ürününe yabancılaşma, emeğin yabancılaşmasının bir başka boyutunu temsil eder. Bu durum, emeğin ürünüyle arasında öylesine bir mesafe yaratır ki, bu ürün sonunda emeğin karşısında bağımsız ve yabancı bir güç haline gelir.

"İşçinin kendi ürünü içinde yabancılaşması, yalnızca emeğinin bir nesne, dışsal bir varoluş durumuna geldiği anlamına değil ama emeğinin kendi dışında, ondan bağımsız, ona yabancı ve onun karşısında özerk bir erk durumuna gelen bir varlık olarak var olduğu ve nesneye geçirdiği yaşamın, hasım ve yabancı bir yaşam olarak ona karşı çıktığı anlamına da gelir (Marx,2013, s.25)."

İşçi ürettiği, emeğini üzerinde gerçekleştirdiği, emeğinin nesneleşmiş hali olan ürüne yabancı bir nesne mesafesindedir. Emeğinin ürününden adeta soyulmuştur (Marx,2013, s.78). Çünkü çalışması bir başkası için olduğundan emeğinin ürünü üzerinde hak iddia edememektedir.

Yabancılaşmış emeğin bir diğer boyutu, türsel varlığa yabancılaşma olarak kendini gösterir. İnsan, bilinçli olarak gerçekleştirdiği çalışma etkinliği aracılığıyla yaşamını sürdüren ve doğayı dönüştüren bir varlık olarak çalışma sırasında özgürdür. Ancak yabancılaşmış emekte, çalışma dışsal ve zorunlu bir hale gelir. Bu bağlamda, bilinçli bir varlık olarak insanın kendi yaşam etkinliği, varoluşu için sadece basit bir araç olarak küçültülmektedir.

"Çünkü ilkin emek, yaşamsal etkinlik, üretken yaşam, bunlar insana ancak bir gereksinmenin, fizik varlığı koruma gereksinmesinin bir karşılama aracı olarak görünürler. Ama üretken yaşam, cinsil yaşamdır. Yaşamı doğuran yaşam. Yaşamsal etkinlik biçimi, bir cinsin tüm özlüğünü, cinsil özlüğünü kapsar ve özgür, bilinçli etkinlik, insanın cinsil özlüğüdür. Yaşamın kendisi bile ancak geçim aracı olarak görünür (Marx,2013, s.27)."

İnsanın kendi üretici ve yaratıcı etkinliği dışsal hale geldiğinde, yani emeğinin ürünü kendisinden koparıldığında, bilinçli bir tür olarak kendini gerçekleştirme kapasitesini yitirir. Üretici etkinlik özgürlükten yoksun hale gelir ve üretilen ürün de kişisel mülkiyete dönüşmez. Bu durum, insanı türsel bir varlık olarak kendine yabancılaştırır.

Yabancılaşmış emeğin yol açtığı bir diğer süreç, insanın insana yabancılaşmasıdır. Bu durum, insanın kendi emek ürününe, üretici yaşam etkinliğine ve türsel varlığına yabancılaşmasının bir sonucudur.

"İnsanın yabancılaşması ve genel olarak insanın kendi kendisi ile içinde bulunduğu her ilişki, ancak insanın öteki insanlarla bulunduğu ilişki içinde gerçekleşir, dışa vurulur. Demek ki yabancılaşmış emek ilişkisi içinde her insan ötekini, kendi kendisi ile işçi olarak içinde bulunduğu ilişkinin ölçü ve niteliğine göre değerlendirir. (Marx,2013, s.29)"

Pasaj, insanın türsel varlığına yabancılaşmasının, aynı zamanda diğer insanlara da yabancılaşmayı beraberinde getirdiğini ve dolayısıyla insan doğasına özgü niteliklerden uzaklaştığını ifade etmektedir. Çünkü bir bireyin kendi emek ürünü, iş ve kendisiyle olan ilişkisi, diğer bireylerle, onların ürünleri ve işleriyle olan ilişkileri için de geçerlidir.

POLİTİK EKONOMİDEN NEO-KLASİK İKTİSATA: METAFİZİK VE MANİPÜLASYON

Daha önceki bölümlerde aktardığımız, dönemlerin içerdiği toplumsal olgu ve süreçler, bilimlerin (özellikle sosyal bilimlerin) yöntemlerini ve kapsamlarını etkilediği tespitini, bu başlıkta açıklamaya çalışacaklarımızı vermeden önce yeniden vurgulamayı anlamlı buluyoruz.

1800'lü yılların ortalarından itibaren büyük ölçüde yayılmış olan (sermayenin uluslararasılaşması) kapitalist toplumsal ilişkiler (burada süreçle doğrudan bağlantılı olmasına rağmen, makalenin sınırlılığı dolayısıyla emperyalizm konusuna girmeyeceğiz) üretimi devasa boyutlara taşımıştır. Artık bu aşamada sendikalardan, sigorta şirketleri ve bankalar önemli roller üstlenmekte, üretilen malların dağıtımı için alt yapı sistemleri geliştirilmekte, sanayi yalnızca iç piyasaya yönelik değil dünyanın her bir bölgesine yapılan ihracatla büyümeye devam etmektedir. Ne var ki üretimdeki bu artış, işçilerin refahı lehine işlememekte, derme çatma kulübelerindeki işçiler ve karını günden güne artıran kapitalistler arasındaki uçurum derinleşmekte, çatışmalar artmaktadır. İşte tüm bu tarihsel arka planıyla ekonomik ilişkilerdeki değişim, ekonominin tanımlanmasında da bir değişimi beraberinde getirmiştir (Ercan,1998, s.226). Bugün de egemenliğini sürdüren bu yeni yaklaşım, toplumsal ilişkilere içkin ekonomik ilişkileri, toplumsal ilişkilerden kopartmak suretiyle politik ekonomi olarak adlandırılan bu disiplini "iktisat(ekonomi)" olarak adlandırmaya başlamıştır. Tanımlama da böylece giriş bölümünde de verdiğimiz üzere "sınırlı kaynaklarla sonsuz isteklerin en uygun şekilde karşılanması" olarak evrenselleştirilmiş bulunmaktadır. Bu yolla toplumsal alandan soyutlanan iktisat, toplumsal çelişkilerden de soyutlanmış olmakta ve "iktisat" olarak yalnızca insanların ihtiyaçlarını karşılamak için yaptıkları bireysel tavır ve beraberinde getirdiği süreçlere odaklanmaktadır (Ercan,1998, s.227). Yani politik iktisatta ekonominin nesnesi olan toplumsal ilişkilerin yerine, neo-klasik iktisatta insanla, ihtiyaçlarını gidermek üzere yöneldiği nesne arası ilişkiler geçmiş bulunmaktadır.

Neoklasik iktisat, temel olarak bireylerin rasyonel kararlar aldığını ve piyasanın arz ve talep dengesi aracılığıyla kendini düzenlediğini savunan bir yaklaşımdır. Bu teori, bireylerin fayda maksimizasyonu ve firmaların kâr maksimizasyonu prensibine dayandığını varsayar. Neoklasik iktisat, piyasa mekanizmasının en etkin kaynak dağılımını sağlayacağına inanır ve devlet müdahalesine sınırlı bir rol verir. Fiyatların, malların ve hizmetlerin değerini belirleyen temel unsur olarak marjinal fayda ve marjinal maliyet üzerinde durur (Mankiw, 2020). Ayrıca, bu yaklaşım, rekabetin piyasanın işleyişindeki en önemli mekanizma olduğunu öne sürer ve tam rekabet koşullarının varlığı altında piyasaların etkin çalışacağına inanır (Samuelson & Nordhaus, 2010).

Neoklasik iktisat, ekonomik denge analizini kullanarak piyasaların kendiliğinden dengeleneceğini varsayar ve bu denge, fiyatlar aracılığıyla sağlanır. Bu yaklaşım, Pareto verimliliği kavramına dayanarak, kaynakların dağılımında en yüksek verimliliği elde etmenin mümkün olduğunu iddia eder. Ancak en temelde piyasalardaki eşitsizlikleri ve dışsallıkları göz ardı etmektedir. Ayrıca, bireylerin her zaman rasyonel davranmadığı da eklenmelidir (Stiglitz, 2018).

Bu yeni yaklaşımda artık değerin kaynağı emek değildir. Çünkü emeğin harcanması ürenin tüketildiği anı önceleyen uzun bir zaman sürecine denk düşmektedir (Denis, 1997, s.518). Ana akım neo-klasik iktisadın önemli temsilcilerinden William Stanley Jevons'un bu düşüncesi, emek-değer teorisinin yerine, fayda-değer teorisini koymuştur. Fayda tanımlanması güç bir metafizik kavram olmasının yanında, tüketicinin ürünü satın alma konusundaki isteğinin nedeni ve ürünlerin kalitesine dair bir ifadedir (Robinson,1984, s.47). Ekonomik faaliyetin amacı yaşamdan olabildiğince fayda sağlamaktır. Ayşe Buğra, "İktisatçılar ve İnsanlar" adlı kitabında, gelinen bu yeni aşamada ekonomiyi "fayda ve kişisel çıkar bilimi" olarak tanımlamaktadır (Buğra,1989, s.95). Bu tür bir ekonomik analizin nesnesi bireyler akıllıca hareket etmekte (rasyonel bireyler), kendilerine en fazla faydayı sağlayacak seçeneği bulma konusunda yetkin bulunmakta ve faydalarını en çoklaştıracak şekilde davranmaktadırlar. Marx'la aynı zaman diliminde yazan iktisatçı, Marx'ın metanın içindeki toplumsallaşmış emek niteliğini yazarken ve üretim sürecine odaklanırken; mübadele değerinin yeni bir yorumu olarak "azalan marjinal fayda kanunundan" söz etmekte ve iktisadın odağını tüketim sürecine almaktadır.

Marjinal fayda, bireyin tüketmeyi arzu ettiği her bir birim üründen sağladığı faydadır. Fakat tahmin edilebilir ki aç bir insanın ilk tostunu yediği anda elde ettiği fayda ile hemen ardından yemeğe devam ettiği süreçte elde ettiği fayda eşit değildir ve azalma eğilimi gösterir. Metafiziksel bu kavram, bilimsellikten yoksun olmasının yanında yine de bir görüş bildirdiği için açıklanmaya değerdir. Üretim sürecinden koparılan değer kavramı, tüketim sürecinde tüketicisine sağladığı fayda üzerinden tanımlanır. Böylece üretim sürecindeki emek sömürüsü, yabancılaşma gibi olgular manipüle edilmiş olur.

SONUÇ

Makale boyunca ele aldığımız temel nokta, ekonomi kavramının tarihsel ve toplumsal bağlamdan bağımsız olarak değerlendirilemeyeceğidir. Başlıklarla ifade edilmeye çalışıldığı gibi, tek bir politik ekonomi anlayışı değil, insanlık tarihi boyunca çeşitli niteliklere sahip farklı politik ekonomiler ve toplumlar bulunmaktadır. Politik ekonomiye ilişkin bu farklı yaklaşımlar, kendi kapsam ve yöntemleri doğrultusunda varlık göstermiş; bazıları toplumsal gerçekliği açıklamaya, bazıları ise manipüle etmeye yönelik olmuştur.

Çalışmamızda, politik ekonomi ve iktisat arasındaki yöntemsel ve kapsam farklarını açığa çıkarmaya çalıştık. Bu bağlamda, politik iktisadın çalışma alanını ve öncelikli olarak üzerinde durduğu konuları, analizine dahil ettiği unsurları ortaya koyduk. Ayrıca, Marx'ın politik ekonomiye yaklaşımını inceledik ve Marx'ın politik ekonomiye katkılarını belirttik.

Tüm bu açıklamaları yaparken, tarihsel süreç içinde toplumların ve ekonomilerin farklılaştığını (üretim güçlerinin gelişmesi ve üretim ilişkilerinin değişmesiyle birlikte) gözlemledik. Politik ekonominin içeriğinin de bu değişimlere paralel olarak evrildiğini ve geliştiğini gördük. Makale boyunca, Antik Yunan'dan günümüz neo-klasik iktisadına kadar politik ekonominin çeşitli tanımlarını, dönemin iktisadi düşünce ve koşullarını ele alarak bu süreci ortaya koymaya çalıştık.

Sonuç olarak, evrensel bir politik ekonominin mevcut olamayacağını ve tarihsel süreçte politik ekonominin kapsam ve yöntemlerinin sürekli değiştiğini belirledik. Ekonomik olanın politik olduğunu ve ekonominin politikadan bağımsız ele alınmasının toplumsal gerçekliği eğip bükmeye, çelişkileri gizlemeye ve sınıfsal dayanışma önünde engel oluşturmaya hizmet edeceğini vurguladık. Bu nedenle, Marx'ın politik ekonomi eleştirisini anlamak, neo-klasik iktisat öğretisinin ve yöntemlerinin geçerli olduğu günümüz toplumlarında toplumsal gerçekliğe ulaşmak için kritik bir öneme sahiptir

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PECULIARITIES OF PERSONNEL MANAGEMENT OF A BANKING INSTITUTION UNDER MARTIAL LAW

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Abstract

The article deals with personnel management issues in a banking institution post-Covid period and the first year of the Ukrainian-Russian war. The object of analysis is a foreign banking institution that is among the top ten largest banks in Ukraine, a position that significantly amplifies the impact of its personnel management strategies. The methods used are static analysis, synthesis, and induction.

In particular, the article examines changes in the number and structure of personnel from 2020 to 2022, emphasizing the impact of external factors, such as military operations, on the efficiency and management of the bank's human resources. A comparative analysis by categories of industrial and non-production staff was conducted, and the prominent trends were identified, including a significant decrease in the number of employees, a change in the gender balance, and a redistribution of shares of different job categories. There is a decline in labor productivity and an increase in temporary disability, partly due to the deterioration of employees' health and changes in working conditions.

Additionally, the study analyzes changes in the wage bill, which has been growing despite reducing the number of employees. The study points to significant structural shifts in work processes, such as the adoption of remote work and changes in job roles, and demonstrates the dependence of HR policy on the current crisis circumstances.

As conclusions and prospects for further research, it is proposed to revise HR management strategies and develop a comprehensive HR policy that considers gender aspects, training needs, motivation, and support of employees in times of crisis. This will allow the bank to more effectively adapt to changing conditions and ensure long-term sustainability despite the challenges of the external environment.

Keywords: Personnel management; personnel policy; martial law

INTRODUCTION

The ongoing COVID-19 pandemic and the outbreak of the Ukrainian-Russian war have significantly impacted the workforce of many enterprises. In this study, we analyze the changes in employee numbers and the structural composition of the staff at one of Ukraine's largest banks, OTP Bank. External factors drove these changes. It's important to note that OTP Bank is owned by a foreign investor, OTP Group, providing it with a stronger financial position and institutional capacity than other banks. This relationship offers "insurance protection" due to its foreign ownership.

For our analysis, we have intentionally excluded data from 2023, as its relevance and comparability are unsuitable for our study.

FINDINGS

First of all, let's look at the number of employees in the analyzed period (Table 1).

Table 1: Characteristics of OTP Bank's personnel for 2020-2022.

№	Indicator.	2020		2021		2022		Deviations	
		Individuals.	Specific gravity, %.	Persons.	Specific gravity, %.	Individuals.	Specific gravity, %.	Absolute, persons	Structural changes, p.p.
1	Average number of full-time employees	3438	100	3448	100	2810	100	-628	-
2	Non-industrial personnel	82	2,3	83	2,4	61	2,1	-21	-0,2
3	Industrial and production personnel (IPP), total, incl:	3356	97,6	3365	97,5	2749	97,8	-607	0,2
3.1	operational employees of the bank (specialists in the sale of banking products and services, financial advisors, employees of the bank's operational branches, etc.)	1456	42,3	1461	42,3	1088	38,7	-368	-3,6
3.2	leaders	105	3	105	3	90	3,2	-15	0,2
3.3	specialists	1247	36,2	1250	36,2	1034	36,7	-213	0,5
3.4	employees	374	10,8	375	10,8	368	13	-6	2,2
3.5	Other personnel (cleaners, security guards, duty officers, couriers etc.)	174	5	174	5	169	6	-5	1

From the data in the table, we can note that from 2020 to 2021, the number of employees increased from 3438 to 3448, which is a slight increase of 10 people. At the same time, from 2021 to 2022, the number decreased significantly to 2810, which is a decrease of 638 people. This indicates a significant change in structure and is a consequence of the Russian invasion.

There were noticeable structural changes, especially in the categories of operational employees and officers. These changes were mainly caused by changes in the business model and process optimization, which in turn were caused by the outbreak of war.

In general, we should note that these and further calculations are directly affected by the consequences of the Russian attack, which, from the point of view of the banking institution's operations, caused the loss (destruction, closure, temporary suspension of work) of more than two dozen units, significant staff migration (internal and external), an increase in the volume of temporary disability of employees, a spontaneous and tsunami-like increase in the volume of vacations, etc. These and other factors are taken into account in our analysis and, accordingly, explain the decline in the performance indicators of OTP Bank's personnel.

Let's look at the dynamics of staff composition in 2020-2022 (Table 2).

Table 2: Staff Composition Dynamics for 2020-2022

Gender.	Number by year, persons		Specific gravity, %.		Deviations	
	2020	2022	2020	2022 year	Absolute, persons	Structural shifts, pp.
Industrial and production personnel, total						
Men.	1712	1237	51	45	-475	-6
Women	1644	1512	49	55	-132	+6
Together	3356	2749	100	100	-607	-
Management personnel						
Men.	662	504	49	45	-158	-4
Women	690	620	51	55	-70	+4
Together	1352	1124	100	100	-228	-
Operations and other staff						
Men.	1012	733	50	45	-279	-5
Women	992	892	50	55	-100	+5
Together	2004	1625	100	100	-379	-

From the data in Table 2.3, we can draw the following conclusions.

Industrial and production personnel:

There was a decrease in the number of men by 475 people and a decrease in their share from 51% to 45%. A decrease in the number of women by 132 people, but the proportion increased from 49% to 55%. This indicates a more significant decrease in the number of men in this category, which may indicate a greater vulnerability of male jobs to reorganization and mobilization.

Management personnel:

A decrease in the number of men by 158 and a decrease in their share from 49% to 45%. There was also a decrease in the number of women by 70 people but an increase in their share from 51% to 55%. These changes in the management staff also reflect the upward trend in the share of women, which may be due to, among other things, the gender equality policy and changes in the management structure.

Operations and other staff:

Reduction in the number of men by 279 people with a decrease in the proportion of men from 50% to 45%. A decrease in the number of women by 100 people but an increase in their share from 50% to 55%. That is, similar trends to other categories, where the share of women is increasing and men are decreasing.

Thus, in all categories, there is an increase in the proportion of women and a decrease in the proportion of men, which may indicate the effects of mobilization, the structure of change, and broader trends in the gender balance in the organization.

The following table shows the changes in wages and labor productivity (Table 3).

Table 3: Dynamics of wages and labor productivity in 2020-2022

№	Indicator.	Years		Deviations	
		2020	2022	Absolute	Relative, %
1	Average number of employees (persons)	3438	2810	-628	-19
2	Payroll (UAH thousand)	1144668	1408154	263486	23
3	Labor productivity (UAH thousand)	560,3	185,3	-375	-67

Thus, there is a decrease in the number of employees from 3438 in 2020 to 2810 in 2022, an absolute decrease of 628 people or a relative deviation of -19%, a significant decrease in the number of employees.

The payroll increased from UAH 1144668 thousand in 2020 to UAH 408154 thousand in 2022. The absolute increase is UAH 263486 thousand, and the relative increase is 23%. This may indicate an increase in the average salary per employee as the total number of employees decreased.

There was a significant decrease in labor productivity from UAH 560.3 thousand to UAH 185.3 thousand.

An absolute decrease of UAH 375 thousand, which in relative terms is 67%. This indicates a significant drop in personnel efficiency and changes in the cost of products and services provided by the organization.

The calculated data is illustrated in Figure 1.

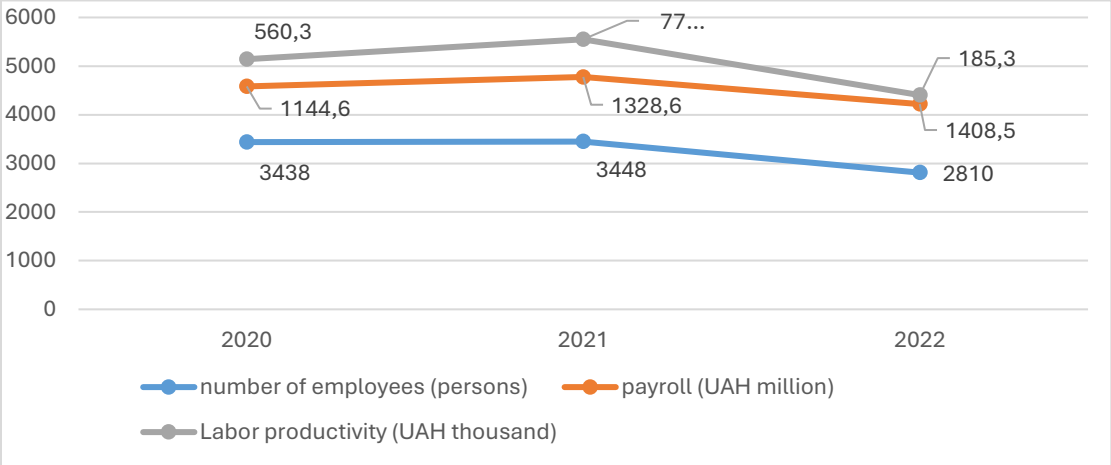

Figure 1 Dynamics of salary and labor productivity at OTP Bank in 2020-2022

A comparative analysis of the estimated use of working time by the bank's employees is presented in Table 4. When making the calculation, we took into account the total average annual number of working days - 250 per year; the average amount of vacation was 29 days, which accordingly reduced the number of working days by 21 (since at least 8 of these 29 days were days off and therefore were already taken into account when calculating the number of working days); the period of temporary disability ranged from 0.2 days per employee to 0.9 days; unpaid leave averaged 0.3 days per employee (the amount was adjusted in the same way as vacation leave); in 2022, losses from the effects of the outbreak of hostilities were also taken into account.

Table 4. Accounting of working time use by OTP Bank employees for 2020-2022

№	Indicator.	Years				Deviations	
		2020		2022		Absolute	Structural changes, p.p.
		Man-hours.	%	Man-hours.	%		
1	Working time fund	6876000	100	5620000	100	-1256000	-
2	Time worked	6025640	87,8	4094210	72,8	-1931430	-15
3	Unworked time, all of them for reasons:	850360	12,3	1525790	27,1	675430	14,8
3.1	annual leave (basic and additional)	576240	8,3	472080	8,4	-104160	0,1
3.2	temporary disability	171500	2,5	632250	11,3	460750	8,8
3.3	unpaid leave without pay	85950	1,3	351250	6,3	265300	5
3.4	other reasons	16670	0,2	70210	1,2	3540	1

Based on the table, we can draw the following conclusions. During the analyzed period, the working time fund decreased by 1256000 man-hours. This indicates a decrease in the total number of hours available for work due to staff reductions, changes in work schedules, and a general decrease in the number of employees due to the hostilities.

The percentage of total hours worked from the general fund decreased by 15 percentage points, emphasizing the decrease in the efficiency of working time use.

A minimal decrease in the amount of leave with an almost unchanged percentage could indicate stability in the planning and use of annual leave but given that the number of employees decreased by more than 600 during this period, the situation begins to look quite different.

A significant increase in absolute and relative values (by 8.8 percentage points) indicates a deterioration in employee health due to the above reasons.

A significant increase in unpaid leave (by five percentage points) indicates economic difficulties and company reorganizations, which forces employees to take this type of leave.

Overall, the decline in total working hours and the increase in unworked hours indicate potential challenges in using employee time. This data may signal employers to review their HR strategies, assess the impact of employee health on productivity, and adapt their leave policies to optimize working time and rationalize the use of employees under martial law. As we have already mentioned in the previous section, OTP Bank has a relevant Performance Appraisal and Financial Incentive Policy, the primary purpose of which is to regulate the process that combines the Bank's efforts aimed at developing and evaluating the performance of employees by achieving goals for the current year and defining approaches to financial incentives, the procedure for calculating and approving payments.

The above policy is aimed at motivating employees to achieve the target performance indicators and final results of the Bank's activities through the strategic development plans, compliance with the principles of remuneration for employees' contribution to the Bank's performance, improvement of the remuneration system, including material incentives; establishing the tenets of incentives and measuring the performance of JSC OTP Bank as a company of the Banking Group by the provisions of the Bank's Remuneration Policy.

However, this policy is primarily aimed at the motivational aspects of HR management, and there is no full-fledged HR strategy.

Every company that employs employees has a statutory HR function. Therefore, an HR strategy is integral to a comprehensive internal management system. An HR strategy should contain three main elements to perform its function effectively: strategic goals in HR activities, conceptual approaches to achieving them, and options for implementing them in practice.

Attempts to limit the HR policy to the first component only, which is typical for many national companies, turn it from a practical document into a declaration of intent with a low probability of successful implementation.

The main objectives of the bank's HR strategy are based on the following key provisions: full and prompt satisfaction of the needs of personnel with the required level of qualifications and knowledge; fostering the "spirit of entrepreneurship" in the team as the primary condition for proper responsibility and loyalty of all categories of employees; creating organizational, economic and psychological conditions for the full realization of the labor potential of employees.

HR strategies are formally or "by default" based on one of the doctrines of labor relations organization, which serves as their "ideological" basis. Historically, the doctrine of "efficient consumption of labor resources" was the first to spontaneously emerge. This doctrine envisages consideration of human resources as one of the consumed resources, complete disregard of the details of influence of "human factors" on the processes and results of using this "resource", as well as extension of the traditional requirement to optimize resource costs to the HR sphere.

Based on this doctrine, the company's HR strategy envisages the use of a minimum level of remuneration that allows employees to stay in the organization; maintaining general social, environmental, and other working conditions at the legally established minimum level; psychological and additional support only for a limited number of the most valuable personnel (specialists, middle and senior managers) Expanding social support, minimizing the cost of further training of personnel at the expense of the employer; providing social and Employee training is an employee problem"), prioritizing administrative management methods to the detriment of economic incentives and psychological impact on employees, strict distribution of powers and responsibilities, discouraging "bottom-up initiatives," constant personal control, and developing sanction mechanisms for possible violations.

The advantages of this doctrine are cost minimization and simplicity of application. The disadvantages of the doctrine are twofold: the inability to attract competent personnel, which leads to a loss of the company's high competitiveness in the market; the inability to form the ideology of the "spirit of the enterprise" among employees, as well as to ensure a minimum level of employee loyalty to the employer.

Corporate spirit is understood as the state of the psychological climate in the team, characterized by a high level of respect and personal commitment to the employing organization on the part of the majority of employees. In the modern theory of personal management, the formation of such a climate is considered the most important strategic task in the field of human resources. The practical solution to this task is ensured by creating economic, social and other conditions for employees' work, such that they are fully satisfied with their labor relations and the very fact of belonging to a particular bank determines it.

This principle can be used to a limited extent in industries that employ mostly low-skilled workers but is categorically inapplicable in the banking sector, which has unique requirements for personnel.

The industry specifics of a bank's HR strategy depend on the following key factors.

Firstly, the level of primary education (up to 85% of positions in modern banks require higher education), the level of professional specialization, the level of responsibility due to the technical autonomy of the position, and, accordingly, the low probability of detecting and eliminating employee errors, especially in the form of disclosure of confidential information, as well as the bank's vulnerability to threats from employees. Increased requirements for labor resources used by employers, for example, the level of loyalty due to higher wages, which is a consequence of the

Secondly, employees' demands on employers are growing in remuneration, social and psychological support, regularity and effectiveness of additional training, and the overall culture of HR management.

In addition, the national specificity of banks' HR strategies is determined by the following factors

It is determined:

First, the national specifics of the labor mentality determine the place of work in the system of life values and priorities, obligations to employers and employees, particular attitudes towards direct superiors, colleagues, the nature of work, etc.

Second, many managers and executives of Ukrainian banks do not understand the role of HR. This is reflected in a principled approach to solving HR problems only when they reach a crisis level, and not preventively, in financing this area on a "residual principle" in determining the place of HR services in the management hierarchy of banks as a subsidiary rather than a central unit, etc. This is reflected in the following.

Thirdly, there is a lack of professionally trained HR specialists, in particular those directly responsible for the work of HR services. As a result, today, only the largest and most reputable banks have specialists capable of independently formulating strategies that meet the requirements of modern methodology and the actual working conditions of a particular credit institution.

Fourth, most peripheral cities lack labor market infrastructure, have a limited supply of qualified specialists, and lack specialized education, mediation, and consulting mechanisms. These factors force peripheral banks to apply non-standard and inefficient strategic approaches to solving the most critical HR issues. In general, the specifics of a bank's HR strategy are determined by the following key factors: the bank's mission (e.g., the overall strategic focus on servicing elite clients determines the focus of the HR strategy on securing elite employees), social and value orientation of the bank's management; the level of development of the local labor market (sufficient supply of qualified labor, availability of specialized educational institutions, recruitment agencies and consulting centers, the degree of development of the local labor force and labor market); socio-economic conditions for

Naturally, the HR strategy, like any other strategy, should be systematically linked to the bank's overall strategy.

The general strategy of the bank's development is formulated based on the bank's mission and is implemented over a long period as an integrated complex of the entire banking institution, and, as a rule, does not set clear time frames for its implementation. Strategy is understood as a conceptual field of activity that is important for the bank, the formulation of which begins with defining a system of strategic goals.

Strategic human resources management should start with the development of an incentive system and include long-term planning and management of plan implementation. Such management is usually based on the tasks set for the bank by the general meeting of shareholders and senior management.

According to the information already provided, OTP Bank has an appropriate motivation policy, but insufficient attention is paid to the professional development of its staff. We cannot say there is no staff development, but we could not obtain information on a comprehensive staff development strategy or other systemic document.

When elaborating on the further content of the HR strategy, it is advisable to provide generalized approaches to strategic management of bank personnel formulated by M. Sytnytskyi.

This system guarantees the continuous development of the organization's human resources, including a critical aspect of balancing human resources potential and labor costs.

The primary condition for this system is to optimize personnel costs while maximizing the use of their qualitative characteristics and high level of expertise to develop and implement strategic tasks of the banking institution as defined by its strategic goals and mission.

It is important to note that in large banking institutions, individual units perform various functions of separate subsystems, while in small banking institutions, one subsystem may include the functions of several other subsystems. For a better understanding of this phenomenon, it should be noted that the subsystems of a banking institution are formed from the functional elements and organizational features of the overall strategic HR system, are autonomous, and are aimed at achieving the overall goals of the banking institution.

A systematic combination of these components will allow us to create an integrated HR strategy that will cover all aspects of HR and create a basis for improving the performance of OTP Bank's staff.

We would also like to emphasize that the relevant HR strategy has the expected effectiveness. To assess the projected effectiveness, we formed a group of experts consisting of top managers of one of OTP Bank's regional directorates. They provided their own assessment of the increase in performance (based on the growth of net interest income) from the development and implementation of the HR strategy (Table 5).

Table 5. Expert assessment of the increase in performance due to the implementation of HR policy

Expert	1	2	3	4	5	6	7
Net interest income, %.	0,1	0,08	0,1	0,12	0,05	0,12	0,09

Calculate the standard deviation to summarize the experts' estimates (Table 6).

Table 6. Standard deviation of experts' estimates

Experts (i)	1	2	3	4	5	6	7
Increase in efficiency (ΔNPVi), %.	0,1	0,08	0,1	0,12	0,05	0,12	0,09
ΔEfficiency average (average increase in efficiency)	0,09						
Deviation from the average: ΔNPVi - ΔNPV of the ser.	0,01	-0,01	0,01	0,03	-0,04	0,03	0
Deviation square	0,0001	0,0001	0,0001	0,0009	0,0016	0,0009	0
Sum of squares deviations	0,0037						

In order to determine the consistency of experts' opinions on the bank's profit growth forecasts, it is necessary to calculate the coefficient of variation.
According to the calculations made

- standard deviation - 0.023
- coefficient of variation - 25.5%.

Thus, the obtained value of the coefficient of variation of 25.5% is less than the standard 33%, which indicates the appropriate homogeneity of expert opinions. This means that these estimates can be used for further efficiency assessment.

The most probable value of the projected growth of the bank's income is determined by the standard probability distribution method, according to which it is necessary to rank the experts' estimates from Table 5 from the lowest to the highest.

The most likely value of the bank's income growth forecast will be determined by the standard probability distribution method, according to which the expert estimates from Table 6 should be ranked from lowest to highest. It should be noted that the exact forecasts were grouped during the ranking and are not shown in the table but used in the calculation.

The ranking of expert estimates of the bank's profit growth (based on Table 5) is shown in Table 7.

Table 7. Ranking of export estimates of bank profit growth

ΔNPVi , %.	0,05	0,08	0,09	0,1	0,12
Forecast.	Pessimistic (П)			Probable (B)	Optimistic (O)

By ranking, we will forecast the income growth of OTP Bank JSC as a result of the development and implementation of the HR strategy. Thus, the expected increase in income will be as follows:

ΔNPV(%) = (0.05+3*0.1+0.12) / 5 = 0.09

The increase in income based on the 2022 reporting data will be (based on the amount of net interest income):

0.09*7696.132 thousand UAH. = UAH 692.6 thousand.

Thus, the expected results of the HR strategy implementation will result in an expected increase within one regional directorate of UAH 692.6 thousand. Extrapolation of the calculations to other directorates may affect the amount of expected income, but in general, we do not expect significant adjustments.

DISCUSSION AND CONCLUSION

Although our results are specific to a single bank, they can be scaled up to the entire banking system of Ukraine due to the similarity of the situation.

First of all, it is worth noting that the impact of external factors, primarily the war in Ukraine, significantly changed the composition and structure of the bank's staff, which led to a reduction in the number of employees and an increase in non-working hours due to losses due to mobilization, branch closures and internal migration of employees.

The share of women in the workforce has increased while the number of men has significantly decreased. This may indicate that men's jobs are vulnerable to mobilization and restructuring.

Despite the increase in total wages, labor productivity dropped significantly (-67%). This indicates a deterioration in labor productivity, possibly due to the military situation and staff reductions. The number of hours not worked increased significantly due to an increase in temporary disability and unpaid leave. This is a consequence of the deterioration of employees' health due to mental and physical threats from shelling and destruction and financial difficulties.

The absence of a comprehensive HR strategy as a response to the changed business environment is currently hindering the development of banking institutions in the crisis. Therefore, it is imperative to update the HR strategy, which considers the current challenges associated with the military situation and integrates it into the bank's overall strategy.

Studying different approaches to HR management in emergency situations will help formulate more effective HR strategies aimed at maintaining employee productivity and minimizing the impact of stressors on their performance. Building models that predict the losses of organizations due to mobilization and reduction in the number of employees can help increase financial stability and readiness to respond quickly to such challenges.

Further research could analyze the effectiveness of different motivational approaches and assess their impact on employees under challenging conditions. This will allow companies to adapt incentive systems to new realities and promptly update HR strategies considering the challenges posed by hostilities or other emergencies. Such a strategy could include measures to support employees' physical and psychological health, as well as recommendations for optimizing working hours.

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A PERSPECTIVE ON CUSTOMS DUTIES WITHIN THE FRAMEWORK OF CONSTITUTIONAL TAXATION PRINCIPLES

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Abstract

The principles of constitutional taxation are fundamental guidelines that limit the use of taxation authority and ensure the rule of law. In Turkey, the principles of constitutional taxation are regulated under Article 73 of the Constitution, and the establishment of tax justice on a legal basis is grounded on the principles of financial capacity, legality, justice, and general reciprocity. These principles are of critical importance in ensuring that the taxation process is carried out in a democratic, transparent, and fair manner, and that the tax system remains sustainable. When customs duties in Turkey are evaluated within the framework of constitutional taxation principles, it can generally be said that they are based on a legal foundation, but some issues arise in practice. In particular, the occasional sudden changes in customs duties aimed at protecting domestic producers can create uncertainty for importers. In this context, the principles of legality, certainty, equality, universality, and justice cannot be fully implemented. After discussing the principles of constitutional taxation in a theoretical context, the study will evaluate customs duties in accordance with these principles. Specifically, the problems arising in the application of customs duties in Turkey will be addressed, and solutions will be proposed.

Keywords: Constitutional taxation principles, customs duties, financial law.

INTRODUCTION

Throughout the historical process, states have made arrangements to prevent the individual from entering the sphere of freedom through various methods. The ability of the individual to give meaning to his/her life and to realize his/her values is first and foremost possible by securing his/her existence. In the relationship between the state and the individual, it is imperative that the modern state adheres to the law, continues its actions only within a legal environment and does not go beyond this.

The principles of taxation have always been on the agenda within the framework of regulations on who will have the authority to tax and where this authority will be used. In our country, the principles of taxation are included in Article 73 of the 1982 Constitution under the title of tax duty. Taxation principles generally consist of the principles that should be taken into consideration in the choice and application of taxes in order to realize the fiscal and non-fiscal functions expected from the tax. Within the framework of the provisions of the Constitution, it is possible to make inferences such as the constitutional duty of taxation, the obligation to meet public needs, the necessity of a fair and balanced distribution of the tax burden, and the necessity to impose taxes by law. In this context, the principles of taxation guaranteed in the 1982 Constitution consist of generality, legality, solvency and justice.

Customs duties are expenditure taxes in the nature of indirect taxes imposed on imported or exported goods. Customs duties are based on a legal and legal basis. They have different features from inward taxes. On the other hand, the fact that the legislation is comprehensive and has technical features sometimes brings up problems in practice. As stated in the title of the study, the legal basis of customs duties will be questioned within the framework of constitutional taxation principles and evaluations will be made based on frequently encountered cases in practice. In the concluding section, suggestions will be put forward regarding the failing and deficient aspects.

METHODS

On January 1, 1996, with Turkey's entry into the Customs Union, the need arose to revise the Customs Law No. 1615, which entered into force on 19.07.1972, in order to comply with the European Union (EU) Customs Code. In this context, Customs Law No. 1615 was repealed in order to harmonize with the Customs Union and Customs Law No. 4458 was adopted on 27.10.1999 and entered into force on 05.02.2000. Customs Law No. 4458, besides being a tax law in the material sense, is also a procedural law since it includes the procedural provisions to which customs duties and penalties are subject.

According to Article 3 of the Customs Law No. 4458, the term "customs duties" refers to all import duties or export duties imposed on the goods. The term "import duties" refers to customs duties and other co-effective taxes and financial burdens to be paid on the import of goods, taxes and other financial burdens to be levied on imports within the framework of agricultural policy or special regulations applied to certain products obtained as a result of the processing of agricultural products. The term "export duties" refers to customs duties and other co-effective taxes and financial burdens to be paid in the export of goods, and taxes and other financial burdens to be collected in exports within the framework of special regulations applied to certain products obtained as a result of agricultural policy or processing of agricultural products.

27.08. In Annex No. 1 to the Customs Settlement Regulation published in the Official Gazette No. 28038 dated 27.08.2011, Customs Taxes are defined as; "Customs Duty, Additional Customs Duty, Single and Specific Tax, Anti-Dumping Tax, Countervailing Duty against Subsidy, Value Added Tax, Special Consumption Tax, Additional Financial Obligation, Collective Housing Fund, Tobacco Fund, Additional Fund, Resource Utilization Support Fund, Environmental Contribution Fee, Countervailing Duty (Export), TRT Bandrol Fee (for non-commercial goods)".

All practices such as taxes and similar financial obligations levied on foreign trade are realized by the taxation authority of the state. Although many financial obligations arise under different names, the basic tax is a customs duty. Most of the financial obligations collected in the context of Article 3 of Law No. 4458 are collected from import transactions (Uyanık, 2021; Şahin, 2019, Güney, 2023).

When customs duties in Turkey are evaluated within the framework of constitutional taxation principles, it can be said that they are generally based on a legal basis, but there are some problems in practice.

The highest norm of tax law is the constitution. The main provision on taxation is Article 73 of the 1982 Constitution. The Article states that "Everyone is obliged to pay taxes according to their financial capacity to meet public expenditures. The fair and balanced distribution of the tax burden is the social objective of fiscal policy. Taxes, duties, fees and similar financial obligations shall be imposed, amended or abolished by law. The President of the Republic may be authorized to make changes in the provisions regarding the exemptions, exceptions, reductions and rates of taxes, duties, fees and similar financial obligations within the upper and lower limits specified by law." In this context, the principles of taxation are discussed under the headings of generality, solvency, legality and justice.

The principle of generality implies that everyone living in the country should pay taxes. However, what is emphasized with everyone is those who have financial power. Therefore, those with little or insufficient financial power are excluded from this scope (Tekbaş, 2012).

The principle of legality states that taxes and all other financial obligations should only be imposed by the legislative body and that the executive and judicial powers should not be authorized in this field. In other words, since taxes are closely related to the fundamental rights and freedoms of individuals, they have been taken under constitutional guarantee in order to prevent arbitrary and broad discretionary power of the administration (Çomaklı et al., 2011; Gerek and Aydın, 2010; Budak, 2010). According to the established jurisprudence of the Constitutional Court, if financial obligations are not sufficiently framed by law in terms of tax base and rates, assessment and accrual, collection procedures, sanctions, statute of limitations, upper and lower limits, arbitrary practices that will affect the social and economic status of individuals and even their fundamental rights will emerge (Güneş, 2014). On the other hand, Article 167 of the Constitution states that "In order to regulate foreign trade for the benefit of the national economy, the President may be authorized by law to impose and abolish additional financial obligations other than taxes and similar obligations on imports, exports and other foreign trade transactions. " is an exception to the principle of legality. This flexibility stems from the dynamic structure of foreign trade transactions. This situation is also important in terms of harmonization with the Union regulations in case of full membership to the European Union (Üstün, 2003).

The principle of solvency refers to "the collection of taxes by considering the economic and personal situation of individuals and by observing a balance between unequals" (Gerçek et al., 2014). The principle is related to the establishment of tax justice of the social state. Levying taxes according to the ability to pay is also a means of implementing the principle of equality in taxation. The principle of equality in taxation means that those with the same financial power are taxed at the same rate and those with different financial power are taxed at different rates.

Apart from this, the fact that some citizens are subjected to different principles and rules based on a justifiable reason does not contradict the principle of equality. In other words, reasons based on legal grounds make separate regulations valid, not contrary (Üstün, 2003; Gerçek et al., 2014).

FINDINGS

Customs duties are an important instrument of foreign trade policies in Turkey. Customs duties directly affect the economic policies of a country. Customs duties have a regulatory role not only for the purpose of raising revenue, but also for economic development and supporting domestic industry, protecting the environment, and regulating the import of products that are important for strategic and national security. Regulation of customs duties by constitutional norms not only helps to ensure stability by determining the general framework of these policies, but also ensures that the fiscal structure of the state is fair, transparent and sustainable.

Within the framework of constitutional taxation principles, customs duties will be evaluated under this heading. In addition to this, examples from practice will be given and the faulty aspects will be revealed.

Customs Taxes and the Principle of Legality; Customs taxes are regulated by Customs Law No. 4458, related regulations (discounts, exemptions, exemptions, rates) and international agreements. Especially within the framework of the Customs Union Agreement, many EU regulations have been adapted to Turkey, but these regulations are also adopted and legalized by the Turkish Grand National Assembly and are compatible with the principle of legality.

Customs Duties and the Principle of Generality; Customs duties are paid by the importer or exporter companies. This principle is also reflected in the fact that customs duty rates of imported products are determined by country and special exemptions are not granted to certain countries. Within the framework of international agreements to which Turkey is a party, customs duty advantages may be provided in trade with some countries. For example, within the framework of the Customs Union, no customs duty is applied for industrial products in trade with EU countries. However, since these practices are based on the law and approved by the Turkish Grand National Assembly, they do not violate the principle of generality.

Customs duties and the principle of solvency; Customs duties are not direct taxes like income taxes. However, the tax rates applied to different product groups such as luxury goods or basic necessities are indirectly regulated to comply with the affordability principle. Customs duties are added to the cost of imported products and indirectly passed on to consumers. For example, while high customs duty rates are applied on some products considered luxury consumption, tax rates are lower on basic necessities.

Customs duties and the principle of fairness; Since customs duties are indirect taxes, it may be difficult to establish a direct link with the principle of fairness. However, different rates and exemptions applied to certain product groups try to ensure a fair distribution of the tax. Customs duties are also applied to protect domestic producers and prevent unfair competition. In this framework, domestic producers are protected by imposing high customs duties on certain imported goods that compete with domestically produced products. For example, in the textile sector, the imposition of high customs duties on some textile products imported from China aims to ensure tax justice and protect the competitiveness of domestic producers.

It is useful to elaborate the study with examples of customs tax practices within the framework of constitutional taxation principles.

- ✓ This is the decision of the Seventh Chamber of the Council of State in the case filed against the Council of Ministers Decision No. 2016/9391. In this case, it was discussed whether the additional customs duty is a separate tax from the original customs duty or whether it is an increase in the rate of the existing customs duty. The Seventh Chamber of the Council of State ruled that the additional customs duty is not a separate tax from the original customs duty levied on the value of the imported goods; on the contrary, it is in the nature of increasing the rate of the original customs duty by using the authority granted to the Council of Ministers by Article 2 of the Law No. 474 on the Customs Entry Tariff Schedule. Therefore, it was concluded that the additional customs duty was not contrary to the principle of legality.
- ✓ In Turkey, some customs duties on imports may be increased in certain periods to protect domestic producers. For example, in strategic sectors such as the textile or automotive sectors, import duty rates may be increased by Presidential decree for a certain period of time to protect domestic production. These

regulations are made on the basis of powers established by law and approved by the legislature. Therefore, they comply with the principle of legality.

- ✓ In Turkey, goods imported temporarily are exempt from customs duties for certain periods of time. For example, certain goods brought from abroad for fairs or exhibitions can be imported temporarily and customs duty is not charged for these goods. This exemption granted within the scope of temporary imports is based on legal regulations and is applied equally to everyone within certain criteria.
- ✓ Turkey's Customs Union Agreement with the European Union (EU) requires zero customs duties on imports of certain products from EU countries. For example, there is no customs duty on imports of industrial products from EU countries. However, this regulation is also based on an international agreement ratified by the Turkish Parliament and is therefore compatible with the principle of legality.
- ✓ No customs duties are levied on goods originating in third countries transiting through Turkey. The transit regime is regulated under the Customs Law and applies equally to all transit goods, and therefore does not violate the principle of generality.
- ✓ Customs duty exemption is applied to imports made within the scope of free zones in Turkey. For example, customs duty is not collected on imports from free zones. This practice is based on Free Zones Law No. 3218. This legislated exemption shows that tax obligations are clearly and legally regulated.
- ✓ Within the scope of Free Trade Agreements that Turkey has concluded with some countries, customs duty reductions or exemptions are provided for imports from those countries. These exemptions and reductions are based on agreements that enter into force with the approval of the Turkish Parliament.

DISCUSSION AND CONCLUSION

Foreign trade taxes serve as a tool for taking and implementing immediate measures to benefit the national economy. However, their application to specific sectors (such as textiles, agriculture, and electronics) raises legal debates. Generally, they are regulated under the principle of legality. Nevertheless, granting the executive body the authority to impose additional financial obligations exemplifies a challenge to this principle. The executive's ability to provide tax exemptions, advantages, incentives, or exceptions to specific sectors may occasionally lead to tax discrimination in practice. The complex and dynamic structure of customs legislation may also violate the principle of clarity.

Exemptions and exceptions under the Customs Law are defined within the framework of economic, social, and strategic goals. However, tying these exemptions to complex regulations and extensive bureaucratic procedures can lead to additional costs (for both the administration and taxpayers). Misuse, ambiguity, and lack of oversight may result in tax losses. Frequent changes in sector-specific customs duty rates can violate the principle of certainty, impacting import costs and negatively affecting long-term investment decisions by investors.

Taxes on imports for sectors that significantly contribute to Turkey's economy should be carefully determined. Lower rates should be applied, especially for sectors with high import costs but limited domestic production. Low customs duties can be implemented for essential raw materials. High customs taxes should not be the only method to protect domestic production. Alternative methods, such as incentives, training programs, and technological support, should be enhanced. Any changes to customs duties should allow transition periods, enabling importers to make long-term plans. Strengthening inspection mechanisms at customs to combat smuggling and prevent tax losses is critical. This would improve overall tax compliance and reinforce the principle of equality.

Additionally, Turkey’s Customs Union process with the EU creates challenges concerning constitutional taxation principles. Following the implementation of the Customs Union in 1996, Turkish customs legislation was harmonized with that of the EU. However, Turkey cannot impose customs duties on goods from third countries due to the EU's Free Trade Agreements (FTAs) and is bound by tariffs set by the EU. The preferential duty-free or low-tax application granted to certain imports from the EU creates an unequal situation for similar goods from third countries (contrary to the principle of generality). Moreover, the Common Customs Tariff applied under the Customs Union prevents Turkey from determining tariffs that align with its own economic dynamics (contrary to the principle of ability to pay).

In conclusion, applying lower taxes to certain countries through FTAs and other international agreements can lead to unfair competition. These agreements should be reevaluated, and regulations more aligned with Turkey's economic interests and the principle of competition should be introduced. Turkey must review its legislation to align with customs standards set by international organizations like the World Trade Organization (WTO) and the European Union (EU). A customs system that adheres to international standards will both facilitate trade and attract foreign investors to Turkey.

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MACROECONOMIC DETERMINANTS OF CORRUPTION IN PUBLIC AND PRIVATE INSTITUTIONS: A SYSTEMATIC LITERATURE REVIEW

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Abstract

This review consists of basic bibliography in order to present the development of public corruption in relation with macroeconomic variables and the causation between them that it controlled by endogen eighty test and robustness check including several control variables, as well. The main statistical methodology based on regression analysis model and its derivatives. Results show that corruption has a significant impact on the decrease the national inward and outward investments and the growth with the analogous covariance of macroeconomic variables, such as, public spending, national income and so on.

Keywords: corruption, democratization, institutions

INTRODUCTION

It is important to first outline the purpose of this review and how it advances our understanding of public corruption from a macroeconomic perspective. To begin with the related statements about the reviewed topic, they have a significant scientific impact for the following reasons: Firstly, the secondary-sourced data that was used in related previous empirical studies and literature reviews is also widely accessible to researchers. Secondly, the choice of macroeconomic variables affects the development of public corruption. Thirdly, it is scientifically crucial that these data about public corruption and its development from the macroeconomic point of view be collected and analysed in different time periods and geographical areas. Therefore, they might help the countries design public economic strategies inside a democratic framework.

The review aims to investigate how corruption develops in both public and private sectors as a result of macroeconomic growth and other related variables, including public spending and investments, as well as how corruption is classified according to institutional factors within a democratic framework. The associated bibliography indicates that corruption has been demonstrated to be a crucial component of a country's economic development, suggesting that this research topic has a significant influence on the global economy.

More specifically, governments can decide whether to distribute products and services themselves, control how they are delivered, or take no action at all, according to Graycar (2020). They have the option of enforcing light or strict regulations in a variety of areas, including the economy, healthcare, communications, transportation, water quality, and teaching effectiveness. Human society will benefit if these goods are provided or governed in accordance with moral standards and supported by capable public administration. The community has been defrauded if they are corrupted. Furthermore, the organization of any society is a reflection of its social, political, economic, and legal ideals. Throughout history, formal processes of administration have been examined, and efforts to discover more adaptable, effective, and efficient ways of allocation are ongoing. Public policy research looks on more effective approaches to creating and carrying out desired goals and objectives.

To reiterate, corruption harms policy objectives and undermines trust, costs governments and businesses trillions of dollars annually, and significantly raises the cost of goods and services. Corruption impairs economic performance and growth, deters investment, distorts the development of natural resources, harms the environment, lowers tax revenue, lowers quality of life, delays human development, distorts services, undermines judicial integrity and the rule of law, and—most importantly for the purposes of this book—leads to ineffective public administration.

Stevens (2016) asserts that low levels of perceived corruption may not result from democratic gains that are not accompanied by shifts in value orientations and human development. Furthermore, a nation would have to achieve a high level of at least four of the five criteria in this analysis—high democracy, human development, self-expression orientation, and either rational-secular orientation or low-income inequality—in order to ensure a low level of perceived corruption. It appears that democracy or development typically interacts with traditional or survival tendencies in adequate causal combinations to explain high levels of perceived corruption. Furthermore, a particularly important factor in explaining the low levels of perceived corruption appears to be the combination of self-expression oriented with high levels of democracy and development.

It is imperative to state the study's research questions at this time. First, the relationship between corruption in the public and private sectors (RQ1), and second, the impact of macroeconomic factors on corruption (RQ2). Furthermore, the explanatory variable is specified to be corruption, and the response variables are democratization, governance, public investments, growth effect size, and other macroeconomic variables. The sixth table on the study's findings shows the relationship between the aforementioned variables.

Finally, the following sections of this review are offered. The paper's scientific topic introduction is followed by a review of related prior research about public corruption and the macroeconomic factors that influence it. Furthermore, the methodology and outcomes of the bibliographical search are described. Ultimately, the conclusion regarding the evolution of public corruption is highlighted.

A PREVIOUS RELATED LITERATURE REVIEW

Mugellini et al. (2021) state that anti-corruption initiatives have been given a higher priority in order to potentially address administrative corruption. The review's findings demonstrate that the best ways to reduce administrative corruption are either raising the likelihood of detection (through risk audits, for example) or the expected monetary consequences (through sanctions, for example). Organizational, cultural, and educational initiatives do not have the same impact. However, it turns out that a combination of several therapies works better than a single one. On the one hand, it is evident from the literature that the organizational and cultural context in which the intervention is executed is crucial. The meta-regression study encompassed, whenever feasible, the attributes of the environments in which the interventions were created, including the nations' income levels. Further investigation revealed that the magnitude of the bribe, the likelihood of ongoing interactions between bribe givers and takers, the quantity and possibility of fines, and other factors all had an impact on the interventions' effectiveness. Conversely, the likelihood that a sanction would be implemented and the severity of the possible penalty both have a significant impact on the audit risk related to corruption.

According to Bautista-Beauchesne and Garzon (2019), there is a 41.3% chance of corruption developing in the public sector. Furthermore, by adopting a wider perspective and focusing on system-wide success conditions, scholars such as Gong and Wang (2013) emphasize the significance of the general public's low tolerance for corruption because their civic engagement helps to deter corruption and limit its opportunities. Other system-wide conditions for the success of corruption prevention policies are the involvement and cooperation of the private sector, as well as the trust of civil society (e.g. Lukito, 2015; Oyamada, 2015; Scott and Gong, 2015). Another systemic condition which has received scholarly attention is political will (e.g. Quah, 2006; Oyamada, 2015; Scott and Gong, 2015). Reflecting the broader corruption and anti-corruption literature (e.g. Rotberg, 2017), political will is considered crucial if corruption prevention policies are to be effective. For example, there may be a lot of scholarly interest in the macroeconomic impact, and particularly in how the growth of public corruption affects FDI inflows. Particularly, the review's outcomes, which are shown below, shared many macroeconomic aspects. Initially, the effects of GDP growth, inflation, trade openness, and corruption control were investigated. According to Bui et al. (2021), the results from ASEAN member nations demonstrate that trade openness and GDP development have a beneficial impact on foreign direct investment inflows. Additionally, FDI inflows are positively impacted by the suppression of corruption. This demonstrates the need for sound macroeconomic policies and effective anti-corruption measures in order to draw foreign direct investment, which is another interesting finding of this study. Both the ASEAN economies and researchers value these findings as empirical proof.

Ostrihon's (2022) survey states that it is imperative to identify the factors influencing the decision-making process that underpins Alert Mechanism Reports (AMRs) for each member state by using an in-depth review (IDR) system. These factors include weakly behavioural ones, like the economic crisis, political ones, like public approval

and EU positive preferences, institutional ones, like government effectiveness, rule of law, control of corruption, and regulatory quality, all of which are influenced by an unbalanced macroeconomic environment. Thus, it can be inferred from the results that the corresponding institutional parameters' predicted sign becomes less clear because comparable elements seem to have an adverse effect on whether or not the national crisis situation is handled in a macro-in balanced setting.

Despite the fact that there is a progress on the research of corruption and the combination of different empirical approaches using both observational and experimental data, it is difficult to understand the multifaceted nature of corruption and its interactions on the micro, meso, and macrolevel. Hence, according to Dimant & Tosato's (2018) survey, the quality of empirical research on corruption is still advancing and has to settle important issues, such as the right way to measure corruption, before being able to both settle the debate of conflicting empirical findings and answer the plethora of still open questions. There is an interrelation between corruption and bureaucracy, press and economic freedom, poverty, wages, or the shadow economy are in line with both theoretical assumptions and older empirical research. On the flipside, however, recent research has produced conflicting results on the interrelation of corruption with market and political competition, foreign direct investment, as well as income inequality and poverty. While one can only speculate about the exact reasons for such discrepancies, arguably more sophisticated econometric approaches and different and/or larger data sets are at least part of the story.

Last but not least and according to Enste (2017), there is empirical research that shows a very clear result: Corruption reduces total investment. Total investment includes public as well as private investment. Whereas economists agree on the general impact of corruption on private investment, the effects of corruption on public investment are broadly disputed. We discuss the problems involved with public investment later on when we interpret the influence of corruption on government expenditures. The intuition of how corruption affects private investment is quite simple. Private investors take into account that they have to bribe several officials in order to get the permits and licenses for their projects. This increases the costs of private projects and time involved in it with the consequence of being less attractive. Therefore, projects that would have been profitable without paying bribes do not get realised because of the bribes. If the corruption index increases and thus improves by one-standard-deviation, the investment rate increases by 2.9 % of the GDP. These results are disputed by several economists claiming that the effects depend on the form of corruption and its institutionalisation. All the above are presented at Table 1 below.

Table 1 Corruption and its consequences

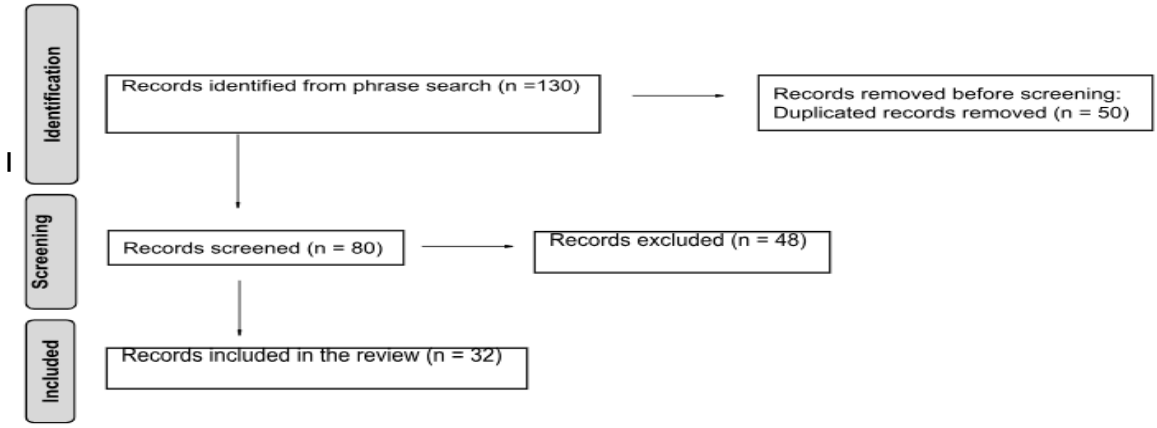
Author	**Elements**
Mugellini et al. (2021)	Increases fines and detections
Ostrihon (2022)	Public law's tolerance, civic engagement, ineffective prevention policies and macroeconomic imbalances
Dimant & Tosato's (2018)	No political will for effective policies
Bautista-Beauchesne and Garzon (2019)	Decrease GDP growth and FDI inflows
Enste (2017)	Decrease total investments

Source: Edit by author

MATERIALS AND METHODS

As it lists from the PRISMA diagram that it listed below at diagram 1, from 130 relative scientific papers to research topic were chosen 80 that have to do with macroeconomic variables in the development of corruption in public and private sector.

Figure 1 – Systematic review process



Source: Adapted from Page et al. (2021), PRISMA 2020 flow diagram template for systematic reviews.

Owing to their primary focus on corruption as a dependent variable in relation to macroeconomic variables as independent variables, they were narrowed down from 130 to 80 studies from the previous number. Additionally, 50 records were eliminated owing to duplication. Because the majority of research studies used versions of the regression model with macroeconomic control variables for their methodologies analysis. As a result, 40 papers total—out of 80—were gathered for the literature review, and 32 out of 40 referred to quantitative techniques, particularly regression analysis models.

Furthermore, it is necessary to note that the scientific publications' results showed that the lowest number of Google Scholar listings was 13, whereas Scopus listed roughly 19. The dependent and independent variables that are employed, together with the third requirement that all scientific publications be published in scientific journals with judges, are the inclusion criteria for them. In conclusion, the keywords are displayed as terms of the bibliography search, as Table 2 below illustrates.

Table 2 – Grouping of bibliography search terms of title

Grouping term search	Operator	Grouping term search	Number of papers
Political corruption, macroeconomics, law, public administration	- ---	- – --	92
Political corruption	and	Macroeconomic rates	19
Political corruption	and	Public administration	13
Political corruption	and	Law, Civil Societies	8

Source: Edit by author

FINDINGS

Corruption and Governance

First of all, based on Al-Faryan & Shill (2023) it would be stated that good governance with its dimensions is presented as an interplay between corruption and polity nationally. Primarily, as it was mentioned that corruption, which is measured through CPI and world governance index WGI, affect negatively the economic development and growth, produces different costs for the states and the institutions, increases political violence and increases

also the vulnerability. These elements, as a result, harm the democracy, violate the implementation of law and also violate the separation of powers and finally polity is affected.

In Moldogaziev & Liu's (2020) study, two linear regression models with country fixed effects were applied to a data set containing 34 countries from the former Communist/Soviet bloc in Eastern and Southern Europe, the Caucasus, and Central Asia. The results showed a relationship between the perceived corruption of local officials (LOC) and that of government officials (GOC), as well as general economic conditions, policy quality, governance quality, household composition, urban residency, respondent income decile, gender, age, bachelor's degree, and random slopes. The findings of the regression indicate an adverse relationship between assessments of local government performance and perceived levels of corruption among government officials, where (GOC) is a more comprehensive measure than (LOC). These regression results, which are all significant at the 0.1% level, demonstrate a persistently unfavourable relationship between assessments of the performance of the central government and perceived levels of corruption among local authorities. Lastly, we now concentrate on the relationship between assessments of central government performance (CGP) and perceived levels of corruption among government personnel overall (GOC). The findings indicate a negative correlation between assessments of central government performance and government officials' assessed levels of corruption. Moreover, both at the local and national government levels, corruption will be negatively correlated with perceived organizational performance levels.

Furthermore, in comparatively more corrupt situations, the negative correlation between perceived levels of public corruption and assessments of organizational effectiveness is less pronounced. Additionally, respondents' assessments of (positive) improvements in the economy, politics, or levels of corruption as compared to four years before and their perceptions of the performance of both local and national governments are positively correlated.

Manzetti & Wilson (2016) employed a probabilistic (probability) regression model with data from 14 WVS countries to address questions regarding the degree of satisfaction with the way national office holders manage the nation's affairs and how this satisfaction is affected by high and low levels of corruption. The government's support, which is related to the satisfaction mentioned above, is assumed to be the dependent variable in this model. The independent variables are the robustness of democratic institutions and their relationship to government efficacy metrics. These metrics include public service delivery quality, bureaucracy quality, civil servant competency, civil service independence from political constraints, and the government's ability to be trusted to uphold these policies. The perceived amount of corruption and economic contentment are additional independent variables. The model's output indicated that there is a negative correlation between government satisfaction and corruption. Just 30% of respondents who believe there is the highest amount of corruption say they are satisfied with the administration, compared to 62% of respondents who believe there is the lowest level of corruption. Furthermore, citizens perceive higher degrees of corruption in countries below the mean level of effectiveness than in those above. In nations with below-average effectiveness, nearly a quarter of the sample (24.4%) believe that few or no public officials are corrupt. Forty percent of citizens believe that most or almost all public officials in highly effective countries are corrupt. Therefore, only when corruption is high does' government effectiveness combined with corruption lead to a major drop-in government support. Finally, if administrative and economic reforms are left to corrupt leaders, they will never produce the desired outcomes because weak democratic institutions enable unscrupulous administrations to win political support.

Furthermore, according to Thanapaet et al. (2023), NPS emphasizes citizens articulating shared interests, NPG emphasizes decentralization to local governments for stronger social partnerships, and public service managers are viewed as entrepreneurs creating leaner organizations in a privatized environment. NPM is decentralized, results-oriented, and owned by the community. Good governance, community stakeholder involvement, and collaborative leadership across organizational boundaries are necessary for the effective delivery of public services. Values of political, social, and economic development should all be strengthened by good governance.

Su et al. (2023) used a regression model to examine the preventative, exposed, and defensive roles of audits in connection to the degree of corruption. The data came from 30 provinces in China, which includes municipalities and autonomous areas. The data was collected between 2008 and 2017. It suggested an uneven level of corruption in China's various areas. In a similar vein, the national audit function's substantial standard deviation indicated notable variations in the way China's provinces' national audit "immune system" operated. In terms of public involvement, China's provinces differed significantly in terms of urbanization, education, and social organization, which resulted in uneven development. On the other hand, there was less fluctuation in the GDP's industrial added

value proportion, urbanization rate, and Internet penetration rate among different regions, indicating comparatively balanced development.

Moreover, the national audit function contributed to a decline in the quantity of employment-related criminal charges due to its negative link with the level of corruption. Furthermore, it was mentioned that the chance of corruption decreases with increasing fiscal expenditure as a percentage of GDP and that the national audit defensive function may be useful in controlling corruption. Furthermore, there is a negative correlation between the level of corruption and the national audit function, as indicated by the correlation analysis results and regression analysis outputs. These findings imply that national audit institutions play a significant role in mitigating corruption across all regions of China.

According to Villanueva (2019), a four-step hierarchical multiple regression model was used to estimate political corruption in relation to the civil society environment, the transparency of laws and predictability of enforcement, the rigorousness and impartiality of public administration, and large-N data that covers approximately 20000 observations from approximately 200 countries between 1789 and 2018. Transparency of laws and predictability of enforcement had the biggest variation (21.7%) among the three predictors entered after civil structural society, followed by the atmosphere of civil society (1.4%), strictness and impartiality of public administration (11.5%), and both. These findings highlight the value of institutional frameworks, legal transparency, and predictable enforcement in this particular instance, as well as the effectiveness of public administration in reducing corruption. Therefore, the environment in which national governments partially shape the anticorruption reform and movement—including the environment in which civil society organizations operate and the larger politico-legal institutional framework in which governance and administration generally take place—affects the success of any actor involved in these efforts.

The findings of Sharma & Mitra's (2015) private sector study, which utilised information from the global World Bank Enterprise Surveys conducted in India in 2005–2006, are noteworthy. Proxies of control variables, such as Y variables (policy obstacles, bureaucratic complexity), W variables (tax compliance, external audit, profitability, and selling to the government), Z variables (employment (size), and other control variables like age, foreign ownership, labour intensity, and the nature of the market for level of competition, are used to reframe the probability that a randomly drawn firm pays bribes as a probit model. The study's conclusions about how bribe payments affect businesses' performance are found to be somewhat contradictory. Bribes promote inefficiency and act as a cost on a company's profitability. Bribing government officials is said to improve a company's export performance and innovative product development pertaining to the traits of the companies that accept bribes. First, companies that evade taxes are probably going to bribe government officials more. Second, businesses do a better job of complying with taxes. Third, one significant justification for bribe payments is policy obstacles. Therefore, the likelihood of paying bribes tends to increase and performance is hindered by the complexity of the system (be it bureaucratic or policy). Finally, in order to lessen corruption in emerging nations generally and India specifically, we suggest a number of tax, policy, and administrative reforms.

Desta's (2006) questionnaire-based survey of 62 public officials from 13 Eritrean government ministers examined attitudes and personal characteristics regarding the scope and causes of corruption as well as various reforms, such as measures to enhance transparency and democratic accountability, administrative and economic reforms, and so on. With regard to sub-factors, the survey revealed that Eritrea, although one of the least corrupt countries in Africa, has a bright future in its fight against corruption because it has recently established a state where corruption is not entrenched in the government. The responders are all in agreement that the government should give top priority to fighting corruption. The data from studies suggests that a number of political, administrative, transparent, economic, and accountability reforms must be implemented in order to stop widespread corruption from developing. Nonetheless, compared to other anti-corruption measures, the need to enact administrative or civil service changes, as well as reforms pertaining to openness and accountability, is thought to be considerably stronger. It is imperative that new laws and institutions be introduced, existing accountability and transparency procedures be strengthened, and civil service reforms be implemented as soon as possible. Public managers in Eritrea have stated that they do not believe that corruption stems from Eritrean culture. Public servants in Eritrea do not think that foreign interests fuel corruption in their country. Furthermore, public officials polled said that monitoring by NGOs—particularly international ones—has little influence in thwarting corruption. According to this research, Eritrean public officials believe domestic solutions are the most suitable for addressing the country's corruption and blame it to internal causes.

In order to assess the satisfaction with the delivery of public services in India, Schatz (2013) conducted a comparative case study analysis on 250 primary schools and 1140 households. The level of corruption in public administration was assessed in relation to the activation of horizontal accountability,institutionalization, effective electoral accountability, and two shadow cases (Mumbai and Tanzania). systematic reductions in corruption in public administration are best accomplished through enhanced horizontal accountability, as corruption is primarily the product of economic incentives mixed with a lack of systematic monitoring and punishment. Moreover, citizens' effective sanctioning authority is required to halt systemic corruption and impose more stringenthorizontal responsibility. If social accountability systems establish horizontal accountability and maintain it through the sanctioning mechanism of successful electoral accountability, they will lessen corruption in public administration. Furthermore, how social accountability measures are applied largely determines how effective they are at reducing corruption. For them to be successful, they must provide enough public pressure to fortify horizontal accountability and establish a real danger of sanctioning power via the electoral accountability system.

Corrado & Rossetti (2018) examined a dataset from twenty Italian regions from 2000 to 2011 using a panel data model that included an estimated error and dummy heterogeneity test. The dataset was then subjected to a pooled OLS model. Crime against public administration is the dependent variable; income per capita, NEETS, and public spending across many branches, including welfare, social security, health, and public safety, are the independent factors. The expanded model demonstrates that there is evidence linking corruption to lower (but not statistically significant) levels of per-capita spending on general public services, which account for a sizable portion of all public expenditures (because they also include debt interest payments). Once more, there is a negative correlation between people's involvement in volunteer organizations and misbehaviour or wrongdoing inside public administration. The dynamic panel attests to the robust causal relationship between (high) social capital and (reduced) corruption. Lastly, the estimations support the existence of a positive link between the frequency of corruption crimes and the quality of public roads and infrastructure, indicating that a high proportion of poorly maintained paved roads may both contribute to and result from corrupt practices.

Regarding Diaby (2014), in 1999, 4100 businesses in 24 transitioning nations—aside from Turkey—were included in the data gathered from the Word Bank Survey. The corruption (BRIBE) that depended on the bureaucracy's structure (CENT), a set of control variables including firm characteristics, the percentage of time senior management spends interacting with officials, whether the company receives government subsidies, the percentage of sales reported to tax authorities, and the ease with which a company can access an honest official where it can receive the proper treatment, were all examined using these data using both the ordered probit model and the OLS estimation model. The more time company representatives spend with government officials, the larger the bribes. This outcome could occur because spending more time with government representatives could be interpreted as a sign of stricter laws, which would encourage greater bribes in an effort to get around them. Bribes also rise in proportion to a company's sales as reported to the tax authorities. Maybe both factors represent challenges that a company might seek to bribe its way around. Older companies pay less bribes, maybe because they have greater clout in politics to keep corrupt authorities at bay or because they have learned from the past to better avoid these officials. There isn't much of a correlation between getting government subsidies or lobby organization membership and bribe payments. Businesses that are able to pay bribes to honest officials tend to pay lesser bribes. The quantity of bribes paid by the company is inversely correlated with its size. There is a statistically significant negative coefficient on CENT. Higher levels of centralization are linked to fewer overall bribery payments made by the company. According to the size of the coefficient estimate (0.285), there is an almost 0.3 unit drop in BRIBE for every one-interval increase in CENT−. According to the analysis, businesses pay less in bribes in centralized bureaucracies than in decentralized ones. In situations where bribes are inherently less predictable, where obtaining a business license presents more business difficulties, or where changing the ethics of public officials is unfeasible, centralization appears to have a bigger impact on reducing bribe payments. Reorganizing bureaucracies to become more centralized is the second-best way to reduce the level of bribery. The items listed above pertain to both government performance and corruption. All the above for corruption and government performance are listed in Table 3 below.

Table 3 - Bibliography review about corruption and government performance

Author	Sample	Dependent Variable	Independent Variables	Relation
Moldogaziev & Liu, (2020)	34 countries of former USSR	Local and Government perceived corruption	Policy quality, Government performance	Negative
Al-Faryan & Shill, (2023)	Not mentioned	Corruption (CPI, WGL)	Polity, Governance, Democracy, Law	Negative
Manzetti & Wilson, (2016)	14 WVS countries	Government's support	Efficacy metrics (perceived corruption, bureaucracy quality etc.)	Negative
Thanapaet et al., (2023)	Not mentioned	Good Governance decentralized NPM	Corruption,	Negative
Su et al., (2023)	30 Chinese provinces	National audit function, fiscal expenditures	Corruption	Negative
Villanueva, (2019)	Large-N data from 200 countries	Corruption	Effectiveness of Public Administration through NGO	Negative
Sharma & Mitra, (2015)	WB ES in India	Corruption in Public and Private Sector	Tax avoidance, low quality policy	Positive
Desta, (2006)	62 officials of 13 Eritrean ministries	Corruption in public sector	Transparency and democratic accountability, administrative and economic reforms	Negative
Schatz, (2013)	250 primary schools and 1140 households	Public Corruption	Accountability	Negative
Corrado & Rossetti, (2018)	Dataset from 20 Italian regions	Corruption (Crime against PA)	Public Spending	Negative
Diaby, (2014)	4100 businesses in 24 nations	Corruption	Administrative function of public sector	Negative

Source: Edit by author

Corruption and growth effect size

The study by Uroos et al. (2021) used time series analysis, the Tobit Model of Censored Regression, the Autoregressive Distributed Lag (ARDL), and the augmented dickey fuller test (ADF) to identify the economic determinants of corruption in Pakistan and investigate the effect of trade openness on corruption. More specifically, the relationship between corruption and the GDP growth, public spending, investment, inflation, literacy rate, and economic integration was looked for. It was discovered that while inflation has a favourable impact on corruption, the literacy rate, GDP growth, and economic integration have a negative impact on it. But income distribution, governmental spending, a large index, and investment are statistically inconsequential.

The application of a simple growth model and then three additional special models that account for fixed effect, random effect, and Hausman test to check for heterogeneity in data from 47 sub-Saharan countries has been found by Omoteso & Mobolaji (2014) to have a significant impact on the growth rate of real GDP per capita in relation to institutional variables like accountability (ACCT), rule of law (LAW), political stability and absence of violence (POSV), government effectiveness (EFF), and regulatory quality (REG). The study's findings demonstrated that the region's economic growth is positively impacted by the indices of voice, accountability, and rule of law. Furthermore, it was discovered that while government effectiveness has a negative impact on economic growth in the region, political stability and regulatory quality indices have growth-enhancing characteristics. Even with a number of anti-corruption initiatives in place in the area, it is unclear how corruption prevention affects economic expansion. The region's economic growth is more positively impacted when accountability and rule of law indicators are implemented concurrently. Lastly, it was proposed that reform initiatives with a focus on improving political stability, accountability, regulatory quality, and the rule of law should receive more priority because they have more characteristics that promote growth.

Meon and Sekkat's (2005) study evaluate the connection between the quality of governance and the effects of corruption on investment and growth in a sample of 63–71 nations between 1970 and 1998. The average growth rate of per capita income was used as the dependent variable in this assessment, and the independent variables included the initial per capita income, the initial level of education, the average population growth rate during the sample period, the average ratio of investment to GDP during the period, the degree of economic openness, the corruption index, and the error term. Similar to earlier research, we have discovered that corruption has a detrimental impact on investment and growth. In contrast to earlier research, we discover that corruption hinders growth regardless of how it affects investment. However, these effects vary according to the level of government. When measures of the effectiveness of governance decline, they usually go worse. This goes against the "grease the wheels" theory of corruption, which suggests that corruption could help make up for poor governance, and instead supports the "sand the wheels" theory of corruption.

Dzhumashev (2014) looked into how the growth rate of bureaucrats, workers, and businesses using an endogenous growth model depended on the rate of tax evasion and corruption. The analysis demonstrates how the relationship between governance and corruption affects public expenditure efficiency, which in turn impacts corruption's growth. In particular, corruption only increases economic efficiency when the size of the government is larger than ideal. It suggests that corruption may reach a level that maximizes growth. This study also reveals that as economies grow, corruption becomes less common. This is due to the fact that rising wages and greater rent-seeking expenses for private companies deter corruption. The primary policy implication is that it is more effective to target tax evaders rather than officials in order to reduce corruption and increase an economy's capacity for growth.

In order to provide a comparison analysis for these two groups, Feruni (2020) surveyed the effects of urbanization, economic freedom, and corruption on the economic development of both Western Balkan and EU nations during the period 2009–2018. Urban population growth, the economic freedom index, and the corruption perception index are selected as independent factors, whereas economic development is the dependent variable of the human development index (HDI). The empirical analysis, which employs the Random Effects model under the Panel Generalized Least Square method, indicates that, for both groups of countries, corruption has a negative effect on economic development while economic freedom and urbanization have a positive effect. In contrast to the EU, the Western Balkans seem to gain more from economic independence and urbanization, but corruption has a more devastating effect there. Is the influence of the selected independent variables limited to a certain HDI component? Though the results of this work are extremely significant and consistent with the evaluated literature, they are left open for further research.

Kunieda et al. (2014) state that two nation models were used to evaluate data gathered from 109 countries between 1985 and 2009, which just revealed the interactive relationship between financial openness, economic growth, and corruption. It looked at how financial transparency and corruption combine to affect economic growth. Investment served as a control variable in the analysis. We additionally account for trade, inflation, government spending, population growth, and life expectancy in order to do robustness checks. The findings suggest that, in comparison to less corrupt nations, highly corrupt nations typically levy higher tax rates (both the observed tax rate and unseen bribes). If the nations liberalize their capital accounts, this will amplify the detrimental effects of government corruption on the economic development of highly corrupt nations. Yet, because of the influx of financial resources from highly corrupt nations, the detrimental effects of government corruption on the economic development of less corrupt nations are mitigated if such nations liberalize their capital accounts.

Mendez (2006) claims that the World Bank's 2004 World Development Indicators were used to extract data and their values from a wide sample of nations throughout the years 1960–2000. The values of the following variables were analysed using an OLS estimation unrestricted model for free and not-free sub-sample countries: annual GDP growth as the dependent variable, annual population growth (POP), real income per capita (GDP), secondary school enrolment rates (SED), the investment share of GDP (investment), and the share of government expenditures in GDP (government) as the independent and control variables. By performing a fixed-effects regression with the variables averaged across three 5-year intervals, an attempt was made to correct for endogeneity. The estimations' findings point to the possibility of a positive growth-maximizing degree of corruption in free nations. The coefficients on corruption and corruption squared for these nations are consistently significant at the 1% level, and the estimates of the coefficients hold up when all other independent variables are taken into account. The number of explanatory factors in the regression and the particular corruption index

employed have a significant impact on the size of the estimated coefficients of corruption for the not-free countries subsample. There is a positive growth-maximizing degree of corruption for free countries, according to the findings of these fixed-effects regressions for the scenario where free countries control the endogeneity. When our measurements of investment, government consumption, and political instability are added to the list of explanatory variables, the estimated coefficients of corruption do not change. Lastly, the fixed effects estimations were redone with the inclusion of the role of the government as an explanatory variable and an interaction term between corruption and the percentage of government expenditure. The detrimental consequences of corruption also increase with government spending. Additionally, because larger governments impose more bureaucratic restraints, corruption will become more productive or advantageous. According to the other viewpoint, corruption is worse when there are larger governments because it decreases the effectiveness of how funds are allocated. All the above for corruption and growth effect size are listed in Table 4 below.

Table 4 - Corruption and growth effect size

Author	Sample	Dependent Variable	Independent Variables	Relation
Uroos, et al., (2021)	Time series analysis	Corruption	Trade openness and other macro-economic determinants	It was discovered that while inflation has a favourable impact on corruption, the literacy rate, GDP growth, and economic integration have a negative impact on it.
Feruni, et al., (2020)	2 groups of Western Balkans and EU nations	Economic development is the dependent variable of the human development index	Urban population growth, the economic freedom index, and the corruption perception index	WB countries gain more from economic independence and urbanization but, corruption has the negative effect on the economic development.
Omoteso & Mobolaji, (2014)	Data from 47 sub-Saharan countries	Growth as a percentage of GDP	Accountability, Law, Voice, Government effectiveness	Accountability, law, voice have positive relation with economic growth but, negative with government effectiveness. Anti-corruption policies have an unclear role on economic growth.
Meon & Sekkat, (2005)	Data from 63-71 nationa	Average growth rate of per capita income	The initial per capita income the, average ratio of investment to GDP.	Corruption hinders growth regardless of how it affects investment.
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 affect the economic development of less corrupt nations are and it is mitigated if such nations liberalize their capital accounts
Mendez, (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: Edit by author

Corruption and investments

According to Cieslik's (2017) research, GMM techniques were used to evaluate data collected from 142 countries' samples between 1994 and 2014. (one, two stages: Kiviet model, endogeneity check, and robustness check). It looked into mistake terms, fixed effects, and the connection between investments and corruption. It has been shown that corruption has a detrimental impact on the foreign investment stock of the receiving nation. Additionally, the uncertainty brought on by corruption ought to hinder progress. In contrast to taxes, bribes entail the arbitrary and capricious use of state power. Businesses incur expenses as a result, and the economy is further burdened by the resources used for ineffective endeavors. The economy bears heavy expenses from corruption. Specifically, corruption imposes an excessively high cost on nations by preventing them from accessing global finance markets and by reducing investment and growth. Furthermore, there is substantial evidence that corruption has a detrimental impact on economic growth, which is in line with other prior empirical research and has significant policy ramifications. Last but not least, variations in the degree of corruption may result in long-lasting disparities in the degree of growth among nations.

The Russtat dataset's data pertains to a sample of 2263 foreign-owned businesses. Ledyaeva (2013) used a negative binomial panel model to assess them. In a given Russian region, the study examined the number of foreign-owned businesses registered in relation to control variables like market size, surrounding-market potential, population educational background, transportation infrastructure, natural resources, institutional potential, and investment risk. The variables that provided explanations were corruption and regional democracy. According to the findings, international manufacturing companies are more likely to be found in less corrupt and democratic regions of Russia than are businesses engaged in trade and the services sector, which are more likely to be found in less democratic and more corrupt regions. Additionally, foreign investors set up shop in less corrupt areas of Russia. Additionally, investors from dishonest nations frequently make their way to more dishonest areas of Russia. Furthermore, the degree of democracy and foreign investors' judgments about where to locate in Russian areas were positively correlated. Like with corruption, though, this outcome is a reflection of the reality that most foreign direct investment (FDI) entering Russia comes from democracies. The location decisions of foreign investors from democratic nations are favorably correlated with regional democracy; however, there is evidence of a negative correlation between the degree of regional democracy and the location decisions of investors from non-democratic countries. In conclusion, foreign direct investment is motivated by the personal interests of the ruling regional political elites, who work with international investors from corrupt and authoritarian nations, in Russian regions with high levels of corruption and an autocratic government.

Pagano et al. (2017) collected data from 49 countries between 2004 and 2008, which was also analyzed with the OLS and 2SLS regression analysis models. The total portfolio investments by foreigners and institutional trading volumes showed that increased corruption is normally related to less foreign portfolio investment in a country. However, the effect of corruption on foreign equity investment is nonlinear and reverse J-shaped, with intermediate levels of corruption yielding the most negative effects on foreign portfolio investment in our study of 49 countries.

Through the implementation of non-parametric analysis on data which were collected from Vlachos et al., (2019) and concerned 140 top management personnel of multinationals or their subsidiaries operating in Greece, occur significant results between inward FDI and expected economic growth, geographical proximity to EU, links of Greece to other neighboring countries, cultural similarities/closeness, availability of skilled workers, availability of labor force, low cost of skilled labor, favorable business climate, political stability, and macroeconomic stability**.** Especially, the findings indicate that Greece's systematic inability to attract significant amounts of FDI has met with the lack of confidence in the recovery of the economy. In order to make the Greek economy more competitive and appealing to foreign investors, policymakers should, on the one hand, move on with reforms that aim to bolster confidence in Greek institutions and foster political and financial stability. Second, the Greek government needs to consider policy changes that will reshape the economy so that it can compete with economies like Cyprus, whose lower tax rates and similar culture attract investors, and Bulgaria, whose close proximity poses a threat due to lower unit costs and tax rates. More specifically, the Greek government must choose the best course of action quickly to rid the market of zombie companies and the banking system of non-serviceable loans. Finally, adopting a stable tax system over an extended period of time, ending the practice of tax amnesties and long tax instalment periods, and gradually lowering the compliance costs will be necessary. Subsidies should end and all economically viable investment projects should be rewarded in the form of income tax. Subsidies to investors should only be limited to infrastructure projects, either physical or digital.

The effects of host country institutional quality on CFDI in Africa and flows of Chinese OFDI are estimated for eight countries: Nigeria, South Africa, Zambia, Ghana, Kenya, Algeria, Egypt, and the Sudan. This was done by utilizing a panel data model from Ross et al. (2019) for the years 2003–2015. An OLS pooled and fixed effect model was used to examine the relationship between Chinese foreign direct investment (FDI) and the following indicators: labor productivity (LBPRO), annual GDP growth (GDPG), political stability and absence of violence (POLS), regulatory quality (RGQ), the rule of law (ROL), control of corruption (COC), total natural resource rents as a percentage of the host country's GDP (RMAT), and the inflation rate (INFL). The findings show that host country POLS and the ability of the host government to control corruption (COC) are significant institutional predictors of CFDI. Macroeconomic stability does not appear to influence levels of CFDI in Africa; the investments are driven by resource-seeking and efficiency-seeking forms of FDI rather than market-seeking FDI. Also, political stability significantly and positively impacts levels of CFDI in Africa, whereas political instability has a negative impact on incoming investments. As a result, Chinese investors like to invest in countries with different political regimes. Controlling levels of corruption (COC) in the host country was also a significant institutional determinant of CFDI and reflects previous literature related to general flows of FDI in Africa. Moreover, CFDI in Africa appears to be driven by other strategic reasons related to resource acquisition and efficiency-seeking motives. Finally, future Chinese economic growth and domestic consumption are increasingly dependent upon securing natural resources (RMAT), including energy and raw materials, many of which are available on the resource-rich African continent, and efficiency-seeking FDI measured by the ratio of GDP per person employed (LBPRO) has now superseded resource-seeking firm-level motivations as the primary driver of CFDI in Africa based on the size of the coefficient.

Having analysed data from Bailey (2018), a sample of 91 published and 6 unpublished studies from 1976 to 2011, by using meta-analytic procedures and meta-analytic regression analysis between FDI and political stability, democratic institutions, corruption, tax rates, and cultural distance, significant results occurred. To the point, general institutional quality is also positive and significant. More specifically, the relationships between political stability, rule of law, democratic institutions, and FDI are positive and significant, but the strength of the coefficients is only modest. The relationships between corruption, taxation, cultural distance, and FDI were negative and significant, with the strength of the coefficients being higher on average, suggesting that deterrence may have a stronger effect on FDI. The relationship between attractive institutional factors and FDI is significantly larger for developing countries than for developed countries. In each of the individual types of institutional factors, the relationship is stronger for developing countries with the exception of political stability, which is significantly higher for developed countries. Also, control for GDP, trade between home and host countries, and wage levels in the host country show a stronger positive relationship between institutional factors and FDI. However, including GDP per capita in the regression weakens the relationship. Similarly, including geographic proximity (distance) and population variables also weakens the positive effect of the institutional factors-FDI relationship. Finally, controlling infrastructure strengthens the negative relationship, while controlling the common language between the home and host country weakens it.

Concerning Zakharov's (2019) study, the data from 79 Russian countries between 2004 and 2013 were analyzed using an OLS estimation in order to demonstrate a strong negative relationship between corruption and investment, but they did not assert its causation because of the potential endogeneity of corruption. For this purpose, the determinant of corruption was the freedom of the local press. It was found that corruption has a strong effect on regional investment in fixed capital. The effect is robust to controlling for socioeconomic conditions, including the quality of local bureaucracy, to the use of alternative measures of corruption, and to addressing the endogeneity of corruption by using freedom of the press and the violations of journalists' rights as instrumental variables. Freedom of the press has an effect on investment by reducing corruption through improving the accountability of public officials, but it does not correlate with regional economic conditions, the characteristics of local mass media, or even direct financial support from the government. The effect of corruption is particularly large for companies with a share of foreign ownership. When we look separately at the inward FDI in Russian regions, we find a negative relationship between corruption and the level of FDI, which is, however, not consistently significant across all our specifications and measures of corruption.

Consequently, results from Jadhav's survey (2012) and after running the OLS regression using period random effects and cross-section fixed effects models, show that the regression model explains 78 percent (R2) of the variation in FDI inflows in BRICS. Furthermore, the findings clarify that, with the exception of Rule of Law, every variable in the model is statistically significant. The predicted positive sign is present in the Government

Effectiveness and Regulatory Quality variables. Every other independent variable exhibits a negative sign, indicating that these independent variables have an adverse effect on FDI inflows. These findings are very unexpected in light of the BRICS economic bloc. They show that despite the BRICS countries' poor levels of political stability, voice and accountability, and corruption control, FDI influx to these economies remained unaffected. These findings demonstrate that Political Stability, Voice and Accountability, and Corruption Control have little impact on FDI influx into the BRICS countries. Thus, other factors other than political and institutional factors have a greater impact on FDI inflow.

The study by d'Agostino et al. (2016) used a dataset that covered 48 African countries over the period 1996–2010 and was mainly taken from the African development indicators of the World Bank. It used an endogenous growth model, extended it to include different categories of government spending, and then introduced the possibility of corruption, which is allowed to have different effects on each of the categories. It was researched the GDP per capita growth rate depending on private investment, military spending in GDP, government investment in GDP, current government consumption in GDP (World Bank), corruption index, dummies of regimes, resources, and time. The extended model leads to empirical results that confirm the negative effect of corruption on growth and the positive effect of government investment spending. It also leads to the finding that corruption has a complementary effect on military spending, which makes the negative impact of military spending larger. Therefore, countries with high military spending and high corruption are particularly disadvantaged. Countries with higher levels of natural resources tended to have a less negative effect of military spending on growth, probably because their “less unproductive” role in protecting natural resource extraction offsets any crowding-out effect, while autocratic regimes did not seem to influence the results.

According to Ojede & Kishan study, analysis's findings present a strong case that a developing nation's ability to successfully implement the IMF's recommended economic policy reforms and achieve favourable economic outcomes depends on its institutional stability and availability of the essential economic infrastructure. The analysis also indicates that the ex-ante positive economic outlook expected to accrue due to necessary economic policy reforms dampens the negative signal of a Balance of Payment crisis that is implied by the extent of an IMF intervention, above a certain threshold level of economic freedom. All the above for the corruption and the investments are listed in Table 5 below.

Table 5 - Corruption and Investments

Author	Sample	Dependent variable	Independent variable	Relation
Cieslik, (2017)	Data from 142 countries	Economic Growth through investments	Corruption	Negative
Ojede, A. & Kishan, R. (2017)	Not mentioned	Economic development	Policy reforms, nation stability, economic infrastructures	Positive
Jadhav, (2012)	Not mentioned	FDI inflows in BRIC economies	Institutional and political determinants	Despite the BRICS countries' poor levels of political stability, voice, accountability, and corruption control, FDI influx to these economies remained unaffected.
Ledyaeva, (2013)	2263 foreign-owned businesses in Russia	Corruption	Macroeconomics, Democratization	International manufacturing companies are more likely to be found in less corrupt and democratic regions of Russia than are businesses engaged in trade and the services sector, which are more likely to be found in less democratic and more corrupt regions.
Pagano et al., (2017)	Data from 49 countries	Corruption	Investment	increased corruption is normally related to less foreign portfolio investment in a country.
Vlachos et al., (2019)	Data concerned 140 top management personnel of multinationals	Inward FDI and Growth	Labor, Politics, Macroeconomics	Greece's systematic inability to attract significant amounts of FDI has met with the lack of confidence in the recovery of the economy.
Ross et al., (2019)	Data for African countries	OFDI in Africa	Institutional Quality, Stability, Control of corruption	The findings show that host country POLS and the ability of the host government to control corruption (COC) are significant institutional predictors of Chinese FDI.
Bailey, (2018)	91 published and 6 unpublished studies	FDI	Institutional Factors (political stability, democratic institutions, corruption, tax rates, and cultural distance)	The relationships between corruption, taxation, cultural distance, and FDI were negative and significant, with the strength of the coefficients being higher on average, suggesting that deterrence may have a stronger effect on FDI.
Zakharov, (2019)	Data from 79 Russian countries	Investments	Corruption (Freedom Press)	It was found that corruption has a strong effect on regional investment in fixed capital.
D' Agostino et al., (2016)	Data from 48 African countries	Corruption,	Government Spending and Investments	corruption has a complementary effect on military spending, which makes the negative impact of military spending larger.

Source: Edit by author

Corruption, anticorruption policies and democratization

Methodologically qualitative research for anti-corruption policies of Gans- Morse, (2018) revealed that the growing evidence of the effectiveness of such policies based on monitoring, through anti-corruption audits and e-governance. Contrary to the above, it was found that for a clear majority of commonly prescribed anti-corruption policies, the existing evidence is too thin to offer rigorous assessments.

In order to analyse the impact of corruption on economic growth, for a sample of 131 countries during the year 2018, a set of control variables was also used by Labed et al. (2022). The relationship between the variables was analysed using ordered probit and ordered logit models. To be more specific, it was researched the formulation of gross national income with the existence of corruption (CPI), ethics and corruption (EC), ethical behaviour of firms (EBF), and other control variables, such as innovation (IN), innovation capacity (INC), and diversification of production (Div). The coefficients of the explanatory variables CPI and IN are positive and significant, which indicate that a rise in the CPI index value (reduction in perceived corruption) or a rise in innovation will lead to a shift to a higher income level. The coefficient of economic diversification is negative and significant, which means that a high level of diversification will lead to a transition to a higher income level. The ordered logit and ordered probit models are similar and have the same prediction power. The explanatory variables CPI, IN, and Div have a significant effect on income level, where a reduction in perceived corruption and/or a rise in economic diversification and/or innovation will lead to a shift to a higher income level. Moreover, the probability that a given country belongs to the category of high-income countries is very high when the CPI value exceeds 45. The ethical commitment in the public and private sectors explains income level, which means that both the public and private sectors contribute to corruption. Accordingly, an increase in the ethical commitment of the private or public sectors will lead to an increase in the probability that this country will shift to a higher income level. Finally, it should be mentioned that the study results allow policymakers to set anti-corruption policies with the aim of improving the country's income level ranking.

This study by Qu et al. (2018) investigated the relationship between anticorruption measures, the logarithm of the previous year's GDP per capita, the vector Xi, which is a set of controls commonly used in the growth literature, the share of physical investment in GDP, the population growth rate, and average years of education as independent variables, and economic growth as a dependent variable in 31 provinces of China between 2000 and 2014. It used a panel fixed-effect regression model. From the results, it was shown that there was a negative association between our indices and economic growth. The index is a measure of the intensity of an anticorruption campaign, and so the negative association suggests that anticorruption campaigns lower economic growth, at least in the short run. Also, the removal of high-ranking officials would cause the most political instability. Moreover, members of the Central Committee who initiated the campaigns would likely feel little, if any, threat from low-ranking officials, so targeting them is more likely to arise from a sincere desire to punish corrupt activities. Also, the anticorruption campaigns in China usually take place in a top-down manner; when, where, and how hard to run an anticorruption campaign are decided by the Central Committee of the Party at the national level rather than at the provincial level. Finally, it is shown that anticorruption lowers investment, and the lower investment also lowers growth.

In the survey of Britto (2020), data concerning corruption at the municipality level were analysed through a regression discontinuity (RD) design, where council size is the treatment variable and population size is the running variable. Therefore, corruption depended on population size, council size, discontinuity dummy, and the bandwidth used in linear and quadratic conventional regression. As a result, robust evidence was found that increasing council size had a strong positive impact on political corruption in the Brazilian context. Also, it was indicated that larger legislative bodies may lead to dire outcomes in terms of corruption, which arguably constitutes a welfare burden to society. Hence, the findings presented here highlight that increased corruption is a relevant concern when considering enlarging the legislature with the goal of fostering political representation and enhancing societal welfare. Complementary results indicate that changes in the characteristics of elected politicians are unlikely to explain the substantial effects of corruption. Moreover, further evidence suggests that the public budget is not significantly affected by the addition of a councillor, thus suggesting that budget changes are not part of the relevant mechanisms leading to the increase in corruption. Hence, the findings on corruption are not simply driven by increased fiscal profligacy caused by a larger legislature. In addition, councillors play a relevant role in monitoring the activities of the executive and fostering judicial accountability.

Data formed from an unbalanced panel of 101 countries from 1984 to 2001 allowed Tavares (2007) to exploit both cross-country and time-series variation. Implementing a difference-in-difference (DID) approach estimated the

effects of political and trade liberalizations on corruption through government size, log of population, literacy, and average GDP growth in a half decade, following or not policy changes, liberalization, and democratization processes. It was found that while democratization reduces corruption, liberalization might potentially increase it. Furthermore, undertaking both reforms in rapid succession may actually lead to an overall decrease in corruption, possibly because they are mutually reinforcing and hence more credible, while countries that liberalized more than five years after the first reform experienced an increase in corruption following the second reform. Moreover, trade liberalizations may increase the incentives to abuse power, and in particular, democratizing only many years after trade liberalization can increase corruption, whereas undertaking the two reforms in close succession reduces corruption, regardless of which reform is first.

Data concerning on average more than 100 firms per country and a total of 67 countries were analysed by Pieroni (2013) through a multilevel probit model in order to measure corruption corelated with components of economic freedom, like private investment regulations, firms' covariates, and macro covariates (GDP, INV, GOVSPEN, GINI, and CIVIL). First of all, the degree of economic prosperity (GDP) can explain gains in the efficiency of the economic and social system and the control of corruption. Also, more income inequality would reduce corruption. While this result may be thought counterintuitive, there are several possible explanations. In addition, African and transition countries have a negative sign, which is instead positive for Latin American countries. Second, our perception index is closer to bureaucratic corruption than the Transparency International index, which mainly accounts for political corruption. Inequalities may favour lobbying politicians rather than bureaucrats, reducing the importance of bureaucratic corruption. The importance of the civil liberty index (CIVIL) in reducing corruption is in line with theoretical expectations, whereas an oversized state (GOV) affects the efficiency of expenditure, leading to increased corruption. Also, the probability of corruptive practices in larger firms is consistently found to be 12–13% lower, irrespective of which aspect of economic freedom is used. In addition, the industrial sector has a higher propensity to be subject to corruption, perhaps reflecting the greater market independence of services and the smaller size of businesses. Government regulations on investment, employment, sales, and prices increase corruption as inefficiencies caused by an over-regulated economic system can distort private productive activity and influence corruptive behavior. Constraints in private and public financing projects increase the probability of corruption, whereas the efficiency of the financial system does not seem to affect it. Trade regulation, as expected, increases corruption. So far. The largest and most significant effect on corruption turns out to be exerted by the legal system protecting property rights and contracts. Finally, political crises and economic recessions have inhibited the establishment of a market system with clear and general rules affecting economic legality.

The paper by Saha (2017) analyses the role of economic development in curbing corruption by focusing on political and economic freedoms for a sample of Middle Eastern and North African (MENA) countries over the period 1984–2013. Initially, the relationships between economic development, political and economic freedom, and corruption are explored using a panel data estimation technique. Then, the same model was used with dummy variables (fixed effect) in order to control corruption in relation to economic development in the natural-resource-rich countries. Also, the Hausman test performed in this study rejects the existence of random effects. Therefore, to address the problem of endogeneity, the most advanced dynamic panel System Generalized Method of Moments (GMM) estimators are employed for the robustness check. It was researched the corruption depending on real GDP per capita, government size, economic freedom, democracy, political and economic freedom in relation to government size, educational background, unemployment, ethnic tensions, and dummy variables for the natural-resource-rich countries. As a result, the interactive relationship between economic and political freedoms and government size affects corruption. It was supported by the idea that an increase in income increases corruption in natural-resource-rich countries. Furthermore, it was shown that higher political freedom efficiently reduces corruption in MENA countries. Furthermore, an increase in the population's education level in the MENA countries leads to corrupt activity being carried out in a more efficient and secret manner. Moreover, an increase in unemployment in the working-age population decreases corruption. The public sector is the main employer in these MENA countries. Therefore, higher unemployment in these economies means fewer public officials and, thus, fewer opportunities for corruption. Also, larger government sizes increase corruption, showing that MENA countries generally have oversized governments. Further investigation of the relationship between government size and corruption shows that democratization reduces the positive effect of large government size on corruption. Moreover, ethnic tension induces a high level of corruption. Policy implications are numerous in this regard. Effective anticorruption policies require more political freedom to reduce the level of corruption by increasing checks and balances. A more advanced investigation of our model examined the relationship between economic

development and corruption for low, middle, and high-income countries and showed that low-income countries do not generate enough resources to combat corruption as they are still in low economic development stages. For middle-income countries, the corruption level decreases until they reach the turning point at which the average level of corruption is at its minimum. For high-income countries, corruption levels become substantially higher at the more mature stages of economic development. Middle Eastern and North African countries at high development stages are prone to more corruption and are therefore requested to allocate more resources to curb any rent-seeking activities.

Conversely, the lack of significant perceived corruption can be attributed to the existence of extensive and autonomous public discourse in conjunction with low levels of political marginalization.

In addition to this, Villanueava's investigation delves into the structure of corruption in democracies and concurrently examines the role of civil society in this arrangement. In the third wave of autocratization, it accomplishes this using a fuzzy-set qualitative comparative analysis of thirty democracies. The analysis's findings indicate that the high levels of perceived corruption are caused by a lack of a strong civil society, a lack of extensive and impartial public discourse, and a high level of political exclusion. The function of civil society, whether it exists or not, is especially hazy under the latter scenario. The report adds to the conversation of the conditionality of civil society's anti-corruption role and the contextual dependencies of corruption. Future research directions are suggested regarding civil society's conditional and perhaps indirect participation in anti-corruption efforts in democracies.

All the above for corruption, anticorruption policies, and democratization are listed in Table 6 below.

Table 6 - Corruption, anticorruption policies and democratization

Author	Sample	Dependent Variable	Independent Variable	Relation
Gans-Morse, (2018)	Not mentioned	Governance effectiveness	Anticorruption policies through audits, e-governance	Positive
Labed et al., (2022)	Data from 131 countries	Gross national income	The existence of corruption (CPI), ethics and corruption (EC), ethical behavior of firms (EBF)	Negative
Villanueva, A., (2023)	Data from 30 democracies	Perceived Corruption	A lack of a strong civil society, a lack of extensive and impartial public discourse, and a high level of political exclusion	Positive
Qu et al., (2018)	Data from 31 provinces in China	Economic growth	Anticorruption measures (the logarithm of the previous year's GDP per capita, the vector Xi, which is a set of controls commonly used in the growth literature, the share of physical investment in GDP, the population growth rate, and average years of education)	There was a negative association between our indices and economic growth, the negative association suggests that anticorruption campaigns lower economic growth, at least in the short run.
Britto, (2020)	Brazilian Municipalities	Corruption (council size)	Population size	Positive
Tavares, (2007)	Data from 101 countries	Corruption	Democratization (government size, log of population, literacy, and	Negative

			average GDP growth in a half decade, following or not policy changes, liberalization, and democratization processes.)	
Pieroni, (2013)	Data from 100 firms per country and 67 countries	Corruption	Financial Projects (components of economic freedom, like private investment regulations, firms's covariates, and macro covariates (GDP, INV, GOVSPEN, GINI, and CIVIL)	The civil liberty index (CIVIL) in reduces corruption, oversized state (GOV) affects the efficiency of expenditure, leading to increased corruption. Also, the probability of corruptive practices in larger firms is consistently found to be 12–13% lower, irrespective of which aspect of economic freedom is used. In addition, the industrial sector has a higher propensity to be subject to corruption, perhaps reflecting the greater market independence of services and the smaller size of businesses. Government regulations on investment, employment, sales, and prices increase corruption as inefficiencies caused by an over-regulated economic system can distort private productive activity and influence corruptive behaviour.
Saha, (2017)	Data from the economic development in MENA countries	Corruption	The real GDP per capita, government size, economic freedom, democracy, political and economic freedom in relation to government size, educational background, unemployment, ethnic tensions.	An increase in income increases corruption in natural-resource-rich countries. A higher political freedom efficiently reduces corruption in MENA countries. Furthermore, an increase in the population's education level in the MENA countries leads to corrupt activity being carried out in a more efficient and secret manner. Moreover, an increase in unemployment in the working-age population decreases corruption. Therefore, higher unemployment in these economies means fewer public officials and, thus, fewer opportunities for corruption. Also, larger government sizes increase corruption, showing that MENA countries generally have oversized governments. Moreover, ethnic tension induces a high level of corruption. Policy implications are numerous in this regard. Effective anticorruption policies require more political freedom to reduce the level of corruption by increasing checks and balances.

Source: Edit by author

At the following Table 7 and Figure 2 are presented totally all the above findings.

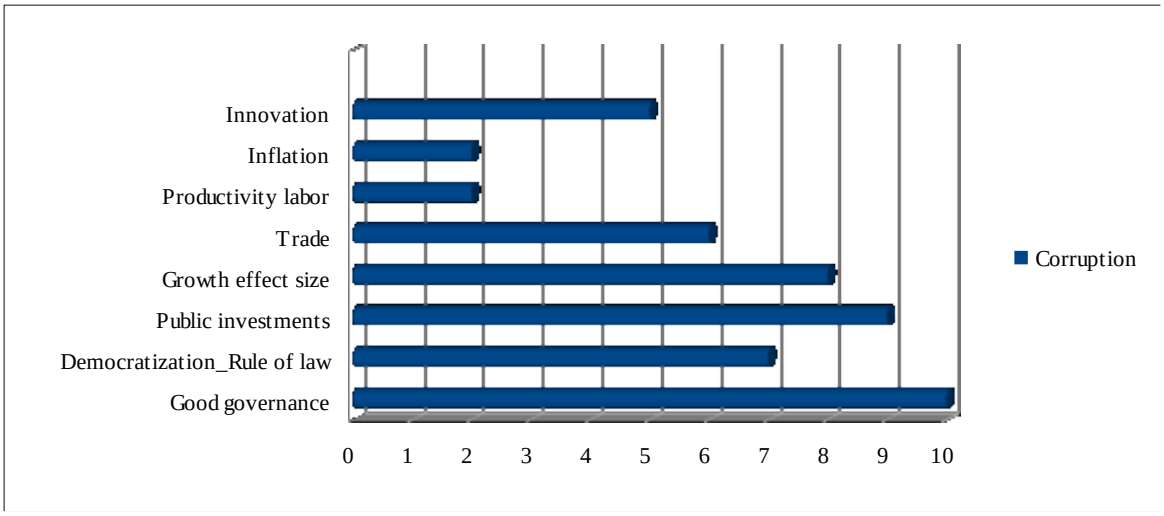


Figure 2 – Frequencies of studies for corruption correlated with macroeconomic variables

Table 7 – Overall findings of the literature review

Explanatory variable	Description	Effect of explanatory variables *
Dimensions of corruption	Black and grey corruption in public and private sector	
Response variables		
Good Governance	Effectiveness of government performance	11 (-)
Democratization – rule of law	By implementing anti – corruption policies	8 (-)
Public investments	Through innovations in GDP	10 (-), (+) depending on the perceived corruption, GDP and consumption
Growth	Growth effect size in terms of GDP per capita	9 (-), (+)
Productivity labor	Revenue based	2 (+) for low productivity
Inflation	Real prices	2 (+) for high prices
Trade	In foreign direct investments	6 (-) for high FDI
Innovation	Through income's increase	5 (-) that arises labour productivity

* Refers to the frequencies of studies and the grade of relation between variables

Source: Edit by author

DISCUSSION AND CONCLUSION

In general, it is safe to state that there is a relationship between economic, political freedoms, government size and corruption. This is not the case, but also, it was outlined that the importance of the civil liberty index in reducing corruption is in line with theoretical expectations, whereas an oversized state (GOV) affects the efficiency of expenditure, leading to increasing corruption. Further investigation of the relationship between government size

and corruption show that democratization reduces the positive effect of large government size on corruption. Moreover, ethnic tension induces a high level of corruption.

Policy implications are numerous in this regard. Effective anticorruption policies require more political freedom to reduce the level of corruption by increasing the checks and balances. At this point, it is useful to remark that anticorruption measures lower investment and the lower investment also lowers growth. As a result, it is concluded that the doctrine of "grease the wheel" for substantial corruption is needed for economic development under the condition of the transparent function of the state and its economy and institutions.

Finally, it could be proposed for additional research some of the following topics like the development of corruption through education and in the presence of politics and ethics of anticorruption policies. Moreover, it is crucial to develop studies of corruption on democratic institutions like NGO's and the role of groups of pressure in a stable environment from economic point of view.

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İKLİM DİRENÇLİ KALKINMA BAĞLAMINDA RİO ÜÇLÜSÜ'NÜN EKONOMİK, ÇEVRESEL VE POLİTİK ÖNEMİ

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Özet

İklim sistemi üzerinde insan etkisinin ulaştığı boyutlar, projeksiyonların öngördüğünün ötesinde gerçekleşmektedir. Olumsuz etkilerin ekonomik, çevresel ve toplumsal sonuçları ciddi tehditler oluşturmakta ve tüm canlıları etkilemektedir. Çölleşme, arazi bozulması ve biyoçeşitlilik kaybı sorunları, iklim değişikliğiyle şiddetlenmektedir. Bunların sürdürülebilir kalkınma üzerindeki sonuçları, ekonomik büyüme ve sosyal eşitsizlik gibi sorunları derinleştirmektedir. Bu sorunlara çözüm üretmek için Birleşmiş Milletler'e (BM) üye ülkeler 2030 Gündemi ve Sürdürülebilir Kalkınma Amaçları'nı kabul etmiştir ancak günümüzde iklim dirençli kalkınma kavramına evrilmiş bu politikaların temeli, 1992'de Rio Zirvesi sonrasında imzaya açılan ve Rio Üçlüsü olarak anılan; BM Çölleşme ile Mücadele Sözleşmesi, Biyolojik Çeşitlilik Sözleşmesi ve BM İklim Değişikliği Çerçeve Sözleşmesi'ne dayanmaktadır. Çalışmanın amacı, Rio Üçlüsü'nün iklim dirençli kalkınma politikalarıyla ilişkisini ekonomik, çevresel ve politik bağlamlarda değerlendirilmektir. Rio Sözleşmelerinin hedeflerinin gerçekleştirilmesi yönündeki çabaların hem Sürdürülebilir Kalkınma Amaçları'na ulaşılabilmesi hem de iklim dirençli kalkınmayı mümkün kılacak sera gazı azaltımı ve iklim değişikliğinin etkilerine uyum stratejilerinin uygulanabilmesi için daha ileri bir aşamaya taşınması gerektiği çalışmada ulaşılan bir sonuçtur. Çalışmada politika geliştirme süreçlerinde kullanılmak üzere öneriler sunulmuştur. Rio Üçlüsü'nün sinerjisinin sağlanmasının ve ekosistem tabanlı uyum önlemlerinin belirlenmesinin, çevresel sürdürülebilirliğin yanı sıra, ekonomik kalkınmayı da iklim dirençli hale getirerek, krizlere karşı hazırlıklı olunmasını sağlayacağı, yeşil iş ve istihdam fırsatları oluşturacağı çalışmanın bir diğer sonucudur.

Anahtar kelimeler: Biyoçeşitlilik, çölleşme, iklim değişikliği, uyum, Rio Üçlüsü.

THE ENVIRONMENTAL, ECONOMIC AND POLITICAL SIGNIFICANCE OF THE RIO TRIO IN THE CONTEXT OF CLIMATE-RESILIENT DEVELOPMENT

Abstract

The scale of human impact on the climate system has exceeded initial projections, creating significant threats with economic, environmental, and social consequences that affect all living organisms. Issues such as desertification, land degradation, and biodiversity loss are exacerbated by climate change, deepening challenges in sustainable development and amplifying problems like economic growth and social inequality. To address these issues, United Nations (UN) member states adopted the 2030 Agenda and Sustainable Development Goals (SDGs). However, these policies, which have now evolved into the concept of climate-resilient development, trace their origins back to the Rio Conventions—namely, the UN Convention to Combat Desertification, the Convention on Biological Diversity, and the UN Framework Convention on Climate Change—introduced after the 1992 Rio Summit. This study aims to assess the connection between the Rio Conventions and climate-resilient development policies within economic, environmental, and political frameworks. The study concludes that efforts toward achieving the objectives of the Rio Conventions must advance further—not only to fulfill the SDGs but also to implement greenhouse gas reduction and adaptation strategies essential for climate-resilient development. It offers policy recommendations to inform future policy development processes. Another key finding is that achieving synergy among the Rio Conventions and establishing ecosystem-based adaptation measures will foster not only environmental sustainability but also climate-resilient economic growth, preparing societies for future crises while generating green jobs and employment opportunities.

Keywords: Biodiversity, desertification, climate change, adaptation, Rio Trio.

GİRİŞ

Çevre sorunları 20. yüzyılın ikinci yarısından itibaren uluslararası gündemindeki yerini almıştır. Ancak günümüzde gelinen noktada çevreye verilen zararların kriz mertebesine geldiği görülmektedir. Dünya'nın tüm

bölgelerinde biyolojik çeşitlilik kaybı, arazi bozulması, çölleşme ve su kıtlığı gibi sorunlar, iklim değişikliğinin de etkisiyle daha da kötüleşmektedir. İklim sistemindeki kompozisyonu bozan ve iklim değişikliğini meydana getiren faaliyetler, doğal ve antropojenik (insan kaynaklı) nedenlerle gerçekleşebilen nitelikte olsa da çağımızda yaşanan iklim değişikliğinin nedeninin insan faaliyetleri olduğu ilk kez Hükümetlerarası İklim Değişikliği Paneli'nin (*Intergovernmental Panel on Climate Change*-IPCC) 5. Değerlendirme Raporu'nda %95 kesinlik oranıyla, ardından 2023 Mart ayında yayımlanan IPCC 6. Değerlendirme Sentez Raporu'nda bilimsel kanıtlarıyla ortaya konulmuştur. İnsanların atmosferdeki sera gazı emisyonlarını artıran ulaşım, binalar, sanayi gibi sektörlerdeki faaliyetleri ve bu faaliyetlerde kullanmak üzere gereken enerjinin fosil yakıtlardan sağlanması, büyük ölçekli tarım faaliyetleri ve insanların neden olduğu ormansızlaşma süreçleri söz konusu olumsuz etkilerin ortaya çıkmasının temel sebebidir (IPCC, 2014, 2023).

IPCC (2023) 6. Değerlendirme Sentez Raporu'nda iklim sistemi üzerine insan etkisinin son 2000 yılda görülmemiş bir biçimde gerçekleştiği ve iklim değişikliğinin mevcut sonuçlarının, 20 yıl önce öngörülenden daha ileri seviyede olduğu ve sadece kentsel ve kırsal alanlarda değil, daha önce etkilerin görülmediği okyanus derinliklerinden, kutuplara, en yüksek dağların tepelerine kadar etkilerin yaygınlaştığı vurgulanmıştır. Önümüzdeki süreçte söz konusu etkilerin yaygınlık, sıklık, etki düzeyi bakımlarından artması beklenmektedir. İklim değişikliği nedeniyle biyolojik çeşitliliğin, bitki ve hayvan türlerinin Dünya çapındaki dağılımı değişmekte, üreme, çiçeklenme gibi önemli biyolojik olayların zamanlaması ve hayvanların kış uykusundan çıkma ve yıllık göç döngüleri gibi önemli biyolojik olayların mevsimsel zamanlaması bu süreçlerden etkilenmektedir. Doğanın karbon bağlama ve depolama, kıyı alanlarını koruma, gıda sağlama ve iklimi düzenleme kapasitesinin de zarar gördüğünün belirtildiği Rapor'da, bu bakımdan ekosistem hizmetlerinin de risk altında olduğu ifade edilmiştir.

IPCC'ye (2022) göre iklim değişikliğine yeterince hızlı bir biçimde uyum sağlayamayacak olan türlerin yok olma riski söz konusudur ve 2015 yılında BM İklim Değişikliği Çerçeve Sözleşmesi (BMİDÇS) 21. Taraflar Konferansı'nda kabul edilen Paris İklim Anlaşması'nın (UNFCCC, 2015) küresel ortalama sıcaklık artışını 2 santigrat derecenin (°C) altında tutma hedefine rağmen, 2100 yılına kadar gerçekleşecek 2°C'lik bir küresel ısınma seviyesinde, karadaki tüm türlerin%18'inin neslinin tükenme riskinin yüksek olacağı ve eğer Dünya 4°C'ye kadar ısınırsa, bildiğimiz her bitki veya hayvan türünün önemli bir bölümünün tehdit altında olacağı ifade edilmiştir. Ayrıca iklim değişikliği nedeniyle ortaya çıkan sel, kuraklık ve çölleşme koşulları nedeniyle su kalitesinin düşeceği, bunun ise hijyen, gıda üretimi ve ekosistemler için suyun kullanılabilirliğini etkileyeceği vurgulanmıştır.

BM'ye üye ülkeler tarafından 2015 yılındaki Sürdürülebilir Kalkınma Zirvesi'nde kabul edilen BM 2030 Gündemi ve Sürdürülebilir Kalkınma Amaçları (SKA); yoksulluğun yok edilmesi, eşitsizliklerin azaltılması ve iklim değişikliğiyle mücadele edilerek doğal kaynakların korunmasını hedeflemektedir (UN, 2024). Ancak IPCC (2022) Raporu'nda iklim değişikliğinin BM SKA'larının ve hedeflerinin gerçekleştirilmesinin önüne geçtiği belirtilerek; bu kapsamda her alanda önemli dönüşümlere ihtiyaç olduğunun altı çizilmiştir. Bunun için Rapor'un önerisi 'iklim dirençli kalkınma (*climate resilient development*)', yani sera gazı emisyonlarının azaltılması ve iklim değişikliğinin etkilerine kapsamlı bir biçimde uyum sağlanması ile sürdürülebilir kalkınmanın ve SKA'ların gerçekleştirilmesidir (IPCC, 2023).

Küresel çapta sera gazı emisyonlarının azaltılması doğrultusunda çabalar olmasına rağmen, mevcut sera gazı emisyonlarının atmosferde yüzlerce yıl kalacak ve olumsuz etkileri ortaya çıkartmaya devam edecek olması, iklim etkileri ve riskleri konusunda artan kamuoyu farkındalığı son yıllarda dirençlilik sağlamak doğrultusunda iklim değişikliğine uyum eylemlerinin ön plana çıkmasına neden olmuştur. İklim değişikliğine uyum, IPCC (2014) tarafından; "doğal sistemler ve insan sistemlerinde iklim değişikliğinin mevcut ve beklenen etkilerinden daha az zarar görmek ve mümkün olan alanlarda bu etkilerden yararlanmak doğrultusunda yapılan düzenlemeler" olarak tanımlanmaktadır. Bu kapsamda gıda ve su güvenliğinin, sağlığın ve refahın korunması, afet risklerinin azaltılması ve biyolojik çeşitliliğin muhafaza edilmesi gibi sayıları artırılabilecek pek çok alanda faaliyetler gerçekleştirilmektedir. Ancak mevcut koşullarda, sadece uyum kapasitesi yeterince yüksek olmayan bitki ve hayvan türlerinin değil, gelişmekte olan ülkeler ve toplumsal hassas grupların da risk altında olduğunun altı çizilmelidir. Çünkü bu gruplar yaşamlarını sürdürmek ve iş ve istihdam olanakları bağlamlarında yüksek düzeyde doğal kaynaklara bağımlıdırlar (IPCC, 2014; CBD vd., 2008: 2).

Esasen insan sistemleri ve ekosistemler arasındaki bu ilişki 1992 yılında gerçekleştirirken Rio Konferansı'nın sonuçlarından olan üç önemli BM Sözleşmesi kapsamında da ele alınmaktadır. Bu sözleşmeler, 2015 yılında BM SKA'ları ortaya konulmadan çok önce yürürlüğe giren BM Çölleşme ile Mücadele Sözleşmesi (BMÇMS/ *United Nations Convention to Combat Desertification-UNCCD*), BM Biyolojik Çeşitlilik Sözleşmesi (BMBÇS/ *United*

Nations Convention on Biological Diversity-UNCBD) ve BMİDÇS'dir (*United Nations Framework Convention on Climate Change*-UNFCCC). BM SKA'ları kapsamında yer alan amaçların pek çoğu da esasen temelini bu üç önemli sözleşmeden almaktadır. Özellikle günümüzde iklim değişikliğiyle mücadele edilmesinin, etkilerine uyum sağlanmasının ve SKA'ların hayata geçirilmesinin her zamankinden önemli hale geldiği koşullarda bu üç sözleşme arasında sinerjinin sağlanması ve hedeflerinin gerçekleştirilmesi, ulusal ve küresel kalkınma çabaları bağlamında da elzem hale gelmiştir (CBD vd., 2008).

Bu çalışmanın amacı, Rio Üçlüsü'nün iklim dirençli kalkınma politikaları ile ilişkisini ekonomik, çevresel ve politik bağlamlarda değerlendirilmektir. Bu kapsamda aşağıdaki araştırma sorularının cevaplanması hedeflenmiştir:

1. Rio Üçlüsü'nün kapsamları ve hedefleri hangi bağlamlarda ilişkilendirilebilir?
2. Rio Üçlüsü'nün, iklim dirençli kalkınma bağlamında sinerjisinin sağlanması doğrultusunda ekonomik, çevresel ve politik bağlamlarda geleceğe yönelik yaklaşımlar ve öneriler neler olmalıdır?

MATERYAL VE YÖNTEM

Çalışmada kullanılan yöntem, ilişkisel araştırma modelidir ve çoklu veri kaynaklarından yararlanılmıştır. Bu doğrultuda, Rio Üçlüsü ile iklim dirençli kalkınma bağlamındaki ilişki ekonomik, çevresel ve politik bağlamlarda irdelenmiştir. Çalışmada, uluslararası ve ulusal kuruluşların verileri, istatistikleri ve raporları ile ulusal ve uluslararası akademik literatürden faydalanılmıştır.

Bu kapsamda çalışmada Bulgular üç ana bölüm halinde ele alınmıştır. Öncelikle, Rio Üçlüsü'nün tarihçesi ve ekonomik, çevresel ve politik kapsamları ele alınmıştır. Ardından, iklim dirençli kalkınma için neden Rio Üçlüsü'nün birbiriyle ilişkili olarak ele alınması gerektiği irdelenmiştir. Son bölümde, iklim dirençli kalkınmanın sağlanması bağlamında Rio Üçlüsü'nün geleceğine dönük yaklaşımların neler olması gerektiği incelenmiştir. Bu bulgular doğrultusunda elde edilen sonuçlar ise Tartışma ve Sonuç kısmında bir arada değerlendirilmiştir.

BULGULAR

Rio Üçlüsü'nün Tarihçesi ve Ekonomik, Çevresel ve Politik Kapsamları

3-14 Haziran 1992 tarihleri arasında Brezilya'nın Rio de Janeiro kentinde düzenlenen BM Çevre ve Kalkınma Konferansı (*United Nations Conference on Environment and Development*-UNCED), Rio Zirvesi veya Dünya Zirvesi olarak da anılmaktadır. UNCED, 1972 yılında düzenlenen Stockholm Konferansı'nın 20. yıldönümü vesilesiyle düzenlenmiş ve Konferansa 179 ülke katılmıştır. Konferansın öncesinde ve sırasında, gelişmiş ve gelişmekte olan ülkeler arasındaki tartışmaların yanı sıra, çevre ve ekonomik kalkınma kavramlarını savunanlar arasındaki kamplaşmalar öne çıkmıştır. Gelişmekte olan ülkelerin, gelişmiş ülkelerden çevre sorunlarıyla mücadele etme ve kalkınma süreçlerinde finansman desteği talepleri tartışmaların odağında yer almıştır (Horta, 2011: 47; Koh, 2019; Meakin, 1992). UNCED, farklı sosyal, ekonomik ve çevresel faktörlerin birbirine nasıl bağlı olduğunu ve birlikte geliştiğini ve bir sektördeki başarının diğer sektörlerdeki eylemlerin sürdürülmesini etkilediğini vurgulaması bakımından önemlidir. Konferansta alınan kararlar sadece hükümetlerin oybirliği ile alınmış olsa da sivil toplum kuruluşlarının geniş çaplı katılım sağlamış olmaları, bu kuruluşların çevre konularında ilerleyen süreçte giderek daha fazla üstlenecekleri rollerin ilk işareti olmuştur (Grubb, 2019; Thacher, 1992: 117). UNCED sonucunda açıklanan belgelerde hâkim görüş; sürdürülebilir kalkınmanın yerel, ulusal, bölgesel veya uluslararası düzeyde olup olmadığına bakılmaksızın, Dünya'nın tümü ve tüm insanları için ulaşılabilir bir hedef olduğudur. Bu doğrultuda insanlığın ihtiyaçlarını karşılamada ekonomik, sosyal ve çevresel kaygıları bir arada ele almanın ve dengelemenin, tüm insanlığın yaşamını sürdürmesi için hayati önem taşıdığı ve bütünleşik bir yaklaşımın mümkün olduğu kabul edilmiştir (UN, 2021). Bu yaklaşım çerçevesinde Konferans'ın önemli çıktıları olmuştur. Konferans'ta Gündem 21, Rio Çevre ve Kalkınma Deklarasyonu ve Ormanların Sürdürülebilir Yönetimi İlkeler Bildirgesi kabul edilmiştir. Konferans'ta BMİDÇS ile BMBÇS de imzaya açılmıştır. Dünya Zirvesi'nde ayrıca BMÇMS'nin de hazırlanmasına karar verilmiş ve 1994 yılında imzaya açılmıştır (MFA, 2022).

UNCED kapsamında ve sonrasında kabul edilen söz konusu uluslararası belgelerin sınıraşan zarar verme yasağı, önleyici eylem ilkesi, kirleten öder ilkesi, ihtiyatlılık ilkesi, sürdürülebilir kalkınma ilkesi ve çevresel etkinin değerlendirilmesi gibi çevre hukukunun evrensel ilkelerini içermesi oldukça önemlidir ve Konferans'tan sonra uluslararası alanda kabul edilen pek çok anlaşma için de temel oluşturmuştur (Bayram, 2019; Koh, 2019). Özellikle sosyo-çevresel konularda karar verme süreçlerine bilgi sağlaması ve bunları etkilemesi doğrultusunda

küresel bir yaklaşım olarak ortaya konulan Çevresel Etki Değerlendirmesi (ÇED) bakımından Rio Konferansı mihenk taşı niteliğinde olmuştur ve ÇED süreçleri BM'ye üye ülkelerin yasalarında, çok taraflı kalkınma bankalarının, özel sektörün, uluslararası kuruluşların projelerinde yerini almıştır (Momtaz ve Kabir, 2013; Sanchez ve Croal, 2012).

Günümüzde BMBÇS, BMÇMS ve BMİDÇS 'içsel bağlantılı üçlü sözleşmeler' olarak nitelendirilmektedir. Söz konusu üç sözleşmenin de kendi tanımlanmış hedefleri ve taahhütleri bulunmakla birlikte, karşılıklı ilişkilere sahip oldukları görülmektedir (Bayram, 2019: 10; CBD, 2023).

Birleşmiş Milletler Biyolojik Çeşitlilik Sözleşmesi (BMBÇS)

Biyoçeşitlilik, diğer ismiyle biyolojik çeşitlilik, Dünya'daki veya Dünya'nın belirli bir bölgesindeki yaşam çeşitliliğini ifade eden bir kavramdır (Pimm, 2023). Dünya'nın biyolojik rezervleri, insanlığın ekonomik ve sosyal gelişimi için hayati önemdedir. Ekolojik güvenlik ve yaşam güvenliği de biyoçeşitliliğe ve bileşenlerine bağlıdır. Üstelik biyoçeşitlilik kaynakları sadece günümüz için değildir ve gelecek kuşaklara bırakılması gereken miras niteliğindedir. Biyoçeşitlilik, Dünya'daki tüm yaşamın toplamıdır ve tüm farklı bitki türlerini, hayvanları ve mikroorganizmaları (tür çeşitliliği), tüm genetik türler içindeki değişkenlikleri (tür başına 10-100.000 gen olduğu öngörülmektedir) (genetik çeşitlilik) ve türlerin farklı kombinasyonlarından oluşan ekosistemlerin tüm çeşitliliğini (ekosistem çeşitliliği) kapsamaktadır (DoE, 2019: 51).

Rio Konferansı'nda gerçekleştirilen tartışmaların sürdürülebilir kalkınma ilkesi etrafında gelişmiş olması ve Rio Deklarasyonu'nun 8. maddesindeki doğal kaynakların sürdürülebilir kullanımı hususu, Konferans'ta imzaya açılan BMBÇS'de karşılığını bulmuş; Sözleşme 29 Aralık 1993 tarihinde yürürlüğe girmiştir. Günümüzde Sözleşme'ye 196 ülke taraftır ve Türkiye, Sözleşme'yi 11 Haziran 1992'de imzalamış ve 14 Şubat 1997 tarihinde onaylamıştır (UNTC, 2024a).

BMBÇS, yasal bağlayıcılığı olan bir uluslararası sözleşmedir ve ikinci maddesinde Sözleşmenin temel üç amacı; (1) Biyolojik çeşitliliğin korunması, (2) Biyolojik çeşitliliğin bileşenlerinin sürdürülebilir kullanımı, (3) Genetik kaynakların kullanımından elde edilen faydaların eşit ve adil bir biçimde paylaşılması, olarak belirtilmiştir (DoE, 2019: 54).

Sözleşme, biyolojik çeşitliliğin korunmasının tüm insanları ilgilendirdiğini ve ulusların kalkınma süreçleriyle doğrudan ilişkili olduğunu vurgulamış olmasıyla uluslararası hukukta bir ilki temsil etmektedir. Sözleşmenin üçüncü maddesinde; doğal kaynak kullanımında ve çevre politikalarının belirlenmesinde, ülkelerin egemenlik hakları vurgulanmıştır (CBD, 2023; Grubb, 2019). Bununla birlikte Sözleşme kapsamında; ulusların doğal kaynakların korunması ve sürdürülebilir kullanımı, bunların tanımlanmasının, izlemelerinin ve raporlamalarının yapılması, biyoçeşitliliğin korunmasına dönük ekonomik ve sosyal önlemlerin alınması, araştırma ve eğitim faaliyetlerinin gerçekleştirilmesi gibi yasal yükümlülüklere yer verildiği görülmektedir (DoE, 2019: 58; CBD, 2016).

29 Haziran 2000 tarihinde BMBÇS Taraflar Konferansı tarafından tamamlayıcı bir anlaşma niteliğinde Cartagena Biyogüvenlik Protokolü kabul edilmiştir. Protokolün önemi, genetiği değiştirilmiş organizmaların (GDO) ülke sınırlarını aşan hareketlerine ilişkin olarak bağlayıcı unsurlar içeren ilk hukuk belgesi olmasıdır ve ihtiyatlılık ilkesini temel almaktadır (CBD, 2021a; CMO, 2011). Protokolle, BMBÇS'nin kapsamı biyoteknolojiyi de içerecek biçimde genişlemiştir. Cartagena Protokolü 2003 yılında yürürlüğe girmiştir (CBD, 2021b; Kıvılcım, 2012: 99, 104).

BMBÇS'nin tamamlayıcısı niteliğindeki bir diğer belge ise, Genetik Kaynaklara Erişim ve Kullanımlarından Ortaya Çıkan Faydaların Adil ve Hakkaniyetli Paylaşımına İlişkin Nagoya Protokolü'dür. Protokol 2010 yılında kabul edilmiş, 2014 yılı itibariyle yürürlüğe girmiştir. Protokol'ün amacı, genetik kaynaklardan elde edilen faydaların adil paylaşılmasının yanı sıra, bu kaynaklara erişimin ve uygun yöntemlerle kullanımlarının sağlanması, bu alandaki teknolojilerin transferinin gerçekleştirilmesi ve bu kaynaklar ve teknolojiler üzerindeki tüm haklar dikkate alınarak ve uygun finansman koşullarını sağlayarak biyolojik çeşitliliğin korunması ve bileşenlerinin sürdürülebilir kullanımının desteklenmesi olarak belirtilmiştir (CBD, 2024).

BMBÇS'nin söz konusu iki protokolüne ilişkin çalışmaların ardından, 2010 yılında Aichi'de gerçekleştirilen 10. Taraflar Konferansı'nda (*Conference of the Parties*-COP), 2011-2020 dönemine yönelik bir stratejik plan olan

Aichi Biyoçeşitlilik Hedefleri kabul edilmiştir. Söz konusu stratejik hedefler aşağıdaki beş ana gruptan oluşmuş ve bunlar altında 20 alt hedef tanımlanmıştır (CBD, 2020):

- Stratejik Hedef A: Biyoçeşitlilik konusunu devletler ve toplumlar genelinde ana akımlaştırmak, biyoçeşitlilik kaybının altında yatan nedenleri ele almak, sürdürülebilir üretimi sağlamak,
- Stratejik Hedef B: Biyoçeşitlilik üzerindeki doğrudan baskıları azaltmak ve sürdürülebilir kullanımını teşvik etmek,
- Stratejik Hedef C: Ekosistemleri, türleri ve genetik çeşitliliği koruyarak biyolojik çeşitliliğin durumunu iyileştirmek,
- Stratejik Hedef D: Biyoçeşitlilik ve ekosistem hizmetlerinden herkese sağlanan faydaları artırmak, ekosistemleri restore etmek, dirençliliği artırmak ve Nagoya Protokolünü uygulamak,
- Stratejik Hedef E: Katılımcı planlama, bilgi yönetimi ve kapasite oluşturma yoluyla uygulamayı geliştirmek.

Aichi Hedefleri, biyoçeşitliliğin korunmasını ve sürdürülebilir kullanımını odağına almıştır. Söz konusu ilkeler, BM SKA'larıyla ve hedefleriyle uyumludur. Bununla birlikte Aichi Hedeflerinin hiçbirinin tam anlamıyla gerçekleştirilememesi, 2020 yılı sonrasında yerine geçecek yeni bir biyoçeşitlilik çerçevesinin hazırlanmasını gerekli kılmıştır (Vardon vd., 2019: 19). Dört yıl süren uzun müzakere süreçlerinin ardından Kunming-Montreal Küresel Biyoçeşitlilik Çerçevesi, 2022'deki BMBÇS COP15'te kabul edilmiştir (CBD, 2022).

Kunming-Montreal Çerçevesi'nin temel amacı; SKA'lara ulaşılmasının desteklenmesi ve dünyanın 2050 yılı itibariyle doğa ile uyumlu bir biçimde yaşamasının sağlanmasıdır. Çerçeve altında 2050 yılına dönük dört amaç ve 2030 yılına dönük olarak 23 hedef belirlenmiştir. Bu amaç ve hedefleri gerçekleştirmek doğrultusunda BMBÇS'ye taraf tüm ülkeler tarafından ulusal plan, politika ve stratejilerini bunlarla uyumlu bir biçimde geliştirileceği taahhüt edilmiştir (CBD, 2023). Kunming-Montreal Küresel Biyoçeşitlilik Çerçevesi'nin 2050 yılına dönük temel amaçları ve 2030 yılına dönük hedefleri ise Tablo 1'de özetlenmiştir (CBD, 2022).

Tablo 1: Kunming-Montreal Küresel Biyoçeşitlilik Çerçevesi'nin 2050 Yılına Dönük Temel Amaçları ve 2030 Yılına Dönük Hedefleri (CBD, 2022)

2050 YILINA DÖNÜK AMAÇLAR	
Amaç A	2050'ye kadar doğal ekosistemlerin alanlarının önemli ölçüde artırılması; tehdit altındaki türlerin insan kaynaklı yok oluşunun durdurulması, yok olma oranı ve riskinin 10 kat azaltılması, yerli yabani türlerin sağlıklı ve dirençli seviyelere çıkarılması; yabani ve evcilleştirilmiş türlerin genetik çeşitliliğinin korunması,
Amaç B	Biyoçeşitliliğin sürdürülebilir kullanımı ve yönetimiyle ekosistem işlevleri dahil doğanın insanlara katkılarının değer verilmesi, korunması, geliştirilmesi ve restorasyonu yoluyla 2050'ye kadar sürdürülebilir kalkınmanın mevcut ve gelecek nesillerin yararına desteklenmesi,
Amaç C	Genetik kaynakların kullanımından elde edilen maddi ve maddi olmayan faydaların, dijital dizi bilgileri ve geleneksel bilgilerle birlikte yerli halklar ve yerel topluluklarla adil ve eşit bir şekilde paylaşılması; bunun 2050'ye kadar önemli ölçüde artırılması.
Amaç D	Kunming-Montreal küresel biyoçeşitlilik çerçevesinin uygulanabilmesi için, yıllık 700 milyar dolarlık finansman açığının aşamalı olarak kapatılması, uygulama araçlarının güvence altına alınması ve tüm taraflar için eşit erişim sağlanması.
2030 YILINA DÖNÜK HEDEFLER	
1. Biyoçeşitliliğe Dönük Risklerin Azaltılması	
Hedef 1	Katılımcı bir yaklaşımla geliştirilen bütünleşik mekânsal planlama ve etkin yönetim süreciyle deniz ve kara alanlarındaki kullanım değişikliklerinin belirlenmesi,
Hedef 2	2030'a dek karasal, iç su ve kıyı ve deniz ekosistemlerinde zarar görmüş alanların en az %30'unun etkin restorasyonunun sağlanması,
Hedef 3	2030 'a dek karasal, iç su ve kıyı ve deniz ekosistemlerinin en az %30'unun etkin biçimde korunması ve yönetilmesi, bu alanlarda etkin koruma ölçütlerinin geliştirilmesi,
Hedef 4	İnsan kaynaklı nedenlerle soyu tükenme tehdidi altında bulunan türler için acil yönetim eylemlerinin geliştirilmesi ve riskin önemli ölçüde azaltılması,

Hedef 5	Yabani türlerin kullanılması, toplanması ve ticaretinde güvenli, yasal ve ekosistem üzerine en az etkinin olduğu süreçlerden emin olunması,
Hedef 6	Yabancı istilacı türlerin biyoçeşitlilik ve ekosistem üzerindeki etkilerinin ortadan kaldırılması ve bu türlerin 2030'a dek en az %50 oranında azaltılması ve kontrol edilmesi,
Hedef 7	Tüm kirlilik kaynaklarının ve kirlilik risklerinin 2030'a kadar biyoçeşitlilik ve ekosistem fonksiyonlarını ve servislerini tehdit etmeyeceği bir düzeye çekilmesi,
Hedef 8	İklim değişikliği ve okyanus asidifikasyonunun biyoçeşitlilik üzerine etkilerinin en aza indirilmesi,
2. Sürdürülebilir Kullanım ve Fayda Paylaşımı Doğrultusunda İnsanların İhtiyaçlarını Karşılamak	
Hedef 9	Yabani türlerin sürdürülebilir kullanımı ve yönetimi ile biyoçeşitlilik kaynaklarına bağımlı kırılgan gruplar da dahil olmak üzere tüm insanlar için sosyal, ekonomik ve çevresel faydaların sağlanması,
Hedef 10	Sürdürülebilir yoğunlaştırma, agro-ekoloji ve biyoçeşitlilik dostu uygulamalarla tarım, su ürünleri yetiştiriciliği, balıkçılık ve ormancılık alanlarının sürdürülebilir yönetiminde önemli bir artış sağlanması,
Hedef 11	Doğanın insanlara sunduğu katkıları, hava, su, iklim düzenlemesi, toprak sağlığı, tozlaşma, hastalık riskinin azaltılması ve doğal tehlikelerden korunma gibi ekosistem işlevlerinin eski haline getirilmesi, sürdürülmesi ve geliştirmesi,
Hedef 12	Biyoçeşitliliği kapsayan kentsel planlama ile yeşil ve mavi alanların genişlemesi, insan sağlığının, doğayla bağlantının ve ekosistem hizmetlerinin iyileşmesi sağlanması,
Hedef 13	Genetik kaynakların ve ilgili bilgilerin kullanımından doğan faydaların adil paylaşımının sağlanması ve 2030 yılına kadar bu faydaların artması için gerekli önlemlerin alınması,
3. Uygulama ve Ana Akımlaştırma İçin Araçlar ve Çözümler	
Hedef 14	Biyoçeşitliliğin ve çoklu değerlerinin, tüm kamu ve özel sektör faaliyetleri ile mali akışlarla uyumlu hale getirilerek politikalara ve planlama süreçlerine tam entegrasyonunun sağlanması.
Hedef 15	Büyük şirketlerin, tedarik zincirlerindeki biyoçeşitlilik risklerini izleyip şeffaf bir şekilde açıklamaları; sürdürülebilir tüketimi teşvik etmek amacıyla tüketicilere bilgi sağlamaları ve fayda paylaşımı düzenlemelerine uyum raporlamaları için gerekli önlemlerin alınması,
Hedef 16	Sürdürülebilir tüketim seçimlerini teşvik etmek ve 2030'a kadar küresel gıda israfını yarıya indirerek aşırı tüketimi ve atık üretimini azaltmak için destekleyici politikalar ve eğitim yoluyla uygun şartların oluşturulması,
Hedef 17	Biyolojik Çeşitlilik Sözleşmesi'ne göre biyogüvenlik önlemlerinin oluşturulması, biyoteknoloji faydalarının adil dağıtımı için kapasitenin güçlendirilmesi ve tüm ülkelerde uygulanması,
Hedef 18	2025'e kadar biyoçeşitliliğe zararlı sübvansiyonların tespit edilmesi, 2030'a kadar bu teşviklerin yılda en az 500 milyar ABD doları oranında kademeli olarak azaltılması ve biyoçeşitliliği koruyacak olumlu teşviklerin artırılması,
Hedef 19	Ulusal biyolojik çeşitlilik stratejilerinin uygulanması için, tüm kaynaklardan sağlanan mali kaynakların 2030'a kadar yılda en az 200 milyar ABD Doları seviyesine çıkarılması, gelişmiş ülkelerden gelen resmi kalkınma yardımlarının artırılması, yerli kaynakların seferber edilmesi ve özel finansmanın teşvik edilmesi, ekosistem hizmetleri için yenilikçi planların harekete geçirilmesi ve kaynak sağlama etkinliğinin artırılması,
Hedef 20	Biyoçeşitliliğin korunması ve sürdürülebilir kullanımı için ortak teknoloji geliştirme ve bilimsel araştırma programlarının teşvik edilmesi, kapasite güçlendirilmesi ve teknoloji transferinin artırılması ile gelişmekte olan ülkelerde inovasyon ve iş birliğinin desteklenmesi,
Hedef 21	Biyoçeşitliliğin etkin yönetişimini desteklemek için en iyi verilerin ve bilgilerin herkesin erişimine açılması, yerli halkların geleneksel bilgilerine ise yalnızca özgür, önceden ve bilgilendirilmiş onayları ile erişilmesi,
Hedef 22	Yerli halkların ve yerel toplulukların haklarına saygı gösterilerek, kadınlar, çocuklar, gençler ve engelliler de dahil olmak üzere tüm bireylerin biyoçeşitlilik ile ilgili karar alma süreçlerine eşit ve kapsayıcı katılımlarının sağlanması ve çevresel insan hakları savunucularının korunması,
Hedef 23	Biyoçeşitlilikle ilgili tüm eylem ve karar süreçlerinde kadınlar ve kız çocuklarının eşit haklarının tanınması, cinsiyete duyarlı bir yaklaşım benimseyerek toplumsal cinsiyet eşitliğinin sağlanması.

Birleşmiş Milletler İklim Değişikliği Çerçeve Sözleşmesi (BMİDÇS)

BMİDÇS, UNCED'de imzaya açılmış ve 21 Mart 1994 tarihinde yürürlüğe girmiştir. Sözleşmeye 196 ülke taraftır. Türkiye, Sözleşmeyi 24 Mayıs 2004 tarihinde onaylamıştır (UNTC, 2024b). BMİDÇS'nin nihai amacı; iklim sistemine insan müdahalesinin önlenmesidir, ancak Sözleşme'de bu müdahalenin temelini oluşturan sera gazı emisyonlarının azaltımına dair taahhütler yer almamaktadır. Bunun yerine Sözleşme'de aşağıdaki temel ilkelere yer verilmiş ve gelişmiş ve gelişmekte olan ülkelerin Sözleşme kapsamındaki sorumlulukları tanımlanmıştır (UNFCCC, 1992);

- Ortak fakat farklılaştırılmış sorumluluklar ve göreceli kapasiteler ilkesi,
- İklim değişikliğiyle ilgili önlemlerin uluslararası ticareti sınırlandırmaması ya da haksız ve keyfi ayrımcılık için kullanılamaması ilkesi,
- Söz konusu önlemlerin ekonomik ve sosyal gelişme ile bütünleştirilmesi doğrultusunda özellikle kırılgan ülkelerin ihtiyaçlarına öncelik verilmesi,
- İklim değişikliğine ilişkin bilimsel bilgilerin yetersiz ya da belirsiz olduğu koşullarda dahi ihtiyati tedbirlerin alınması.

BMİDÇS, iklim değişikliğinin önemli bir sorun oluşunun ve bilimsel tereddütlerin önlem alınmasına engel olamayacağının vurgulanması bakımından önemlidir (Grubb, 2019). Sözleşme kapsamında gelişmiş ülkelerin, sera gazı emisyonlarının atmosferdeki artışında ve iklim sisteminin bozulmasında tarihsel sorumluluğu olduğu kabul edilmektedir. Bu kapsamda gelişmiş ülkelerin gelişmekte olan ülkelere finans, kapasite geliştirme ve teknoloji transferi destekleri sağlaması hükme bağlanmıştır. Ayrıca Sözleşme'de gelişmiş ve gelişmekte olan ülke ayrımının yapılabilmesi doğrultusunda bir Ek Sistemi'nin kurgulandığı görülmektedir. Buna göre (CBD vd., 2008):

- Ek 1 Ülkeleri; OECD ülkeleri ve EIT ülkelerini yani Geçiş Ekonomisi ülkelerini kapsamaktadır. Türkiye bu gruptadır ve diğer Ek-1 ülkeleriyle birlikte sera gazı emisyonlarını azaltmak ve Sekretaryaya bildirmekle yükümlüdür (Türkiye bu gruptadır).
- Ek 2 Ülkeleri; Ek 1 ülkeleri içindeki OECD ülkesi olan ama EIT ülkesi olmayan taraflardan oluşmaktadır ve sadece gelişmekte olan ülkelere değil, EIT ülkelerine de finans, teknoloji ve kapasite geliştirme desteği sağlamakla yükümlüdürler.
- Ek Dışı Ülkeler ise iklim değişikliğine karşı desteklenmesi gerekli görülen gelişmekte olan ülkeleri içermektedir ve Sözleşme kapsamında yükümlülükleri bulunmamaktadır.

BMİDÇS'de sera gazı emisyonlarının azaltımına ilişkin somut hedeflerin yer almaması, bunların tespit edilerek uluslararası iklim değişikliği politikalarının daha tutarlı bir biçimde geliştirilebilmesi doğrultusunda Sözleşme'nin protokolü olan ve 1997 yılında kabul edilen Kyoto Protokolü'ne dönük çalışmaların önünü açmıştır. Kyoto Protokolü, BMİDÇS COP3'te kabul edilmiştir ve Protokol'e 191 ülke ve Avrupa Birliği taraf olmuştur. Türkiye, Kyoto Protokolü'ne 2009'da taraf olmuşsa da Protokol'ün kabul edildiği 1997'de henüz BMİDÇS'ye taraf olmadığından sera gazı azaltım yükümlülüğü almamıştır. Protokol, taraf ülkelerin sera gazı azaltım hedeflerinin tespit edilmesi doğrultusunda iki ayrı taahhüt dönemi kapsamıştır. İlki 2008-2012 dönemini, ikincisi ise 2013-2020 dönemini kapsamaktadır (Adams ve Luchsinger, 2009). Protokol'ün Ek sistemi BMİDÇS'den farklıdır. Protokolün Ek A'sı yalnızca hangi sera gazlarının kapsama alındığını ele alırken; Ek B'de 37 gelişmiş ülkenin ilk dönemdeki azaltım taahhütleri yer almıştır. Protokol'de genel hedef emisyonların ilk dönem kapsamında 1990 yılındaki düzeyinin %5 oranında azaltılmasıdır. Ayrıca Protokol'ün kapsamında yer alan sera gazı azaltımı çalışmalarının gerçekleştirilebilmesi doğrultusunda; Uluslararası Emisyon Ticaret Sistemi, Temiz Kalkınma Mekanizması ve Ortak Uygulama Mekanizması gibi üç temel piyasa mekanizmasının da oluşturulduğu görülmektedir (Arıkan, 2008; UNFCCC, 1997).

Protokolün, Çin ve Hindistan gibi gelişmekte olan ülkelere emisyon sınırlama yükümlülüğü getirmemiş olması ABD ve Avustralya gibi ülkelerin Protokole dahil olmaması ve Kanada gibi ülkelerin ise Protokol kapsamında vermiş olduğu taahhütleri yerine getirmemesi sonucunu ortaya çıkarmıştır. Protokol nedeniyle ortaya çıkan darboğaz iklim değişikliği müzakerelerini olumsuz yönde etkilemiş ve Protokol'ün her iki taahhüt döneminin sona ermesini müteakiben, 2020 yılı itibariyle uluslararası iklim politikalarına yön verecek olan BMİDÇS'nin uygulama aracı niteliğindeki Paris Anlaşması'nın 2015'teki BMİDÇS COP21'de kabul edilmesiyle sonuçlanacak çalışmaların başlatılmasına neden olmuştur (Below, 2017; Dahl, 2007: 146; UNFCCC, 2015).

Birleşmiş Milletler Çölleşme ile Mücadele Sözleşmesi (BMÇMS)

Çölleşme, yağışın kaydedilen normal seviyelerin önemli miktarda altına düşmesiyle ortaya çıkan ve arazi kaynak üretimini olumsuz etkileyerek, ciddi hidrolojik dengesizliklere neden olan yavaş gelişen doğal bir olgudur (NOAA, 2006). UNCED sonucunda kabul edilen üç küresel anlaşmadan biri olan BMÇMS, arazi bozunumunu durdurmak ve karbon nötr hedefine katkı sunmak doğrultusunda bir içeriğe sahiptir. Bu kapsamda diğer Rio Sözleşmeleriyle ilişkili bir biçimde biyoçeşitlilik kaybını durdurmayı, doğa ile uyumun sağlanmasını amaçlamaktadır. Bu kapsamda toprak birleştirici bir unsur olarak ele alınmaktadır. Bu bağlamda BMÇMS; toprağı korumayı, restore etmeyi ve güvenli, adil ve sürdürülebilir bir gelecek sağlamak doğrultusunda ele alınmasını sağlamayı amaçlayarak 1994 yılında kabul edilmiştir ve 26 Aralık 1996'da yürürlüğe girmiştir. Türkiye Sözleşme'ye 1998'de taraf olmuştur (TOB, 2024).

BMÇMS, çölleşmenin yanı sıra, kuraklığın etkilerini ele almak için kabul edilen ve bu alanda yasal bağlayıcılığı olan tek çerçeve olması bakımından önemlidir. Katılım, ortaklık ve ademi merkeziyetçilik ilkelerine dayanan Sözleşme, arazi bozulmasının etkisini hafifletmek ve tüm insanlara yiyecek, su, barınak ve ekonomik fırsat sağlayabilmek için toprakların korumasını içeren çok taraflı bir taahhüttür. Çölleşme'den etkilenen ülkelerde sürdürülebilir kalkınmanın desteklenmesini ve çölleşme ile mücadele hususunda uluslararası iş birliğinin geliştirilmesini ve küresel fonların harekete geçirilmesini içermektedir (UNCCD, 2024).

Rio Üçlüsü Ortak Çalışma Grubu

Rio Üçlüsü'nün sinerjisinin sağlanması, aralarında bilgi alışverişi yapılması ve üç sözleşmenin koordinasyonunun sağlanması doğrultusunda 2001 yılında sözleşmelerin Sekretaryaları tarafından Ortak İrtibat Grubu (*Joint Liaison Group*-JLG) gayrı-resmi bir forum olarak kurulmuştur (UNEP, 2024; CBD vd., 2008: 1). JLG'de faaliyetler; Sözleşmelerin Yardımcı Organlarından, Sekreterlik üyelerinden ve İcra Sekreterlerinden oluşan üyeler tarafından yürütülmüştür. Üç sözleşmenin COP'larının her biri tarafından da alınan kararlar ile (CBD Karar No: VI/20, CCD Karar No: 12/COP.6 ve FCCC Karar No: 13/CP.8), Taraf Ülkeler, JLG'nin ulusal ve uluslararası düzeylerde gerçekleştireceği iş birliklerini kolaylaştırmaya, olası ortak faaliyet alanlarını belirlemeye ve koordinasyonu geliştirmeye teşvik edilmiştir. JLG'nin 2001 yılında kurulmasından başlayarak ortak iş birliği alanlarını belirlemeye dönük olarak 2016 yılına kadar bir dizi çalışma grubu toplantıları gerçekleştirdiği görülmektedir. Bu toplantılarda ön plana çıkan konular; (1) uyum, (2) kapasite geliştirme ve (3) teknoloji transferi başlıkları olmuş ve ulusal ve uluslararası düzeyde iş birliklerinin sağlanmasına özel vurgu yapılmıştır. Rio Üçlüsü'nün Sekreteryaları tarafından açıklanan iş birliği alanları şunlardır (CBD, 2017):

- CBD kapsamındaki ulusal biyoçeşitlilik stratejileri ve eylem planları (UBSAP'ler), UNCCD'nin ulusal eylem programları (NAP'ler) ve UNFCCC'nin en az gelişmiş ülkeleri için ulusal uyum eylem programları (NAPA'lar) arasında tamamlayıcılığın teşvik edilmesi,
- Ulusal odak noktaları arasında iş birliğinin sağlanması,
- Sözleşmelerin bilimsel yardımcı kuruluşları olan BMBÇS Bilimsel, Teknik ve Teknolojik Tavsiye Yardımcı Kuruluşu (SBSTTA), BMÇMS Bilim ve Teknoloji Komitesi (CST) ve BMİDÇS SBSTA arasında iş birliğinin sağlanması,
- Ortak çalışma programlarının veya planlarının, ortak çalıştayların (uluslararası düzeyde) ve ortak kapasite geliştirme faaliyetlerinin (uygulamada sinerjiyi teşvik etmek için eğitim ve yerel, ulusal ve bölgesel çalıştaylar dahil) geliştirilmesi,
- Sözleşmelerin bağlantıları üzerine örnek alan çalışmaları,
- Çevrimiçi verilerin karşılıklı erişilebilirliğinin iyileştirilmesi dahil olmak üzere bilgi ve deneyim alışverişinin kolaylaştırılması,
- İletişim, eğitim ve farkındalık programlarında iş birliği,
- Tavsiye, metodoloji ve araçların geliştirilmesinde iş birliği.

JLG'nin söz konusu çalışmaları müteakiben Küresel Çevre Fonu (*Global Environment Facility*-GEF) öncülüğünde, üç sözleşmenin birbiri ile ilişkilendirilmesinde ve sözleşmeler kapsamında yürütülen müzakere süreçlerinde acil ve güçlendirilmiş çaba gerektiren kritik gündemlere yönelik çalışmalar yapılabilmesi

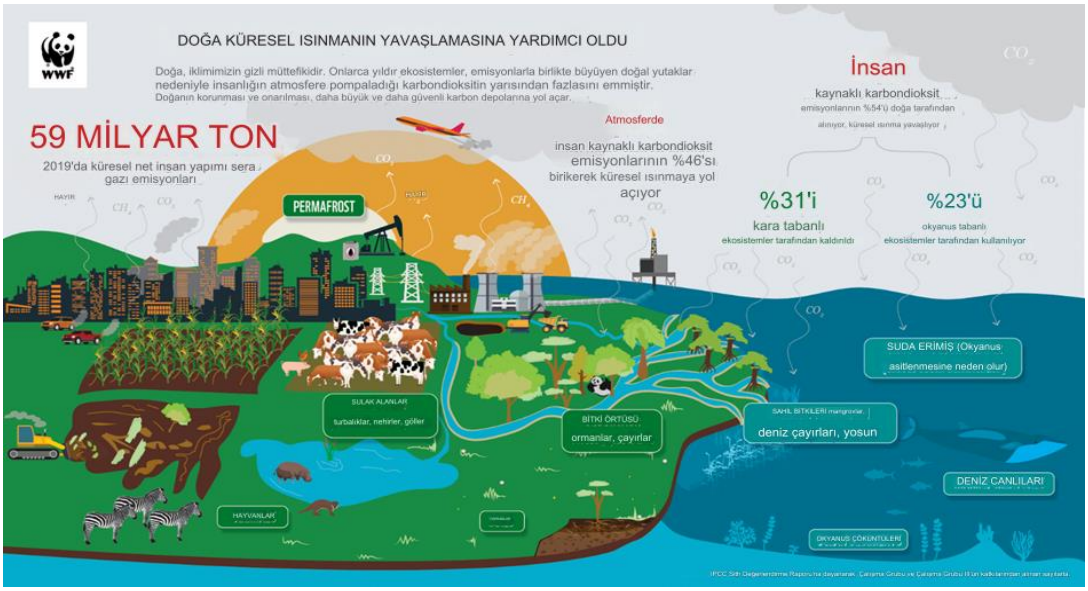
doğrultusunda, 2021 yılında Rio Sözleşmeleri Pavilyonu (*Rio Conventions Pavilion*), BMBÇS COP15'te tanıtılmış ve etkinliklerine başlamıştır. Pavilyon kapsamında; sözleşmelerin COP'ları sırasında etkinlikler düzenlenmekte ve tüm Dünya'da arazi tahribatının önlenmesi, karbon nötr hale gelinmesi, biyoçeşitlilik kaybının durdurulması, doğa ile uyum içinde yaşama ve 2030 yılına kadar BM SKA'larının hedeflerine ulaşılması doğrultusunda sözleşmeler kapsamındaki koordineli eylem fırsatları ele alınmaktadır (Rio Pavilion, 2021).

İklim Dirençli Kalkınma İçin Rio Üçlüsü'nün İlişkilendirilmesinin Önemi

İklim değişikliğiyle mücadele ve uyum faaliyetleri kapsamları bakımından çoklu faydaya sahip faaliyetlerdir ve itici bir güç olarak çölleşmeyle mücadele edilmesi, biyoçeşitliliğin korunması ve SKA'lara ve hedeflerine ulaşılmasında ilerlemeyi hızlandırıcı rol oynamaktadırlar (CBD vd., 2008: 2). IPCC tarafından, BMİDÇS kapsamında yer alan iklim değişikliğine uyum eylemlerine ilişkin konular ve sektörler; karasal ve sucul ekosistemler, deniz ekosistemleri, kıyılar ve düşük rakımlı alanlar, tatlı su kaynakları, kentsel ve kırsal alanlar, gıda üretim sistemleri ve güvenliği, anahtar ekonomik sektörler ve servisler, insan sağlığı, yaşanabilirlik ve yoksulluk olarak ele alınmaktadır (IPCC, 2014, 2022).

Görüleceği üzere, özellikle iklim değişikliğine uyum konularının/sektörlerinin içeriği BMBÇS'nin ve BMÇMS'nin kapsamına giren konularla doğrudan ilişkilidir ve bu kapsamda biyoçeşitliliğin korunması ve ekosistem hizmetlerinin sürdürülmesi önemle ele alınmaktadır. Bu husus BMİDÇS'de vurgulanmakta ve iklim değişikliğinin, ekosistemlerin iklimdeki değişikliklere doğal biçimde uyum sağlayabilecekleri bir düzeyde sınırlandırılması hususu belirtilmektedir (UNFCCC, 1992).

Ancak günümüzde iklim değişikliği başta olmak üzere insan eliyle ortaya çıkan pek çok sorununun kriz düzeyine ulaşmıştır ve üretim ve tüketim süreçlerinde doğal kaynaklara olan talebin giderek fazlalaşmasıyla ekosistemler üzerinde ciddi bir baskı söz konusudur. Oysa insan yaşamının devamlılığı gıda, hayvancılık içim yem üretimi, farmasötik ürünler, besin ve su döngüsüne bağlıdır. Biyoçeşitlilik kaynakları olan sulak alanlar, kıyı ekosistemleri, orman alanları gibi pek çok kaynak iklim değişikliğine uyumu destekleyen doğa temelli çözümler sunan yeşil-mavi altyapılardır (Şekil 1). Biyolojik çeşitlilik ve ilgili ekosistem hizmetleri, sürdürülebilir kalkınmanın sağlanması için elzemdirler. Biyolojik çeşitlilik sadece iklim değişikliğinden etkilenmekle kalmamakta, iklim değişikliğiyle mücadeleyi de etkilemektedir. Dolayısıyla biyolojik çeşitliliğin korunması, biyoçeşitlilik koridorları oluşturulması, istilacı tür yönetiminin gerçekleştirilmesi, iklim değişikliğine dirençli türlerin tespit edilmesi önemli uyum seçenekleridir ve 'ekosistem tabanlı uyum' kavramını oluşturmaktadır. Biyoçeşitlilik ve ekosistem hizmetlerinin kullanımını bütünleşik olarak ele alan bu yaklaşım, önemli bir uyum stratejisidir ve uygun maliyetli ve sosyal ve kültürel bağlamlarda da faydalar elde edilmesine ve biyolojik çeşitliliğin korunmasına katkıda bulunmaktadır (SoCBD, 2009: 3; CBD vd., 2008: 2; WWF, 2023). Bu kapsamda ele alınabilecek örnek faaliyetler; mangrovların ve diğer kıyı alanlarının bakımı ve/veya restorasyonu, sulak alanların ve taşkın yataklarının sürdürülebilir yönetimi ve ormanların korunması ve restorasyonudur (SoCBD, 2009: 10).



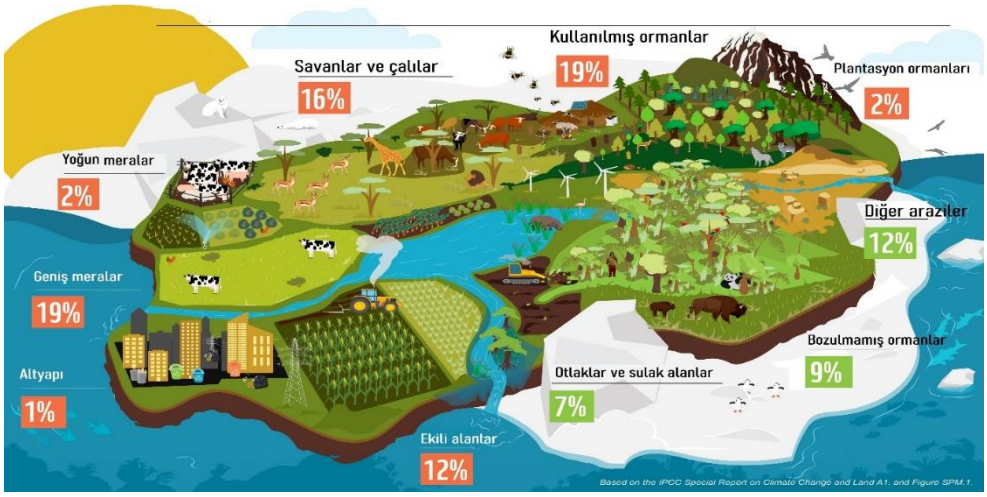
Şekil 1: Doğanın ve Doğa Temelli Çözümlerin İklim Değişikliğiyle Mücadeleye Katkısı (WWF, 2023)

2006 yılındaki BMBÇS COP8'de taraf ülkelerce, BMİDÇS'nin etki, etkilenebilirlik ve uyum konusunda çalışmalar yapan Nairobi Çalışma Programı'nın faaliyetlerinde ilgili kuruluşlarla iş birliği yapılması hususu "VIII/30: Biyoçeşitlilik ve iklim değişikliği: biyoçeşitliliğin korunması, iklim değişikliğinin hafifletilmesi veya iklim değişikliğine uyum sağlanması ve arazi bozunumu ile mücadele faaliyetleri arasında sinerjiyi teşvik etmek için rehberlik" başlıklı karar ile kabul edilmiştir. Bu kararla sadece BMİDÇS'nin değil, aynı zamanda BMÇMS'nin kapsamında yer alan çalışmaların da destekleneceği vurgulanmıştır. Aynı kararda, biyolojik çeşitliliğin korunması ve sürdürülebilir kullanımı faaliyetlerinde, iklim değişikliğiyle mücadele ve uyumun da desteklenmesi için hızlı değerlendirme, tasarım ve uygulama araçlarının geliştirilmesinin desteklenmesine yer verilmiştir (CBD, 2006). Bu karar üzerine BMBÇS Sekretaryası tarafından 2007'de Ekosistem temelli uyuma ilişkin iyi uygulama örnekleri ve ülke uygulama örnekleri çevrimiçi veri tabanı oluşturulmuş, ardından geliştirilen pek çok çalışma ve rehber aracılığıyla biyolojik çeşitliliğin korunmasının sadece iklim değişikliğiyle mücadeleye ve uyuma katkısının değil, aynı zamanda arazi bozunumunu gidermek doğrultusunda ekosistem restorasyonu faaliyetlerinin ne şekilde gerçekleştirilebileceğini de içeren metodolojiler geliştirilmeye devam edilmiştir. Buradaki temel amaç, ekosistem temelli uyum seçeneklerinin geliştirilmesiyle aynı zamanda toplumsal faydalar da sağlayan ve bir yandan da maliyet etkin çözümlerin ortaya konulması olmuştur (UNFCCC, 2019).

Özetle; BMBÇS'nin, BMİDÇS'ye (iklim değişikliğiyle mücadele ve uyum) katkısı olduğu gibi, BMÇMS'ye (arazi bozulması, kuraklık ve çölleşmeyle mücadele) katkıları olduğu aşikardır. BMÇMS kapsamındaki faaliyetler de diğer iki Rio Sözleşmesine katkılar sunmaktadır (CBD vd., 2008: 2). Rio Sözleşmeleri kapsamındaki çalışmalar, BM SKA'larının hedeflerinin gerçekleştirilmesine dönük potansiyel faydalar içermektedir. Bütün bunların bir arada ele alınması ise ortaya çıkan çevresel, ekonomik, sosyal sonuçlarla iklim dirençli kalkınmayı destekleyecektir.

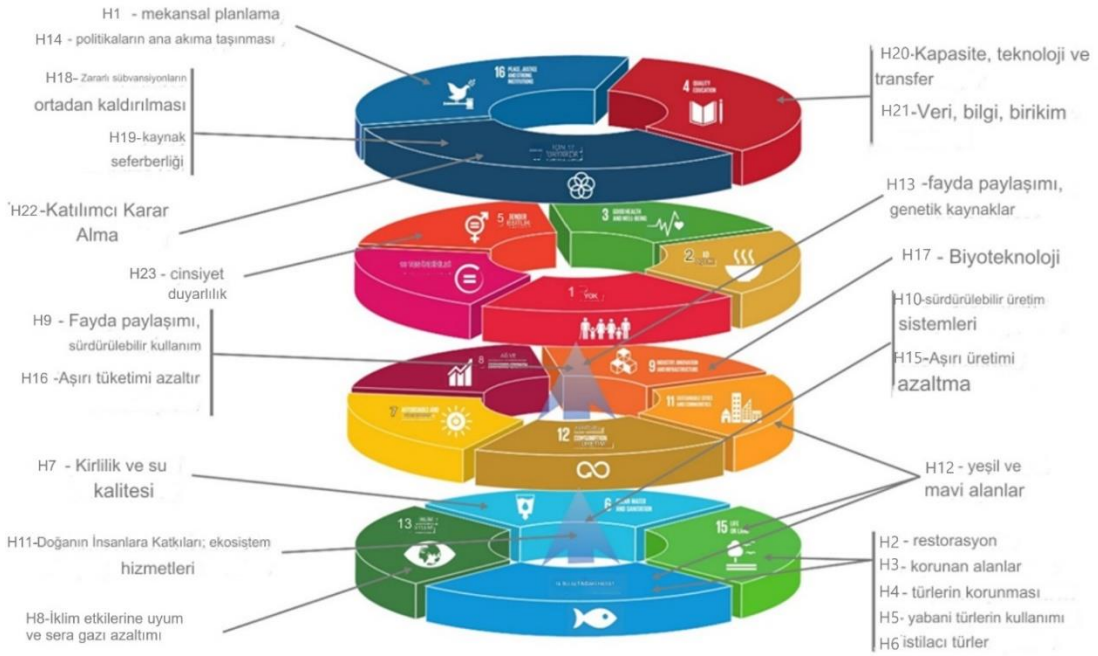
İklim Dirençli Kalkınma Bağlamında Rio Üçlüsü 'nün Geleceğine Dönük Yaklaşımlar

İnsanlık tarihi boyunca doğa, yaşamsal ihtiyaçların karşılanması doğrultusunda kullanılan kaynak olmuşsa da günümüzdeki sürdürülemez üretim ve tüketim kalıpları yaklaşık bir milyon türün neslini tükenme tehlikesiyle karşı karşıya bırakmış durumdadır. Yerkürenin buzsuz nitelikteki ¾'lük kısmı gıda, hammadde ve yerleşime dönük olarak insanlar tarafından işlenmiştir (Şekil 2). Mevcut enerji kullanımı yaklaşımı sonucunda sera gazı emisyonlarının neden olduğu küresel ortalama sıcaklık artışının Sanayi Devrimi öncesi döneme kıyasla önümüzdeki beş yıldan birinde 1,5 santigrat dereceyi aşmasının olasılığı ise %80'dir ve bu oran her geçen gün artmaktadır (Rio Pavillion, 2023; WMO, 2024).



Şekil 2: İnsan Faaliyetlerinin Dünyanın Buzsuz Kara Alanındaki Dağılımı (WWF, 2020)

Gelinen noktada insanlık ekolojik krizle yüz yüzedir ve doğayla ilişkisini tekrar ele almak zorundadır (WWF, 2020). 2030 ve 2050 yıllarına dönük amaç ve hedefleriyle SKA'ların gerçekleştirilmesini destekleyen Kunmig-Montreal Biyoçeşitlilik Çerçevesi, söz konusu ilişkinin ne şekilde kurulabileceğini ortaya koyan bir yol haritası niteliğindedir (CBD, 2022). Geleceğe dönük yaklaşımlar, artık sadece türlere ve korunan alanlara odaklanmamaktadır, yeni bakış açısı sosyal, ekonomik ve kültürel boyutları da içine alacak biçimde biyoçeşitliliği sağladıkları hizmetlerle birlikte ele alarak değerlendirmektir (Obuna, 2023: 77). Söz konusu çerçevenin hedefleriyle hangi SKA'ların gerçekleştirilmesinin desteklenmesinin amaçlandığı Şekil 3'te gösterilmektedir.



Şekil 3: Kunmig-Montreal Çerçevesi bağlamında SKA'lar (Obura, 2023: 79)

Görüleceği üzere; güncel politikalarda biyoçeşitlilik konusuna yer verilmesi Hedef (H) 1 ve 14 ile ilişkilendirilmişken, doğal kaynakların restorasyonu hususu H2'de yer almıştır. H3-H8, Hükümetlerarası Biyoçeşitlilik ve Ekosistem Servisleri Platformu (*Intergovernmental Platform on Biodiversity and Ecosystem Services*-IPBES) tarafından tanımlanan biyoçeşitlilik kaybına neden olan iklim değişikliği başta olmak üzere farklı sebeplere odaklanırken; bazı hedefler ise biyolojik çeşitlilik kaybının ekonomik etkenlerine odaklanmaktadır. Özellikle H10, H15 ve H16, üretim ve tüketim kalıplarının etkileriyle ilişkiliyken, tüketim kalıplarının değiştirilmesi H16'da ve geliştirilen politika ve teşviklerin etkisi H14 ve H18'de ele alınmaktadır (Obura, 2023: 78).

2022 yılında Sharm El-Sheikh'de gerçekleştirilen BMİDÇS 27. Taraflar Konferansı'nda özellikle gelişmekte olan ülkelerin üzerinde önemle durdukları 'kayıp ve zarar (*loss and damage*)' konusu da esasen biyoçeşitlilik kaybı ile ilişkisi içinde ele alınması gereken bir içerik barındırmaktadır. Kayıp ve zararın en aza indirilmesinde ve önlenmesinde gerçekleştirilecek sera gazı azaltımı ve iklim etkilerine uyum eylemlerinde daha istekli hedeflerin belirlenmesi bu açıdan kilit önemdedir. Bu durum biyoçeşitlilik bağlamında değerlendirildiğinde; biyoçeşitlilik kaybının azaltılmasında uyum önlemlerinin ön plana çıkarılması, zarar görmüş ekosistemleri doğal haline döndürmeye yönelik restorasyonların yapılması elzem stratejiler olarak ele alınmalıdır. Özellikle de söz konusu süreçleri gerçekleştirmek için gerekli olan kapasite, teknoloji ve finansman olanaklarından yoksun gelişmekte olan ülkelerin desteklenmesi hususu oldukça önemlidir (IPCC, 2023; Tuğaç, 2024).

Önümüzdeki süreçte Rio Üçlüsü'nin ve SKA'ların hedeflerinin gerçekleştirilebilmesinde ve iklim dirençli kalkınmanın sağlanmasında özellikle çevresel ve ekonomik alanlarda önemle ele alınması gereken diğer politikalar ise şunlardır (Rio Pavilion, 2023; UNEP, 2016; WWF, 2020):

- Arazi ve ekosistem restorasyonlarının yanı sıra, arazi yönetimi süreçleri aracılığıyla doğal sistemlerin güçlendirilmesi, gıda ve su güvenliğinin ve dirençliliğin sağlanması,
- Biyoçeşitliliği korumaya ve geliştirmeye dönük doğa temelli çözümlerle emisyonların önemli bir bölümünün kontrol altına alınmasının yanı sıra, küresel sera gazı emisyonlarının yaklaşık ¼'ünden sorumlu gıda üretim yaklaşımının dönüştürülmesi ve bu alanda uyumun sağlanması,
- Sera gazı azaltım ve uyum eylemleri aracılığıyla iklim değişikliğiyle mücadelede fosil yakıt tüketiminin azaltılması, arazı kullanım ve tarım pratiklerinin dönüştürülmesi ve daha fazla bozulmaya karşı arazilerin korunması,
- Uluslararası ve bölgesel düzeylerde, devletler arasında biyoçeşitliliği korumaya ve geliştirmeye ve diğer çevresel konulara dönük iş birliklerinin geliştirilmesi,
- Karar verme süreçlerini desteklemeye yönelik verilerin üretilmesi ve paylaşımı,
- Çevre üzerindeki baskıların azaltılması doğrultusunda sürdürülebilir üretim ve tüketim süreçlerinin sağlanması,
- Doğal sermayenin ekosistemlere zarar vermeyecek şekilde kullanılması,
- Kirliliği azaltmak ve çevresel baskılar doğrultusunda yeni önlemlerin belirlenmesi ve yenilikçi uygulamaların geliştirilmesi,
- İklim ve çevre duyarlı (su, atık, altyapı, binalar, enerji ve ulaşım sektörleri göz önünde bulundurularak) kentsel planlama ve tasarım çalışmaları yapılması, dirençliliğin ve halk sağlığının desteklenmesi,
- Enerji kullanımında ve üretiminde kaynak çeşitliliğinin sağlanması ve fosil yakıt kullanımının azaltılması,
- Çevresel muhasebe sistemlerine ve etki ve risk analizlerine daha fazla yatırım yapılması,
- Düşük karbonlu, iklim dirençli altyapı, enerji, gıda üretim sistemlerini etkin ve sürdürülebilir doğal kaynak yönetişimi süreçleriyle birleştirerek ekolojik varlıkların korunması.

Özetle; günümüzde uluslararası, ulusal ve yerel tüm düzeylerde doğal kaynakların korunmasının önemi anlaşılmış durumdadır. İnsanların sadece ekonomik faaliyetlerinin devamlılığı için değil, yaşamlarının sürdürülebilmesi açısından biyoçeşitlilik kaynakları korunmalı, restore edilmeli ve geliştirilmelidir. İklim etkilerine ekosistem temelli uyum aracılığıyla, iklim dirençli kalkınmanın sağlanması ve ekosistem hizmetlerinin devamlılığı mümkün olabilecektir. Günümüzde bu husus artık yalnızca bir kalkınma sorunu değil, ulusal güvenlik sorunu haline gelmiş durumdadır.

TARTIŞMA VE SONUÇ

İklim değişikliği artık biyoçeşitliliğin tüm bileşenlerini etkileyen bir gerçek haline gelmiştir; türlerin dağılımını değiştirmekte, yaşam döngüsü olaylarının zamanlamasını etkilemekte, ekosistemlerin ve türlerin kırılganlığını artırmakta ve ekosistem hizmetlerinin sürekliliğini bozmaktadır. Bu nedenle, günümüzde, biyoçeşitliliğin tüm unsurlarını ve çeşitli sektörlerdeki uyum ihtiyaçlarını dikkate alan iklim değişikliğiyle mücadele ve uyum planlarının geliştirilmesi ve uygulanması zorunlu hale gelmiştir.

Çalışmanın başlangıcında belirtilen araştırma soruları kapsamında yapılan değerlendirmede; iklim dirençli kalkınmanın, söz konusu çabaların merkezinde yer alan bir kavram olarak öne çıktığı görülmüştür. Bu yaklaşım, iklim değişikliğine karşı dirençli, esnek ve sürdürülebilir kalkınma çözümleri geliştirerek sosyal, çevresel ve ekonomik dayanıklılığı artırmayı hedeflemektedir. İklim dirençli kalkınma; altyapıdan tarıma, enerjiden su kaynaklarına kadar çeşitli sektörlerde iklim değişikliğinin potansiyel olumsuz etkilerini öngörerek önlem almayı ve kaynakları sürdürülebilir bir şekilde yönetmeyi içermektedir. Aynı zamanda, toplulukları iklim değişikliğiyle ilişkili şok ve streslere karşı hazırlıklı hale getirerek çevresel, ekonomik ve toplumsal kırılganlıkları azaltmayı amaçlamaktadır.

Ekosistem temelli uyum da bu kalkınma modeline katkı sağlayan önemli bir yaklaşımdır. Bu yaklaşım ekosistemlerin doğal dirençliliğini artırarak hem insan toplulukları hem de doğanın iklim değişikliğinin etkilerine karşı korunmasını hedeflemektedir. Pek çok ülke, fırtınaların ve deniz seviyesindeki yükselmenin etkilerini azaltmak için mangrov ormanları ve/veya kıyı alanları restorasyonu, mercan beyazlamasını sınırlamak için deniz koruma alanlarının oluşturulması veya kuraklık ve zararlılara dayanıklı tarımsal çeşitlerin kullanılması gibi ekosistem temelli uyum projeleriyle ve yenilikçi yaklaşımları geliştirmeye dönük araştırma-geliştirme çalışmalarıyla iklim dirençli kalkınmaya destek sağlamaktadır.

Doğal kaynakların sınırsız bir şekilde tüketilmesinin sürdürülemez olduğu artık açıkça görülmüştür. Bu noktada iklim dirençli kalkınma, insanlığın doğayla uyumlu bir geleceğe yönelmesi gerektiğini göstermektedir. Bu kapsamda, BM Rio Sözleşmelerinin hedeflerinin yanı sıra BM SKA'larının ve hedeflerinin gerçekleştirilmesi için bu yaklaşım kritik rol oynamaktadır. İklim değişikliğine uyum, sera gazı emisyonlarının azaltılması, arazi ve toprak yönetimi, biyoçeşitliliğin korunması ve doğa temelli çözümler, kısa sürede hem çevresel hem de toplumsal faydalar sağlayacak eylemlerdir. Ancak bu dönüşüm için bireysel davranış değişiklikleri ve toplumsal farkındalık da büyük önem taşımaktadır.

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EVALUATION OF OBSTACLES TO GREEN HUMAN RESOURCES MANAGEMENT USING AHP METHOD[1]

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Abstract

In this study, it is aimed to reveal the awareness of green human resources management in Turkey and to determine and prioritize the obstacles to green human resources management. For this purpose, a mixed method was applied by using the subjective opinions of experts. First, qualitative questions were used to obtain experts' opinions on important issues such as awareness of green human resources management and the adequacy levels of green human resources management in Turkey and the world. Secondly, a comprehensive literature review was conducted, 5 main obstacles and 21 sub-obstacles were identified, and the identified obstacles were prioritized by experts using the Analytical Hierarchy Process (AHP) method, which is a Multi-Criteria Decision Making (MCDM) method. As a result of the research, it was concluded that the majority of the participants had knowledge about green human resources management, green human resources management was effective in solving environmental concerns but was not sufficient on its own, and the adequacy levels of green human resources management practices in Turkey and the world were low. When the obstacles were prioritized with the AHP method, it was determined that the most important main obstacle was "Economic Obstacle". In addition, when the sub-obstacles were evaluated, it was determined that the most important sub-obstacles were "Insufficient Financial Resources", "Existence of Financial Restrictions" and "Excessive Implementation Expenses".

Keywords: Green Human Resources Management, Sustainability, MCDM, AHP.

INTRODUCTION

In recent years, environmental issues and sustainable development have become increasingly important in both developed and developing countries. The increase in global environmental awareness and the development of international standards have made it a necessity for businesses to adopt "green practices". In this context, organizations have begun to better understand the importance of integrating environmental management with human resources management (Sharma and Gupta, 2015: 825).

Human resources management includes activities such as organizing recruitment processes, planning benefits offered to employees, implementing training and development programs, establishing performance evaluation systems and developing reward policies. Green human resources management, on the other hand, covers human resources policies that aim to increase environmental sustainability by encouraging the sustainable use of resources within the enterprise. In this context, companies should implement environmentally friendly policies such as transitioning to a paperless working system, energy saving measures, car sharing, encouraging the use of public transportation, implementing recycling programs and waste management. In addition, they should adopt practices such as green recruitment strategies, environmentally focused performance management, sustainability-based training programs, environmentally supportive compensation systems and green employee relations (Taruna and Rao, 2016: 95). By implementing green human resources management policies, enterprises can both maintain their

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competitive advantage and develop their capabilities. These policies can also contribute to optimizing costs, increasing business efficiency and strengthening profitability (Uslu and Kedikli, 2017: 67).

This study aims to reveal the awareness of green human resources management in Turkey and to identify and prioritize the obstacles to green human resources management. For this purpose, a mixed method was applied by using the subjective opinions of experts. First, qualitative questions were used to obtain the opinions of experts on important issues such as awareness of green human resources management and the adequacy levels of green human resources management in Turkey and the world. Secondly, a comprehensive literature review was conducted, and 5 main obstacles and 21 sub-obstacles were identified and the obstacles identified were prioritized by experts using the Analytical Hierarchy Process (AHP) method, which is a Multi-Criteria Decision Making (MCDM) method.

This study consists of four sections. After the introduction section where the general framework of the study is evaluated, materials and methods, findings and finally discussion and conclusion are included.

MATERIALS AND METHODS

In this study, academics working in the field of human resources (3 participants) and private sector employees working as human resources experts (9 participants) are included as participants whose expert opinions were obtained in the thesis. The demographic characteristics of the participants are summarized in Table 1 below.

Table 1: Demographic Characteristics of the Participants

Gender	n	Age	n	Year of Expertise	n
Female	5	30-40	7	10-15 years	6
Male	7	40-50	5	16 years and above	6
Total	12	Total	12	Total	12

According to this table, 5 of the participants are female and 7 are male. There are 7 participants between the ages of 30-40 and 5 participants between the ages of 40-50. When the years of expertise of the participants are examined, 6 participants have worked for 10-15 years, and 6 participants have worked for 16 years and above. When the demographic characteristics are examined, it is seen that the years of expertise of the participants are high.

This study aims to contribute to the existing green human resources management literature by identifying the priority obstecles to the implementation of green human resources management using the AHP method. A comprehensive literature review was conducted, and 5 main obstacles (Managerial Obstacles, Technical Obstacles, Economic Obstacles, Education and Development Obstacles and Political and Legal Obstacles) were determined to achieve the goal. In response to the main obstacles, 21 sub-obstacles (Lack of support from top management, Lack of interaction with employees to address environmental concerns, Lack of a comprehensive plan to implement green human resources management, Lack of an institutional human resources system, Lack of technological infrastructures in green human resources management, Difficulty in accepting green technology, Insufficient technological support, Lack of expertise in environmental management, Lack of financial resources, Financial constraints, High implementation costs, Complexity of green initiatives and lack of interest in green initiatives, Lack of green culture, Insufficient green education, Resistance of personnel to green, Unqualified workforce, Lack of promotion of green products, Unclear green value, Lack of government incentives, Lack of government policies and Lack of legal regulations) were identified. These obstacles are presented in Table 2.

Table 2: Obstacles to the Implementation of Green Human Resources Management

Main Obstacles	Sub-Obstacles	Source
Managerial Obstacles (M)	Lack of support from top management (M1)	(Paille et al., 2013), (Fayyazi et al., 2015), (Bombiak, 2020)
	Lack of interaction with employees to address environmental concerns (M2)	(Haddock-Millar et al., 2016), (Paille et al., 2013)
	Lack of a comprehensive plan to implement green human resources management (M3)	(Peng and Lin, 2008), (Fayyazi et al., 2015)
	Lack of an institutional human resources system (M4)	(Fayyazi et al., 2015), (Haddock-Millar et al., 2016), (Paille et al., 2013)
Technical Obstacles (T)	Lack of technological infrastructures in green human resources management (T1)	(Fayyazi et al., 2015), (Gupta et al., 2020)
	Difficulty in accepting green technology (T2)	(Fayyazi et al., 2015)
	Insufficient technological support (T3)	(Gupta et al., 2020)
	Lack of expertise in environmental management (T4)	(Arago´n-Correa and Rubio-Lo´pez, 2007), (Gupta et al., 2020)
Economic Obstacles (E)	Lack of financial resources (E1)	(Bombiak, 2020), (Hasan et al., 2020), (Kodua et al., 2022), (Malek and Desai 2019), (Chan et al., 2018), (Tanco et al. 2021), (Tumpa et al., 2019), (Mutingi et al., 2017)
	Financial constraints (E2)	(Chan et al., 2018), (Tumpa et al., 2019), (Mutingi et al., 2017)
	High implementation costs (E3)	(Fayyazi et al., 2015)
Education and Development Obstacles (ED)	Complexity of green initiatives and lack of interest in green initiatives (ED1)	(Mathiyazhagan et al., 2013), (Mittal and Snagwan, 2014)
	Lack of green culture (ED2)	(Bombiak, 2020), (Hasan et al., 2020), (Gedam et al., 2021)
	Insufficient green education (ED3)	(Gupta et al., 2020), (Gedam et al., 2021)
	Resistance of personnel to green (ED4)	(Fayyazi et al., 2015), (Peng and Lin, 2008)
	Unqualified workforce (ED5)	(Luthra et al., 2011)
	Lack of promotion of green products (ED6)	(Lorek and Spangenberg, 2014)
	Unclear green value (ED7)	(Fayyazi et al., 2015)
Political and Legal Obstacles (PL)	Lack of government incentives (PL1)	(Chan et al., 2018),
	Lack of government policies (PL2)	(Tumpa et al., 2019)
	Lack of legal regulations (PL3)	(Gedam et al., 2021), (Hasan et al., 2020), (Mittal and Snagwan, 2014)

- **AHP (Analytical Hierarchy Process)**

Individuals' preferences for solving a problem may often vary depending on their judgments. Especially in the decision-making process, considering human judgment can have a direct impact on the effectiveness and form of the decision. Because different people may have different criteria, importance levels and options for the same decision problem. Similarly, the Analytical Hierarchy Process is one of the various methods aimed at increasing the effectiveness of decisions (Adıgüzel, 2009: 2). The Analytical Hierarchy Process (AHP) is one of the MCDM techniques developed by Thomas L. Saaty in 1977. AHP is a mathematical method that takes into account the priorities of a group or individual in decision-making and evaluates qualitative and quantitative variables together (Dağdeviren et al., 2004: 132). The Analytical Hierarchy Process is a decision-making method aimed at solving complex, multi-criteria problems. AHP allows decision makers to model complex problems in a hierarchical structure that shows the relationship between the main purpose of the problem, its criteria, sub-criteria and alternatives. The most important feature of AHP is that it allows the decision maker to include both objective and subjective thoughts in the decision-making process (Kuruüzüm and Atsan, 2001: 84).

AHP primarily involves determining the factors and sub-factors of the factors according to the decision maker's intention. In AHP, the goal is first determined and the factors affecting the goal are tried to be determined in line with this goal. At this stage, a survey or the opinions of experts on the subject can be used to determine all the factors affecting the decision-making process (Dağdeviren et al., 2004: 132).

The Analytical Hierarchy Process consists of six steps:

In the first step, the criteria and sub-criteria of these criteria are determined in line with the decision maker's purpose, and the basis of the hierarchical structure is created. In AHP, the goal is first defined and the criteria affecting the achievement of this goal are determined. Then, potential alternatives are determined by taking these criteria into consideration. As a result, a hierarchical structure is created for the decision-making process (Dağdeviren and Eren, 2013: 43).

In the second step, the relative importance levels of the criteria are calculated in line with this structure. The decision maker uses a 1-9 scale to determine the importance level between the criteria. The 1-9 scale used is explained in detail in Table 3 (Orçanlı ve Özdemir, 2013: 84). Thus, the initial decision matrix is created.

Table 3: Importance Scale Proposed by Saaty (1980)

Numerical Rate	Definition	Explanation
1	Equal Important	Two options are equally important
3	A Little More Important	One option is slightly superior to the other
5	Pretty Important	One option is considerably superior to the other
7	Much More Important	One option is very superior to the other
9	Most Important	Evidence that one option is superior to the other has very high reliability
2, 4, 6, 8	Intermediate Values	Values between two consecutive judgments for use when compromise is needed

In the third step, the matrices are normalized. The normalization process is used to prevent problems that may occur due to very large or very small values and to bring all values in the same form and close to each other. This process is carried out by dividing each cell value in the comparison matrix by its own column total. A new normalized matrix is created using the following formula (Özel and Türkel, 2018: 311).

$$\text{bij} = \frac{aij}{\sum_{i=1}^{n} aij}$$

In the fourth step, after the normalization of the matrices, priority vectors are obtained by taking the row averages of the normalized matrix. The priority vector is calculated with the following formula (Ramadhan et al., 1999: 29).

$$\text{wi} = \frac{1}{n}\sum_{j=1}^{n}\frac{aij}{\sum_{j=1}^{n} aij}$$

In the fifth step, the consistency ratio needs to be calculated to assess the consistency of the pairwise comparisons. The purpose of this calculation is to determine how consistently the decision maker acts when making comparisons between criteria. If the CR exceeds 0.1, this indicates that the decision maker is inconsistent and the values entered into the matrix should be reconsidered (Donegan et al., 1992: 296). If the Consistency Ratio (CR) is less than 0.1, the comparison is considered consistent (Orçanlı and Özdemir, 2013: 84). Saaty suggests using the following formula to calculate the consistency of the comparison matrix (Zhou and Shi, 2009: 237).

$$\text{Consistency Ratio (CR)} = \frac{CI}{RI}$$

Consistency Index is calculated with the following formula (Zhou and Shi, 2009: 237).

$$\text{Consistency Index (CI)} = \frac{(\lambda\text{max}-\text{n})}{n-1}$$

When calculating CI, the largest eigenvalue λmax in the formula is calculated with the formula below (Peng and Dai, 2009: 179).

$$\lambda\text{max} = \frac{1}{n}\sum_{i=1}^{n}\frac{(AW)i}{Wi}$$

The values of the randomness indicator (RI) rates according to the matrix measure are shown in Table 4.

Table 4: Values of the Randomness Indicator (RI) Rates According to the Matrix Measure (Özel and Türkel, 2018: 312)

N	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
RI	0,00	0,00	0,58	0,90	1,12	1,24	1,32	1,41	1,45	1,49	1,51	1,54	1,56	1,57	1,59

In the final stage of the AHP method, the problem needs to be solved. At this stage, a combined priority vector is calculated to determine the order of decision alternatives to be used in achieving the goal of the problem. This combined priority vector is created by taking the weighted averages of the priority vectors determined for each criterion. The final priorities obtained are also called decision alternative scores. The decision maker selects the most appropriate alternative according to this result (Ömürbek and Şimşek, 2014: 311).

FINDINGS

The study was examined in 2 parts. First, open-ended questions were answered by 12 human resources experts. Secondly, a comprehensive literature review was conducted, and 5 main obstacles and 21 sub-obstacles were identified. The identified obstacles were prioritized by 12 human resources experts using the AHP method, which is a MCDM method.

• Participants' Knowledge of Green Human Resources

Learning the participants' knowledge of green human resources management is one of the problems of this research. Therefore, the first question to the participants was "Can you explain the concept of green human resources management in a few words?" In this way, the participants' awareness of green human resources management was evaluated.

"It refers to the implementation, planning and management of human resources in line with environmental and sustainability goals, in a way that considers and understands environmental impacts."

"It is a set of human resources activities that develop the environment and create a circular economy, rather than economic activities that create environmental problems, by giving place to environmentally friendly practices and aiming to establish a culture of environmental protection and development."

"To create awareness of environmental sustainability among employees."

"Although it is not a term I know very well, human resources management that includes a sustainable environmental understanding comes to mind based on its name and the data in the table. It can be a human resources management policy that combines less energy and resource use with more efficiency."

When the answers given by human resources experts are examined; Participants stated that green human resources management takes environmental impacts into consideration, includes environmentally friendly practices, and should raise awareness about environmental sustainability. In this regard, survey responses show that the majority of participants have knowledge about green human resources.

• Participants' Thoughts on the Scope of Obstacles to Green Human Resources Management

Participants' thoughts on the scope of obstacles to green human resources management is another problem of this study. The participants' answers to the question "When the obstacles to green human resources management are considered, do you think these obstacles are comprehensive enough?" directed to human resources experts are given below:

"The relevant table has been a comprehensive study since it addresses the obstacles to green human resources management from different perspectives."

"It is comprehensive enough and sufficient."

"It is sufficient. Awareness, resource management and budget are among the most basic obstacles."

All participants agree that the obstacles are sufficient and comprehensive.

• Participants' Thoughts on the Effectiveness of Green Human Resources Management in Solving Environmental Concerns

Green human resources management is a very effective approach in solving environmental concerns. It helps businesses reduce their impact on the environment and adopt sustainable policies. The participants' question "Is green human resources management an effective approach in solving environmental concerns?" The participants' answers to the question are given below:

"Absolutely, these practices that you take into consideration at work will spread to your environment with the butterfly effect. Even if you cannot produce solutions to all environmental problems, you can create a great impact with less carbon footprint and environmental awareness."

"It is one of the effective approaches that can create a positive effect."

"Although it is not alone, it is a great start. Human resources are the backbone of companies. Each employee is a value and the most important building block that will contribute to this environmental solution. Therefore, I think the most important criterion is personnel training."

"I could not reconcile environmental concerns with human resources."

"It cannot be said to be completely sufficient. Unfortunately, I do not think that environmental concerns can be eliminated only with human resources management. Awareness level needs to be created in society."

"Of course, because green human resources management can be a response to environmental concerns that are felt more and more each passing day due to constantly increasing environmental problems."

"It can be effective. However, it can be found in more developed societies."

When the participants' answers are examined, they stated that it is generally effective but not sufficient on its own, personnel training should be increased and social awareness should be increased. One participant stated that he could not reconcile environmental concerns with human resources.

- **Participants' Thoughts on the Level of Adequacy of Green Human Resources Management Practices in the World**

Green human resources management practices are the harmonization of human resources management processes with green principles in order to achieve environmental sustainability goals. The level of adequacy of practices around the world varies by country and region. The participants' answers to the question "What do you think is the level of adequacy of green human resources management practices around the world?" are given below:

"While the level of adequacy varies from country to country, it remains weak in the world in general.

"I believe it is low. The main reason for this is that there is not enough practice, and although sustainability and environmental awareness are among the popular agendas of companies, I think the practices made for this purpose are based on production, sustainability of the product provided to the consumer and post-consumption."

"It is a very new subject. More good examples and incentives are needed."

"When we look at the world, I think that the practices in Europe are at a much better level."

"I do not think that the practices in question are yet sufficient to make a serious difference."

"I do not have much of an opinion on the subject."

"I think that the practices mentioned are still in their early stages in our country."

Participants state that the level of proficiency may vary from country to country and is generally weak, but that practices are at a better level in European countries. Three participants stated that they had no knowledge on the subject; three participants stated that the level of proficiency was at a medium level, and two participants stated that the level of proficiency was at a low level.

• Participants' Thoughts on the Adequacy Level of Green Human Resources Management Practices in Turkey

Green human resources management practices are not yet sufficient and widespread in Turkey. However, they are becoming increasingly important with the increasing awareness of environmental sustainability. The participants' answers to the question "What do you think is the adequacy level of green human resources management practices in Turkey?" are given below:

"I do not think they are very sufficient in Turkey. For this, they should first be made mandatory and controlled by state regulations and rules."

"With the low level of environmental awareness and importance given to sustainability in Turkey, the practices carried out by companies in this regard are generally insufficient. Even though we have seen an increasing emphasis on sustainability in recent years, I think the practices carried out in this area are insufficient."

"They are not effective due to budgetary factors."

"Even if they are sufficient in large corporate companies, I think they are not implemented at all in small businesses due to their own management."

"Not sufficient at all, I am hearing the concept for the first time as a human resources employee."

"I do not have much of an idea about the subject."

When the general answers of the participants are examined, 1 participant stated that he/she has no opinion on the subject and the other participants agree that the level of adequacy of green human resources practices in Turkey is low. In addition, 1 participant stated that large enterprises have a higher level of adequacy than small enterprises.

The second part of the study is the evaluation of all obstacles to the implementation of green human resources management with AHP. The results of this are presented in Table 5.

Table 5: Local and Global Rankings of All Sub-Obstacles to the Implementation of Green Human Resources Management

Main Obstacles		Sub-Obstacles					
Main Obstacle	**Importance Weight**	**Sub-Obstacles**	**Importance Weight**	**Local Ranking**	**Calculation Result Matrix**	**Result Matrix**	**Global Ranking**
M	0,2715	M1	0,2395	3	0,2395 x 0,2715 = 0,0650	0,0650	4
		M2	0,2117	4	0,2117 x 0,2715 = 0,0575	0,0575	5
		M3	0,2538	2	0,2538 x 0,2715 = 0,0689	0,0689	3
		M4	0,2950	1	0,2950 x 0,2715 = 0,0801	0,0801	2
T	0,0929	T1	0,2500	1	0,2500 x 0,0929 = 0,0232	0,0232	9
		T2	0,2500	1	0,2500 x 0,0929 = 0,0232	0,0232	9
		T3	0,2500	1	0,2500 x 0,0929 = 0,0232	0,0232	9
		T4	0,2500	1	0,2500 x 0,0929 = 0,0232	0,0232	9
E	0,3315	E1	0,3333	1	0,3333 x 0,3315 = 0,1105	0,1105	1
		E2	0,3333	1	0,3333 x 0,3315 = 0,1105	0,1105	1
		E3	0,3333	1	0,3333 x 0,3315 = 0,1105	0,1105	1
ED	0,1416	ED1	0,1612	3	0,1612 x 0,1416 = 0,0229	0,0229	10
		ED2	0,3150	1	0,3150 x 0,1416 = 0,0446	0,0446	6
		ED3	0,1762	2	0,1762 x 0,1416 = 0,0249	0,0249	8
		ED4	0,0687	7	0,0687 x 0,1416 = 0,0097	0,0097	14
		ED5	0,0967	5	0,0967 x 0,1416 = 0,0137	0,0137	12
		ED6	0,0735	6	0,0735 x 0,1416 = 0,0104	0,0104	13
		ED7	0,1087	4	0,1087 x 0,1416 = 0,0154	0,0154	11
PL	0,1624	PL1	0,2000	2	0,2000 x 0,1624 = 0,0325	0,0325	7
		PL2	0,4000	1	0,4000 x 0,1624 = 0,0640	0,0650	4
		PL3	0,4000	1	0,4000 x 0,1624 = 0,0640	0,0650	4

DISCUSSION AND CONCLUSION

Green human resources management is a human resources system that aims to reduce the impact of employees on the environment, focuses on environmentally friendly office and business models, and develops sustainable environmental strategies. This study aims to increase awareness of green human resources management in Turkey and to identify and prioritize the obstacles in front of it. The study was examined in two parts.

First, the opinions of 12 human resources experts and the opinions of the participants on green human resources management were evaluated. In the second part, the obstacles to the implementation of green human resources management were analyzed with the AHP method through literature review. First, open-ended questions were asked to the participants to understand the opinions of human resources experts on green human resources management. As a result of the examination of the participants' responses, it was seen that the majority had knowledge about green human resources. In addition, almost all of the participants found the scope of the obstacles faced by green human resources management sufficient. The participants stated that green human resources management was generally effective in solving environmental problems, but it was not sufficient on its own, and that personnel training should be increased, and public awareness should be developed. It is stated that the level of adequacy of green human resources management practices in the world may vary by country, is generally weak, but is better in European countries. In Turkey, participants agree that the level of adequacy of green human resources practices is low.

The existence of obstacles to green human resources management practices is based on various economic, cultural, institutional and technical reasons. Overcoming these obstacles requires the development of strategic planning, training, awareness-raising and incentive mechanisms for the effective implementation of green human resources management. When the obstacles to green human resources management, which constitute the second part of the study, are prioritized with the AHP method.

When the main obstacles to green human resources management are examined.

The most important obstacle is the Economic Obstacle (E) with a value of 0.3315 and the least important obstacle is the Technical Obstacle (T) with a value of 0.0929.

When all the sub-obstacles to green human resources management are examined among themselves.

When the administrative obstacles are examined, the most important obstacle among the administrative obstacles to green human resources management is the Lack of Corporate Human Resources Management (Y4) with a value of 0.2950, and the least important obstacle is the Lack of Interaction with Employees to Address Environmental Concerns (Y2) with a value of 0.2117.

When the technical obstacles are examined, it is seen that all the obstacles are equal in importance with the value of 0.2500: Lack of Technological Infrastructure (T1), Difficulty in Accepting Green Technology (T2), Insufficient Technological Support (T3) and Lack of Expertise in Environmental Management (T4).

When the economic obstacles are examined, it is seen that all of the obstacles are equal in importance with the value of 0.3333: Insufficient Financial Resources (E1), Existence of Financial Restrictions (E2) and Excessive Implementation Expenses (E3).

When the training and development obstacles are examined, it is determined that the most important obstacle is the Lack of Green Culture (ED2) with the value of 0.3150, and the least important obstacle is the Resistance of Employees to Sustainability (ED4) with the value of 0.0687.

When the political and legal obstacles are examined, it is determined that the most important obstacles are the Lack of Government Policies (PL2) and the Lack of Legal Regulations (PL3) with the value of 0.4000, and the least important obstacle is the Insufficient State Incentives (PL1) with the value of 0.2000.

When all sub-obstacles are examined together.

The most important obstacles were found to be Insufficient Financial Resources (E1), Financial Constraints (E2) and Excessive Implementation Expenses (E3) among the economic obstacles with a value of 0.1105. The second important obstacle was found to be Lack of Institutional Human Resources Management (Y4) among the administrative obstacles with a value of 0.0801. The least important obstacle was found to be Employee Resistance

to Sustainability (ED4) among the training and development obstacles with a value of 0.0097. When different studies were examined; Chan et al. examined the critical obstacles to the adoption of green building technologies in developing countries in their 2018 study and stated that the three most critical obstacles were the high costs of green building technologies, lack of government incentives and incomplete financing plans. Tumpa et al. In his 2019 study, when he examined the perspectives and obstacles to the adoption of green supply chain management practices in the Bangladesh textile industry, he stated that the lack of government regulations was a common obstacle. Kodua et al. examined the critical obstacles to the implementation of green human resource management in Ghana in 2022 and stated that the economic obstacle was the highest. In this sense, the studies mentioned are parallel to our study. It is common to encounter economic obstacles in green human resource management in developing countries. In order to overcome these obstacles, governments, businesses and other stakeholders need to work together and develop strategies to support green human resource management practices. The aim of this study is to provide practitioners and policy makers with valuable information about the current obstacles to the adoption of green human resource management practices and to determine the appropriate steps to eliminate these obstacles. A review of national-level research shows that the obstacles to green human resource management are not adequately assessed. Overcoming challenges such as ensuring that employees work in a company with environmental values and allowing businesses to develop long-term sustainability strategies is necessary to build a more sustainable and livable world. Removing the obstacles to green human resources management is vital for a sustainable future not only for businesses but also for society and the planet. In this sense, our recommendations for the implementation of green human resources management are as follows:

Recommendations for human resources experts:

- Organizing trainings that regularly teach all employees and managers the importance of green human resources management and how it can be implemented,
- Organizing awareness campaigns that emphasize the value of green practices within the company and making these campaigns continuous,
- Providing incentives and rewards to employees and units that adopt green practices,
- Developing technologies and methods that can be used to increase energy efficiency in offices,
- Encouraging employees to actively participate in green projects and taking their opinions into consideration,
- Creating sustainable human resources strategies in line with the company's vision and mission,
- Benefiting from tax deductions and low-interest loans offered for environmentally friendly investments,
- Having senior managers set an example for employees by exhibiting environmentally friendly behavior,
- Holding regular meetings in cooperation with the government to create green policies,
- Making recommendations to the government to provide tax deductions and incentives for environmentally friendly investments can contribute significantly to the more effective implementation of green human resources management practices.

Recommendations for policy makers:

- Creating legal regulations that encourage and make green practices mandatory,
- Offering tax breaks and incentives to companies that adopt green human resources practices,
- Developing grant and loan support programs for green projects and initiatives,
- Raising public awareness through campaigns emphasizing the importance of green practices,
- Encouraging R&D investments to develop innovative solutions in the field of green human resources management can contribute to the formation of a more sustainable business world.

Recommendations for researchers:

In future studies, it is possible to increase the number of identified obstacles or ask questions in different categories, and to address the scope of the study from a broader perspective in different sectors or regions. In this sense, more comprehensive studies can be conducted, and more contributions can be made to the Turkish literature.

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THE IMPACT OF ADVERTISING AND SOCIOCULTURAL FACTORS ON E-CIGARETTE USE AMONG ALBANIAN UNIVERSITY STUDENTS

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Abstract
The growing prevalence of e-cigarette use, particularly among young adults, has emerged as a critical public health concern globally. This study investigates the factors driving e-cigarette consumption among university students in Albania.

Using a mixed-methods approach, the study surveyed 424 university students and conducted in-depth interviews to explore both quantitative and qualitative dimensions of e-cigarette use. Key areas of investigation include the impact of advertising through traditional and social media channels, with specific attention to how televised content, such as Big Brother VIP Albania, may affect student behaviors. The research further examines differences in perceptions between users and non-users of e-cigarettes, focusing on factors such as curiosity, stress management, peer influence, and health risk awareness. Advertising, particularly through social media platforms, plays an important role in increasing e-cigarette usage among students.

The results of this study offer a comprehensive understanding of the primary influences behind e-cigarette usage among university students in Albania. These findings can inform public health interventions aimed at reducing e-cigarette consumption and promoting healthier behaviors within this demographic. Additionally, the study highlights the importance of regulating advertising targeting young audiences and providing educational campaigns on the risks associated with e-cigarette use.

Keywords: E-cigarette use, University students, advertising influence, social media, peer pressure, health perception

INTRODUCTION

The use of electronic cigarettes (e-cigarettes) has rapidly gained traction among young people worldwide, particularly university students. This growing trend has sparked significant public health concerns due to its potential health risks and social implications. In Albania, where data on this phenomenon remains limited, e-cigarette use among university students represents a critical area of investigation. This study seeks to fill that gap, contributing to a better understanding of the factors driving e-cigarette use in this demographic.

Globally, research suggests that advertising, particularly through social media, plays a pivotal role in shaping young people's attitudes and behaviors toward e-cigarettes. Studies such as Loukas et al. (2019) have highlighted how e-cigarette advertising normalizes vaping as a socially acceptable activity. Chen-Sankey et al. (2020) demonstrated a strong correlation between social media promotions and increased experimentation with e-cigarettes. Furthermore, research by Soneji et al. (2017) identified advertising exposure as a significant factor in youth adoption of e-cigarettes, emphasizing the need to explore these dynamics within Albania's university population.

In addition to advertising, sociocultural factors such as peer influence, stress management, and health perceptions also drive e-cigarette use. Mantey et al. (2021) found that perceived risks inversely correlate with e-cigarette use,

while Breland et al. (2017) highlighted the role of appealing flavors, sleek designs, and reduced stigma in enhancing the attractiveness of vaping. Despite these global insights, limited research has explored how these factors interplay in Albania, a context marked by unique cultural and societal influences.

This research aims to bridge the knowledge gap by examining the impact of advertising and sociocultural factors on e-cigarette use among university students in Albania. Through a mixed-methods approach combining qualitative and quantitative data, the study investigates how advertising, peer influence, and perceptions of e-cigarettes contribute to their adoption. The findings will not only inform targeted public health interventions but also enrich the broader body of knowledge on e-cigarette use in youth populations.

The objectives:

1. To explore the differences in perceptions of factors influencing e-cigarette use between users and non-users, focusing on aspects such as stress management, curiosity, affordability, and perceived health risks.
2. To evaluate the impact of social media advertising and promotion on e-cigarette use among university students in Albania.
3. To provide actionable insights for public health strategies aimed at reducing e-cigarette use through targeted interventions addressing perceptions and advertising influence.

The main research questions in this paper are:

1. Is there a significant difference in the perception of factors influencing e-cigarette use between users and non-users?
2. How does advertising and promotion through social media impact the increase in e-cigarette use among university students in Albania?

The paper begins by reviewing existing literature on the global and regional prevalence of e-cigarette use, followed by an exploration of the theoretical framework underpinning the study. The methodology section outlines the mixed-methods approach used to collect and analyze data, while the findings detail the primary influences on e-cigarette use among Albanian university students. The discussion connects these findings to broader public health implications, and the conclusion offers actionable recommendations to address the rising prevalence of e-cigarette use.

LITERATURE REVIEW

What are electronic cigarettes?

Electronic cigarettes (e-cigarettes) are battery-powered devices that vaporize a liquid solution, often containing nicotine, which is then inhaled by the user. Their popularity has increased significantly in recent years, particularly among young people. A CDC report found that e-cigarette use among U.S. high school students increased from 1.5% in 2011 to 20.8% in 2018, raising concerns about health risks and the potential for gateway smoking (Cullen et al., 2018; Lopez et al., 2016). Studies such as Santistevan (2019) and Johnson et al. (2018) reveal high awareness among students but persistent misconceptions about safety, while Singh et al. (2019) found rising prevalence, underscoring the need for targeted interventions.

Studies conducted in Albania provide some insights. For example, Xhixha et al. (2019) found that only 4.2% of university students reported current e-cigarette use, while Bregu et al. (2017) identified that 14% of students had tried e-cigarettes at least once, with higher usage among medical students. Similarly, Toçi et al. (2019) reported a 6.2% lifetime usage rate among students at the University of Vlora, with younger and medical students more likely to use e-cigarettes. These findings underscore the need for further exploration of the factors influencing e-cigarette use among Albanian students.

The influence of advertising on e-cigarette use

Advertising has emerged as a significant factor in promoting e-cigarette use. Smith et al. (2019) linked exposure to advertising with increased experimentation among youth. Social media platforms amplify this influence, as Johnson et al. (2018) showed a strong association between advertising and use among students. Celebrity endorsements, as studied by Lee and Kim (2020), further enhance e-cigarette appeal, while Thompson et al. (2017) highlighted themes like rebellion and personalization as persuasive advertising strategies.

Psychological factors

Psychological factors such as curiosity, addiction, stress management, and convenience play a pivotal role in shaping e-cigarette use.

Curiosity

Curiosity often motivates students to experiment with e-cigarettes, leading to occasional or regular use. Pepper et al. (2014) highlighted that exposure to e-cigarette promotions piques interest among young adults, driving initial trials.

Addiction

Nicotine addiction is a key driver sustaining e-cigarette use. Saddleson et al. (2016) emphasized the addictive potential of e-cigarettes, particularly among students transitioning from traditional smoking or experimenting with vaping.

Stress Management

Stress relief is a frequently cited reason for e-cigarette use among students. Park et al. (2020) found that university students perceive vaping as a mechanism for coping with academic and personal pressures.

Convenience in Enclosed Spaces

The ability to use e-cigarettes in spaces where traditional smoking is restricted adds to their appeal. Measham et al. (2016) noted that this convenience makes e-cigarettes an attractive alternative for students who smoke.

Sociocultural factors

Social and cultural influences significantly shape attitudes and behaviors related to e-cigarette use.

Socialization

E-cigarettes often serve as a social tool for students. Measham et al. (2016) and Keamy-Minor et al. (2019) found students use them to connect with peers, while Czoli et al. (2016) linked e-cigarette use to social activities like parties. Mays et al. (2016) highlighted how customizable designs and flavors enhance their appeal as a status symbol.

Media Influence (Big Brother VIP)

Media representations, such as the inclusion of e-cigarettes in shows like *Big Brother VIP Albania*, normalize their use and enhance their desirability among young audiences. Johnson et al. (2018) found that cultural references in media significantly shape perceptions, making vaping appear trendy and socially acceptable.

Perceived benefits

The perception of e-cigarettes as beneficial alternatives to traditional smoking further drives their adoption.

Healthier Alternative

E-cigarettes are often perceived as less harmful than combustible cigarettes. Breland et al. (2017) noted that young users frequently cite reduced health risks and less stigma as reasons for switching to e-cigarettes.

Affordability

Pricing plays a crucial role in influencing e-cigarette use, particularly among students with limited financial resources. Cooper and Loukas (2020) found that higher e-cigarette prices were associated with decreased use among students. Similarly, Cantrell et al. (2019) reported that policies increasing e-cigarette prices through taxation effectively reduced their prevalence among youth. Conversely, Hartman et al. (2021) found that lower prices encouraged higher consumption, highlighting affordability as a key driver of e-cigarette use.

Weight Loss

The belief that nicotine suppresses appetite and aids in weight management also contributes to e-cigarette use. Morean et al. (2018) highlighted the role of e-cigarettes in weight control strategies among young adults. Nicotine's

appetite-suppressing properties lead some to use e-cigarettes for weight control. However, Goniewicz et al. (2014) warned of significant health risks, including cardiovascular and respiratory issues, associated with this practice.

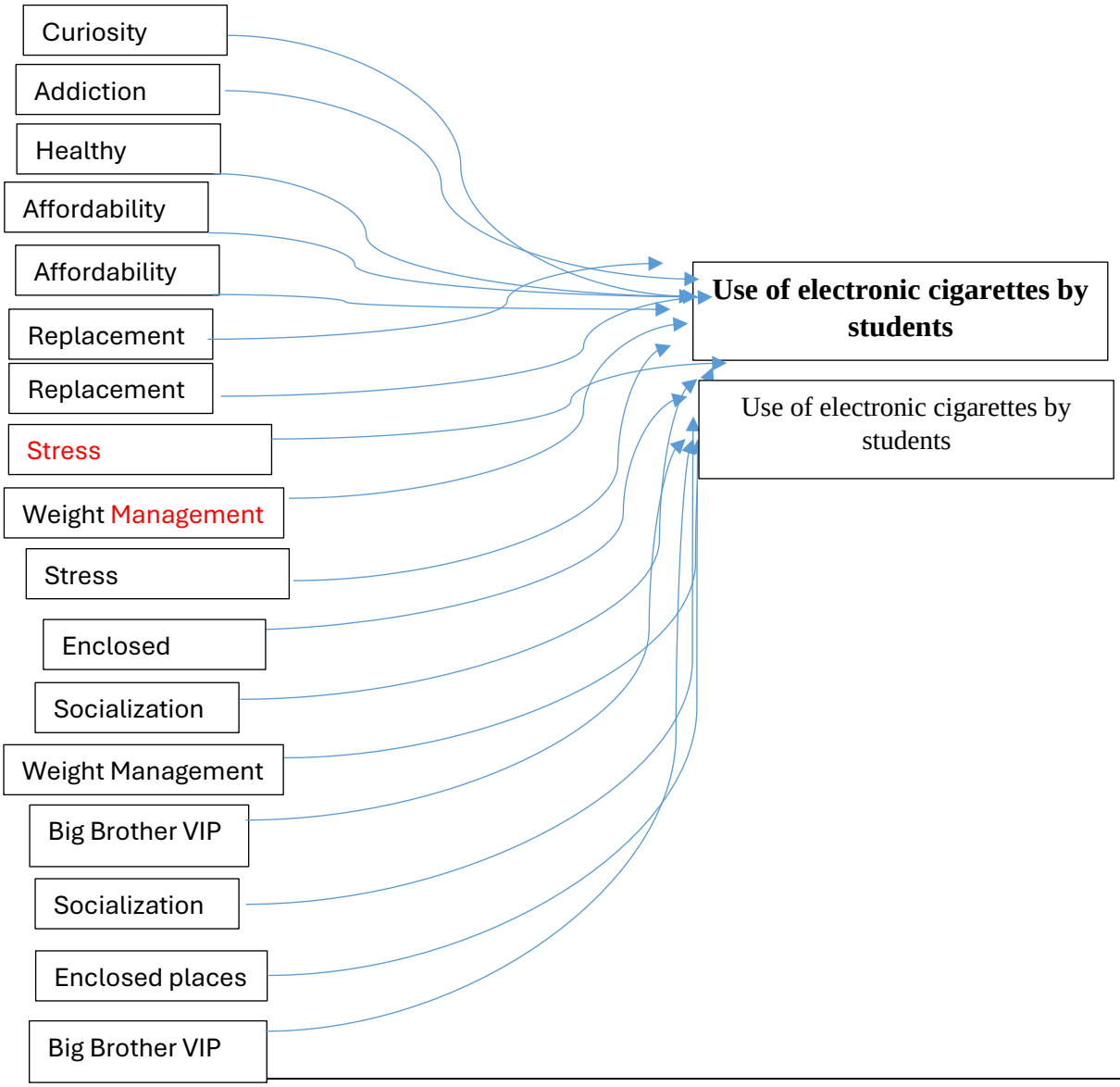
Conceptual framework and hypotheses

The conceptual framework identifies several factors influencing e-cigarette use among university students in Albania, all of which are considered equally significant for testing. These include curiosity, addiction, the convenience of use in enclosed spaces, and stress management as psychological drivers. Socialization, the perception of e-cigarettes as a healthier alternative, their role as a substitute for smoking, affordability, and perceptions about weight loss also contribute. Furthermore, cultural trends, such as references in media like "Big Brother VIP," enhance their appeal. Based on this framework, were developed two hypotheses to explore the relationships between these factors and e-cigarette use in this population:

H1: There is a significant difference in the perception of factors based on e-cigarette use.

H2: Advertising and promoting e-cigarettes through social media influence the increase in the use of e-cigarettes by students in Albania.

Figure 1. Conceptual Framework



MATERIALS AND METHODS

This study aimed to explore the factors influencing e-cigarette use among university students in Albania to inform policies that promote healthier behaviors and reduce usage. A mixed-methods approach was employed, integrating quantitative data collected via online surveys and qualitative insights obtained through in-depth interviews. Secondary data from existing literature and reports also supplemented the analysis. This combination of methods ensured a comprehensive understanding of both measurable trends and personal experiences related to e-cigarette use.

Research Design

The mixed-methods approach combined both qualitative and quantitative methodologies to explore the factors influencing e-cigarette use. The quantitative component involved an online survey capturing prevalence, patterns, and influencing factors of e-cigarette use among university students. The survey design included closed-ended and Likert-scale questions to facilitate statistical analysis. The qualitative component consisted of in-depth interviews, which were semi-structured to delve into personal motivations, perceptions, and experiences related to e-cigarette use, focusing particularly on health implications.

Sampling

A total of 424 students aged 18 to 43 were recruited, comprising both e-cigarette users and non-users. Participants were selected using a combination of convenience sampling (targeting readily available and willing individuals) and snowball sampling (recruiting through referrals). These methods ensured inclusivity across various demographic groups while maintaining diversity within the sample. Participants were categorized into two groups based on an initial dichotomous survey question: **253 e-cigarette users and 171 non-users.**

This classification enabled comparative analysis, allowing the study to identify specific trends and differences between the two groups.

Survey Design

The survey captured quantitative data across multiple variables:

1. **Demographic Information**: Age, gender, and employment status.
2. **Behavioral Factors**: Frequency of e-cigarette use, reasons for use, and social contexts.
3. **Perceptions and Attitudes**: Awareness of health risks, influence of advertising (including social media), and perceived benefits.
4. **Pricing Sensitivity**: The impact of e-cigarette pricing on usage.

SPSS software was used for descriptive and inferential analysis to identify trends, correlations, and group differences.

Interview Design

In-depth interviews consisted of seven open-ended questions and focused on the knowledge of e-cigarettes and their composition and health implications. An interview was conducted with a public health specialist to provide expert insights. The qualitative data were analyzed thematically to uncover recurring patterns and unique insights.

Data Analysis

Descriptive statistics summarized demographic trends and usage patterns. Inferential tests, including One-way ANOVA and Binary Logistic Regression, were used to examine differences among groups and identify significant predictors of e-cigarette use.

Thematic analysis was conducted on interview data, focusing on key themes such as the health consequences associated with e-cigarette use, including potential risks such as heart disease, lung disorders, and harm from passive exposure. This approach provided a comprehensive understanding of the health implications and external influences affecting e-cigarette use among university students.

Ethical Considerations

The study adhered to strict ethical guidelines to protect participant confidentiality and ensure voluntary participation. Informed consent was obtained from all participants before participation in either the survey or interviews. Ethical approval for the study was granted by the relevant institutional review board prior to data collection.

FINDINGS

The majority of the respondents are female, with 66.4% **of e-cigarette users and** 73.7% **of non-users identifying as female, indicating a higher representation of women in both groups. Male respondents constitute** 34% **of e-cigarette users and** 26.3% **of non-users. Regarding employment status,** 47.8% **of e-cigarette users are employed, compared to** 34.7% **of non-users, while** 52.2% **of users and** 65.3% **of non-users are unemployed. These findings suggest that e-cigarette use is more prevalent among employed individuals and that females represent a larger proportion in both user and non-user categories, although their presence is slightly higher among non-users. The average age of the respondents is** 22 years**.**

Table 1: Respondents' Profiles

Respondents' Profile		**Percentage**
Gender	Female (E-cigarettes Users)	66.4%
	Male (E-cigarettes Users)	34%
	Female (E-cigarettes Non-Users)	73.7%
	Male (E-cigarettes Non-Users)	26.3%
Employment	Employed (E-cigarettes Users)	47.8%
	Unemployed (E-cigarettes Users)	52.2%
	Employed (E-cigarettes Non-Users)	34.7%
	Unemployed (E-cigarettes Non-Users)	65.3%

ONE-WAY ANOVA

A one-way ANOVA test was conducted to identify differences in the perceptions of influential factors between e-cigarette users and non-users among Albanian university students. The independent variables analyzed included Curiosity, Addiction, Healthier Alternative, Price, Substitute, Stress Management, Weight Loss, Socialization, Enclosed Spaces, and the "Big Brother VIP" phenomenon.

The criterion for determining significance was set at $p < 0.005$, which was met by four specific influential factors:

1. Addiction (Sig. .000)
2. Price (Sig. .002)
3. Socialization (Sig. .000)
4. "Big Brother VIP" (Sig. .000)

A significant factor represents a variable where there are notable differences in perceptions between e-cigarette users and non-users. These results align with the study's goal of identifying factors that differentiate the perceptions of these two groups. The significance of these factors is further supported by the clear differences in their mean values between the two categories, as shown in the descriptive statistics.

Table 2: ONE-WAY ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Curiosity	Between Groups	1.671	1	1.671	1.464	.227
	Within Groups	481.760	422	1.142		
	Total	483.432	423			
Addiction	Between Groups	126.578	1	126.578	79.140	.000
	Within Groups	674.959	422	1.599		
	Total	801.538	423			
Healthy	Between Groups	1.157	1	1.157	.744	.389
	Within Groups	656.306	422	1.555		
	Total	657.462	423			
Affordability	Between Groups	12.902	1	12.902	9.430	.002
	Within Groups	577.362	422	1.368		
	Total	590.264	423			
Replacement	Between Groups	3.032	1	3.032	1.782	.183
	Within Groups	718.128	422	1.702		
	Total	721.160	423			
Manages stress	Between Groups	4.662	1	4.662	2.719	.100
	Within Groups	723.677	422	1.715		
	Total	728.340	423			
Weight loss	Between Groups	2.254	1	2.254	1.768	.184
	Within Groups	537.850	422	1.275		
	Total	540.104	423			
Socialization	Between Groups	83.015	1	83.015	45.913	.000
	Within Groups	763.020	422	1.808		
	Total	846.035	423			
Enclosed spaces	Between Groups	1.038	1	1.038	.608	.436
	Within Groups	721.113	422	1.709		
	Total	722.151	423			
Big Brother VIP	Between Groups	116.249	1	116.249	53.386	.000
	Within Groups	918.912	422	2.178		
	Total	1035.160	423			

Binary logistic regression

The model explained 31.7% (Nagelkerke R Square) of the variance in e-cigarette use by students in Albania and correctly classified 60.8% of cases. These data show that there is a significant link between advertising and promotion through social media and the use of e-cigarettes by students in Albania, and advertising via social media positively affects students' use of e-cigarettes. E-cigarette use by students in Albania was 1,933 times more likely to be increased by advertising and promotion via social media.The increasing rate of advertising and promotion through social media was accompanied by an increase in the use of e-cigarettes by students in Albania.

Table 3: Binary logistic regression

Model summary								
Step 1	-2 Log likelihood		Cox & Snell R Square			**Nagelkerke R Square**		
	566.528a		.212			**.317**		
Classification Table								
	Observed		Predicted					
			Use of electronic cigarettes by students			Percentage Correct		
			Yes	No				
Step 1	**Use of electronic cigarettes by students**	Yes	227	26		89.7		
		No	140	31		18.1		
	Overall percentage					**60.8**		
a. The cut value is .500								
Variables in the Equation								
			B	S.E.	Wald	df	Sig.	Exp(B)
Step 1	**Advertising and promotion through social media**		.659	.287	5.28	1	.022	**1.933**
	Constant		-1.143	.342	11.165	1	.001	.319
a. *Variable (s) entered in step 1: Advertising and promotion through social media*								

In-depth interview

The interview highlighted those e-cigarettes, while potentially less harmful than traditional cigarettes, are not safe and pose risks such as heart disease, lung disorders, and harm from passive exposure. Long-term effects remain unclear, and there is no conclusive evidence supporting their effectiveness for smoking cessation. Nicotine-free e-cigarettes also carry health risks, including lung damage, coughing, and gum irritation, along with environmental concerns due to non-decomposable waste. Recommendations include regulating advertising, banning public use, and ensuring product safety to minimize health and environmental risks.

DISCUSSION AND CONCLUSION

The study reveals several critical factors influencing e-cigarette use among university students in Albania, providing a nuanced understanding of this behavior. Advertising, especially through social media, significantly drives e-cigarette consumption, normalizing its use and creating appeal through targeted campaigns. This aligns with findings that e-cigarette use is nearly two times more likely to increase with exposure to such advertising. Sociocultural influences, such as the "Big Brother VIP" phenomenon, further reinforce this trend, making e-cigarettes a socially accepted norm among students.

Key differences in perceptions between users and non-users were identified through ANOVA testing. Significant factors include **addiction, price, socialization,** and **media influence**, with users showing higher tolerance for these aspects. While many students turn to e-cigarettes for stress management or as a perceived healthier alternative, the interview findings emphasize their potential health risks, including heart disease, lung disorders, and passive exposure to harmful chemicals. Nicotine-free e-cigarettes were also noted to carry substantial health risks, debunking the myth of their safety.

The study highlights gaps in awareness about the long-term health impacts of e-cigarettes and stresses the need for stricter advertising regulations, public education campaigns, and policies to reduce accessibility and usage among young adults. These interventions are essential to counter the growing normalization of e-cigarettes and to promote healthier behaviors within this demographic.

Addressing the rising prevalence of e-cigarette use among university students in Albania requires concerted efforts across various sectors, including government action. Awareness campaigns are critical to inform students about the health risks of e-cigarettes, often misunderstood due to misleading information. Universities and public health

organizations should collaborate to implement workshops, digital outreach, and peer-led initiatives that counter normalization and empower students to make informed choices.

Stronger advertising regulations are essential, particularly for social media, where targeted campaigns appeal to young audiences. The government must enforce bans on advertisements aimed at students and mandate health warnings in all e-cigarette promotions. Such measures can significantly reduce the influence of marketing on young minds.

Universities also play a vital role through education and policy development. Organizing expert-led sessions, distributing factual materials, and implementing peer education programs can help dispel myths and provide accurate information. Clear campus policies, including banning e-cigarettes on university grounds and offering support services for quitting, are crucial for creating healthier academic environments.

The government has an additional responsibility to ensure that e-cigarette companies demonstrate a commitment to public health. Policies should focus on restricting youth access, increasing product prices through taxation, and regulating sales to limit availability. Broader research efforts must also be supported to understand the cultural and economic factors driving e-cigarette use, enabling the design of more effective national strategies. Together, these measures can curb the growing trend and protect the health and well-being of university students.

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THE IMPACT OF BLOCKCHAIN TECHNOLOGY ON IMPROVING TRANSPARENCY OF MEAT SUPPLY CHAINS IN KAZAKHSTAN

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Abstract

Globalization and the growing demand for meat products have highlighted the importance of transparency and security in supply chains, especially in Kazakhstan, where this sector plays a vital role in the economy. However, the lack of transparency and reliable information on the origin and quality of products remains a significant problem throughout the supply chain. This contributes to the risk of fraud, reduces consumer confidence, creates uncertainty among market participants and hinders the growth of Kazakh meat exports.

Blockchain technology is a promising solution for increasing transparency in supply chains. Due to its decentralized and immutable nature, blockchain allows for the accurate tracking and recording of every stage of the logistics chain - from the producer to the end consumer - with a high degree of security and accuracy. This can change the approach to record-keeping and supply chain management, providing reliable and accessible data to all participants, including farmers, distributors, retailers and consumers. The introduction of blockchain in logistics processes not only increases consumer confidence, but also optimizes internal processes, reducing the risks of errors and data manipulation. Despite its significant potential, the adoption of blockchain technology remains slow due to various economic and technological barriers. However, as the technology matures and more successful examples emerge from other countries, blockchain could serve as a foundation for the development of the meat industry in Kazakhstan.

The purpose of this article is to analyze the impact of blockchain technology on increasing the transparency of meat supply chains, compare its benefits with traditional methods, and propose strategies for its integration into the meat industry in Kazakhstan.

Keywords: Blockchain, transparency, supply chains, meat products, Kazakhstan, logistics

INTRODUCTION

The development of the world economy and the globalization of food markets have set the task for countries and businesses to increase the level of safety and transparency of food supply chains, including meat products. This problem is especially relevant for Kazakhstan, where agriculture and, in particular, meat production occupies an important place in the structure of the national economy and the formation of export potential. Despite efforts to ensure the quality and safety of meat products, serious problems with the transparency and reliability of data on the origin and conditions of production remain, which creates significant risks for consumers and limits the competitiveness of Kazakhstani meat in the international market. Today, blockchain technology is attracting attention as a promising tool for solving such problems. Blockchain, being a decentralized and immutable data accounting system, can provide a high degree of transparency and security, which allows tracking a product from the manufacturer to the end consumer. Due to its properties, blockchain promises to be an effective solution for increasing the transparency of supply chains. Technology allows the specialists to reliably record each stage of the logistics process, including production, transportation, storage and sales. This creates the possibility of forming a system in which information about the origin of a product, its route and production conditions becomes accessible and unaffected. In a situation where consumers and regulatory authorities seek to increase the level of trust in information about food products, blockchain can meet these needs by providing stable and verifiable access to all product data.

An additional factor influencing the need for blockchain implementation is the growing interest of consumers in food safety and transparency issues. The demand for information about the origin and quality of products is especially high in the context of increasing attention to health and safety issues. In this regard, blockchain technology can not only increase transparency, but also improve quality control, which is important for both end consumers and government agencies responsible for product safety.

The purpose of this study is to analyze the impact of blockchain technology on the transparency of meat supply chains in Kazakhstan, compare its advantages with traditional supply chain management methods and develop strategies for integrating blockchain into the country's meat industry. The study aims to identify key barriers that hinder the use of blockchain technology, as well as to identify approaches that can help overcome these difficulties and improve supply chain management. Interviews with supply chain participants were chosen as the main research method, which allows for a deeper understanding of their views, expectations and needs in the field of blockchain use. An important aspect of the study is to identify the opinions of various segments of the supply chain, including farmers, logisticians, retailers and representatives of regulatory authorities, which allows for a comprehensive picture of the perception of blockchain technology in the meat industry of Kazakhstan.

LITERATURE REVIEW

The development of blockchain technology and its application in agri-food supply chains have attracted the attention of both international and domestic researchers. Current research highlights the importance of this technology in enhancing transparency, traceability, and trust among supply chain participants.

Tian (2017) proposed a concept of a food safety traceability system based on the integration of blockchain, HACCP, and the Internet of Things (IoT) [1]. The author notes that blockchain can significantly reduce the time required to verify the origin of products, providing real-time data availability, which can prevent food scandals and increase consumer confidence.

Galvez et al. (2018) analyze the use of blockchain technology for food traceability [2]. They emphasize the ability of blockchain to ensure data immutability and highlight the challenges associated with the integration of the technology, such as the lack of standards and high implementation costs.

The study by Kamble et al. (2020) focuses on creating a model for the application of blockchain technology in agricultural supply chains [3]. The authors identify key drivers and barriers to the adoption of the technology, focusing on its potential to optimize processes and reduce costs.

Casino et al. (2019) in a systematic review classify blockchain applications in various industries, including the food industry [4]. They note that the technology has been successfully applied to address issues related to security and transparency but emphasize the need for regulatory support and standardization for its widespread adoption.

Sander et al. (2018) examine the adoption of blockchain technologies in the meat industry [5]. The authors show that awareness of the technology and its perceived usefulness are key factors for its adoption. In particular, consumers in emerging markets highly value the ability to trace the origin of products.

Wang et al. (2019) study the impact of blockchain on supply chains by improving transparency and trust between participants [6]. They propose a conceptual model demonstrating the benefits of technology in eliminating information gaps and increasing the effectiveness of communication. Pearson et al. (2019) critically evaluate blockchain as a solution for food traceability [7]. The authors conclude that the effectiveness of the technology depends on the willingness of chain participants to implement it and the use of compatible technologies.

In the context of Kazakhstan, research on the use of blockchain in the meat industry is still limited. In agriculture, the possibilities of using technology to combat counterfeiting and improve product quality control are discussed.

An analysis of the existing literature shows that blockchain has significant potential to improve transparency and traceability in meat supply chains. International studies demonstrate successful examples of the technology's application, but there are specific challenges for Kazakhstan, such as the lack of a regulatory framework, insufficient digitalization, and limited awareness of participants. Domestic initiatives are so far limited to pilot projects and discussions, which emphasizes the need for further research and development of strategies for the implementation of blockchain technologies in the meat industry of Kazakhstan.

MATERIALS AND METHODS

Research approach

To achieve this goal, we used a qualitative data collection method through semi-structured interviews, which allowed us to study in detail the perceptions, needs and barriers to the implementation of blockchain technology. This method provided an opportunity to better understand the participants' motives, current processes and assess their attitudes towards possible changes in the supply chain.

The study involved representatives of key links in the meat supply chain in Kazakhstan. We selected 20 respondents from different regions of the country to ensure maximum representativeness and diversity of views. The sample consisted of:

- Meat farmers and producers (6 participants): representatives of agricultural enterprises engaged in raising cattle, small cattle and other types of meat.
- Transport and logistics companies (5 participants): companies that transport and store meat products during the supply process.
- Retailers and distributors (5 participants): companies and representatives of retail trade that work with end consumers and are interested in increasing trust in products.
- Control and certification bodies (3 participants): representatives of government agencies responsible for product quality control and supervision of safety standards. Blockchain technology expert (1 participant): specialists involved in monitoring the quality and safety of meat products.

Interviews with participants were conducted between June and October 2023. Most of the interviews were conducted in person, but online sessions (via Zoom) were used for participants in remote regions. The average duration of the interview was 60-90 minutes, which allowed respondents to talk in sufficient detail about their experiences and views on the implementation of blockchain technology.

The interviews were conducted in two stages:

Stage 1 (June - August 2023): interviews with farmers and logistics companies. In this stage, we focused on identifying current challenges in the supply chain, such as transparency issues, data loss and manipulation, as well as attitudes towards new technologies, in particular blockchain. Phase 2 (September - October 2023): interviews with retailers, regulatory authorities and a blockchain expert. This phase focused on issues of safety, consumer trust and the need to trace product quality. We also explored what kind of data would be most useful for each link in the chain and how blockchain could help improve their business processes.

All interviews were audio recorded with the prior consent of the respondents. After each interview, the audio recordings were transcribed, and the resulting text data was subjected to content analysis to identify key themes and ideas.

Key interview questions covered the following topics:

- Key challenges related to transparency and data reliability in the meat supply chain.
- Perception of blockchain technology and its potential benefits for improving traceability.
- Potential barriers and risks of blockchain implementation, including technical, economic and legal aspects.
- Recommendations and expectations of participants from the implementation of blockchain technology to improve supply chain transparency.

The data analysis process involved several steps:

Coding: After transcribing the interviews, all texts were broken down into meaningful units, which were then coded according to the key research themes (e.g. “transparency”, “consumer trust”, “barriers to adoption”, “blockchain technology”).

Thematic Analysis: After coding, the main themes that recurred across different participants were identified. This approach allowed us to identify common and specific aspects of interest to representatives of each segment of the supply chain.

Interpretation of Results: A separate analysis was conducted for each segment (farmers, logistics companies, retailers, etc.) to understand how each of them sees the opportunities and challenges of implementing blockchain technology.

The study was conducted exclusively on the basis of qualitative data, and its results are not intended to be quantitatively generalizable. However, qualitative data allows us to gain a deeper understanding of the perceptions of chain participants and to identify potential barriers and incentives for the implementation of blockchain technology.

FINDINGS

The results were structured around the key themes that emerged from the interviews and grouped by the roles of the respondents. The results are presented in the following main areas:

1. Participants' perceptions of blockchain technology
2. Current transparency challenges
3. Barriers and risks to implementation
4. Anticipated benefits

Participants' perceptions of blockchain technology

Respondents from different supply chain segments had different perceptions of the idea of using blockchain. Most respondents expressed moderate interest in the technology, but they had different levels of knowledge about its capabilities and principles of operation.

A lack of understanding of blockchain technology was found among farmers and meat producers (6 participants). They expressed interest in the technology's capabilities but noted that they were unsure of its real benefits for their operations.

"*Blockchain sounds interesting, but it is difficult to imagine how it will help our farm*," commented one of the farmers.

Logistics companies (5 participants) showed a higher interest in blockchain, seeing it as a potential solution for streamlining tracking and data storage.

"*The technology could improve the accuracy of accounting, but it requires large-scale changes in equipment*," said a representative of a logistics company.

Retailers also have certain expectations from blockchain, especially in terms of increasing consumer confidence in products.

"*Consumers are increasingly asking about the origin of products. Blockchain could be useful to convince them of the quality of the goods*," said one of the distributors.

Government agencies (3 participants) see blockchain as a way to improve quality monitoring and control over product safety. They are willing to consider the use of the technology if a regulatory framework is developed.

"*Blockchain could facilitate the work of tracking the origin of a product, but so far the legislation does not allow us to implement such solutions*," said one of the inspectors.

A blockchain expert noted that the potential of the technology is huge, but many barriers need to be overcome for its successful implementation. "Blockchain can be implemented, but large-scale preparation of the infrastructure and all participants in the chain is needed."

Table 1: Level of perception of blockchain technology

Level of perception	Number of respondents
Strong interest	5
Moderate interest	10
Lack of understanding	5

Current transparency issues

Supply chain transparency issues are among the most pressing, with most respondents noting that the lack of transparency contributes to a decrease in consumer trust and also creates risks of data manipulation.

Farmers noted that current record-keeping systems are not transparent enough to ensure accurate traceability of the origin of products to the end consumer.

"*We produce a quality product, but when it reaches the end consumer, it is difficult to prove its origin*."

Logisticians faced problems tracking the movement of goods at different points, especially during long-distance transportation.

"*At some stages, we lose the ability to accurately track the location of the product, which is important for quality*."

Retailers noted that current product information is often not available in full, which reduces consumer trust.

"*Consumers ask where the product comes from, and we cannot always provide complete information*."

Table 2: Key transparency issues

Issue	Number of mentions
Lack of information	8
Risks of data manipulation	6
Unable to trace	6

Barriers and implementation risks

All participants noted various barriers to blockchain implementation, including economic, technical and legal aspects.

The main barrier for farmers is the financial costs of installing new technologies and training staff.

"*It is difficult to invest in technologies if you are not sure that they will bring benefits*."

Logisticians see technical barriers, including the need to update equipment for compatibility with blockchain systems.

"*A large investment in technical equipment is required to implement such a system*."

Control authorities point to the lack of a regulatory framework, which makes it impossible to use blockchain at the state level.

"*Blockchain can improve control, but it is not yet clear how it can be integrated legislatively*."

Table 3: Main barriers to blockchain implementation

Barrier	Number of mentions
Economic costs	7
Technical difficulties	8
Lack of a regulatory framework	5

Anticipated benefits

Respondents expressed hope that blockchain technology can help increase consumer trust, improve quality control, and reduce fraud.

Farmers and retailers see the benefit of blockchain in that it can increase consumer trust.

"*If consumers can see where a product comes from, they will trust it more*."

Logistics companies expect blockchain to allow them to better track the movement of products and reduce errors associated with data transmission.

"*With blockchain, we could see the history of a product in one place, instead of receiving data from different parties*."

Regulatory authorities expect blockchain to help ensure greater data reliability and facilitate control.

"*Blockchain can create a system in which data on the origin of products cannot be manipulated*."

Table 4: Expected benefits of blockchain technology

Benefit	Number of mentions
Increased consumer confidence	10
Improved quality control	6
Reduced fraud	4

The results of the study showed that most participants see the potential for blockchain to improve the supply chain, but also acknowledge the presence of significant barriers. The perception of blockchain varies: logistics companies and regulatory authorities perceive the technology positively, while farmers and producers express doubts due to lack of information and financial barriers.

Thus, successful implementation of blockchain will require:

- Training of supply chain participants.

- Reducing technical and economic barriers.

- Creating a regulatory framework to support blockchain technology.

These results allow us to draw conclusions about the need for further research in this area and possible steps to integrate blockchain into the meat industry of Kazakhstan.

DISCUSSION AND CONCLUSION

The study found that perceptions of blockchain technology by participants in the meat supply chain in Kazakhstan vary depending on their role and the specifics of their work. This difference in responses is explained not only by the level of awareness, but also by the individual expectations of each segment. Farmers and meat producers showed interest in the potential of blockchain but expressed hesitation due to their lack of technical knowledge and the high cost of implementation. Such caution on the part of producers reflects the well-known resistance of small and medium-sized enterprises to new technologies, which is often associated with the financial and time costs of training staff and adapting processes. These findings coincide with general trends indicated in the literature, which emphasize that small businesses need support and information to successfully implement innovations [9]. Logistics companies, on the contrary, see the potential for blockchain to optimize product accounting and tracking, which corresponds to their immediate needs for increased accuracy and reliability of data at each stage of supply. However, they also noted that the current infrastructure does not allow for the implementation of blockchain without modernization. This finding is consistent with research indicating that successful implementation of blockchain in logistics requires significant investment in interoperable tracking systems [10]. This interest from logistics companies is understandable: for them, blockchain could be a solution to the problem of data fragmentation and errors in its transmission between participants.

Retailers and distributors expect that blockchain will help to build consumer trust in products. Their views support the literature indicating that consumers, especially in emerging markets, are increasingly seeking detailed information about the origin of products [5]. This is especially relevant in the context of increasing attention to food safety. Since blockchain technology can provide a continuous and immutable record of product data at every stage of the supply chain, its implementation could meet the needs of both retailers and their customers.

Inspection and certification bodies see blockchain as a solution to improve transparency and security but emphasize the need for a regulatory framework. Their expectations are in line with the generally accepted view that regulatory support is a critical factor for the implementation of blockchain in supply chains. This conclusion is supported by studies that note that legal and regulatory aspects play a key role in the adoption of new technologies in the food industry [11]. Government officials cannot implement blockchain without a formal legal basis for integrating the system.

Based on the findings, the following steps can be proposed for the successful implementation of blockchain technology in meat supply chains in Kazakhstan. First, awareness of the benefits and capabilities of the technology should be raised among chain participants, especially among farmers and producers. Training programs and

seminars can help overcome initial resistance and provide participants with more information on how blockchain can strengthen their businesses. Second, focus should be on upgrading the infrastructure of logistics companies, which will allow integrating blockchain systems with minimal technical difficulties. Third, it is important to develop a legal framework that will regulate the use of blockchain in supply chains, which will create a basis for the formal use of the technology at the government level.

Despite the prospects, certain limitations remain. First, the implementation of blockchain will require significant financial investments, which is especially problematic for farmers and small businesses, who are often limited in resources. Secondly, even with successful modernization of the infrastructure, time is needed for all participants to adapt and for building a new order of interaction. These factors should be taken into account when planning the implementation in order to create the most effective conditions for the transition to blockchain in the meat industry of Kazakhstan.

The study found that the majority of participants in the meat supply chain in Kazakhstan see significant potential for blockchain technology to increase transparency and consumer trust. Participants noted that blockchain could improve the accuracy and availability of data on the origin and quality of products at each stage, which is especially important for end consumers and regulatory authorities. However, despite the obvious benefits, many respondents indicated that there are serious barriers to implementation. The main obstacles were identified as the lack of a regulatory framework, high implementation costs, and the need to modernize the infrastructure. The findings highlight that the implementation of blockchain technologies in the supply chain requires both the creation of a regulatory framework and investments in infrastructure and training of participants. At the state level, the creation of regulatory standards for blockchain in the supply chain could ensure a safer and more transparent meat market, increasing consumer trust and strengthening the reputation of Kazakhstani products in the domestic and international markets. At the business level, the results show that investments in training and technical modernization will help logistics companies and manufacturers adapt to the requirements of blockchain systems and reduce the costs associated with data loss and duplication. One of the main limitations of the study is the relatively small sample size, which may limit the generalizability of the findings. In addition, the study focuses on the specific context of Kazakhstan, which may limit the generalizability of the findings to other markets and regions. Given these limitations, the results may require confirmation in studies covering larger and more diverse samples.

To successfully implement blockchain technology in meat supply chains in Kazakhstan, comprehensive steps are needed. First, further research should be conducted involving a wider range of participants and a more in-depth analysis of economic and technical aspects. Second, government agencies may consider developing a regulatory framework that will provide a legal basis for the use of blockchain in food supply chains. Third, businesses are encouraged to invest in training and infrastructure to overcome existing barriers and take advantage of the opportunities offered by blockchain technology.

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TEMETTÜAT DEFTERİNE GÖRE SELANİK MERKEZ KAZASI, GELMERİYE NAHİYESİ'NE BAĞLI TİLKİLİ (PETRALONA) MAHALLESİ (1844)

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Özet

Bu çalışmada, XIX. Yüzyılda Osmanlı İmparatorluğu'nun Selanik Eyaleti, Selanik Sancağı, Selanik Merkez Kazası, Gelmeriye Nahiyesi'ne bağlı olarak idare altında bir mahalle iken; bugün Yunanistan'ın Orta Makedonya Bölgesi'nde Halkidiki iline bağlı Nea Propontida Belediyesi sınırları içerisinde ve Selanik'e 35 km mesafede dağlık bir köy olan Tilkili (Petralona) Mahallesi'nin 1844 yılı için iktisadi ve sosyal yapısının 11748 numaralı temettüat defteri yardımıyla tespit edilerek sonuçlarının paylaşılması amaçlanmıştır. Temettüat defterinden elde edilen veriler yardımıyla Tilkili (Petrolana) Mahallesinde 1844 yılında sakin 91 hane ve buna karşılık 273 ile 455 arasında bir nüfusun yaşadığı tespit edilmiştir. Nüfusu oluşturan hanelerde sakin bireylerin müslüman ve erbab-ı ziraat olarak kayda geçirildikleri belirlenmiştir. Hanelerde gelir hayvancılık ve hayvancılığa bağlı ticaret ile bağcılık faaliyetinden elde edilen gelirler oluştururken buna karşılık ödemekle yükümlü oldukları vergilerin ise vergi-i mahsusa, öşr ve aded-i ağnam kalemlerinden oluştuğu tespit edilmiştir. Hanelerin toplam vergi yükü gelirlerin yaklaşık olarak %10'una tekabül ederken vergi-i mahsusa hane başına gelirin %10,44'üne denk gelmektedir. Hayvancılık gelirleri ise genel itibari ile küçükbaş hayvancılıktan elde edilmektedir.

Anahtar Kelimeler: Temettüat Defteri, Selanik, Petralona, Vergi, Öşr.

IN ACCORDANCE WITH THE TEMETTUAT REGISTERS, THE TİLKİLİ (PETRALONA) NEIGHBORHOOD, AFFILIATED WITH THE GELMERİYE NAHIYAH (SUBDISTRICT) WITHIN THE SELANİK CENTRAL DISTRICT, IN THE YEAR 1844

Abstract

This study aims to examine the economic and social structure of the neighborhood of Tilkili (Petralona) in 1844, located within the administrative jurisdiction of the Gelmeriye Nahiyah (subdistrict) of the Central District of Thessaloniki, Sanjak of Thessaloniki, and Eyalet of Thessaloniki of the Ottoman Empire during the 19th century. Today, this village is situated within the boundaries of the Nea Propontida Municipality in the Central Macedonia Region of Greece, approximately 35 km away from Thessaloniki, as a mountainous village. The data from the Temettuat Register no 11748 has been utilized to identify and share the findings regarding the aforementioned village. According to the data obtained from the Temettuat Register, it was determined that in the village of Tilkili (Petralona) in 1844, there were 91 households with a population ranging between 273 and 455 individuals. The individuals residing in these households were recorded as Muslims and engaged in agriculture. The main sources of income for these households were livestock farming, trade related to livestock, and viticulture. Conversely, the taxes they were obligated to pay consisted of various items such as vergi-i mahsusa, öşr, and aded-i ağnam. The total tax burden of the households accounted for approximately 10% of their income, with the vergi-i mahsusa representing 10.44% of the income per household. Livestock farming revenues predominantly originated from small ruminant husbandry.

Keywords: Temettuat Registers, Thessaloniki, Petralona, Tax, Tithe.

GIRIŞ

Tanzimat Fermanı (1839), Osmanlı İmparatorluğu'nun Batılılaşma sürecinin ilk somut adımı olarak kabul edilmektedir. Ferman ile bozulan devlet düzeninin yeniden tesis edilmesi amaçlanmıştır. Ancak, hayata geçirilen reformlar sadece devlet işlerinde değil, aynı zamanda ekonomik, askeri, mülki ve hukuki alanlarda da köklü değişikliklere yol açmıştır. Bu reformlar, Osmanlı düşünce yapısında derin bir değişime neden olmuş ve ekonomik alanda da yeni bir düzenin oluşturulması yönünde önemli adımların atılmasına zemin hazırlamıştır. Bu adımlardan birisini de Maliye alanında yapılan reformlar oluşturmaktadır. Maliye alanında tesis edilmesi amaçlanan reformlar ise ağırlıklı olarak vergi düzeni üzerine yoğunlaşmaktadır. Vergi düzeni üzerine gerçekleştirilecek reformların amacına ulaşabilmesi için ise vergiye konu kaynakların tespiti önem arz etmektedir. Bu amaçla üç vergi sayımı

(1838, 1840 ve 1845 yıllarında) "*Emlak ve Arazi ve Hayvanat ve Temettuat"* adı altında tesis edilmiş ve Tanzimat'ın cari olduğu bölgeler ile sınırlı tutulmuştur. Üç vergi sayımından 1838 ve 1840 yıllarına ait vergi sayımlarına ait kayıtlar birtakım usulsüzlük ve eksiklikler barındırmaktadır. Bundan ötürü de içerdiği verilerin güvenilirliği kuşkulu olup araştırmacılara tarafından bu verilere itibar edilmemektedir. Üç vergi sayımından sadece 1845 yılına ait kayıtlar diğer iki vergi sayımına ait kayıtlardan ayrılmaktadır. Literatürde itibar edilen tek vergi sayımı olarak bu vergi sayımın kayıtları araştırmacılar tarafından yoğun bir şekilde kullanılmaktadır. 1845 yılı vergi sayımına ait kayıtlar iki yıllık bir döneme ilişkin verileri içermekte olup 1844 yılı verileri gerçekleşmiş ve 1845 yılı verileri ise gerçekleşmesi tahmin edilen verilere ait kayıtlara ilişkindir. Literatürde ise itibar edilen veri yılı 1844'tür. Çünkü gerçekleşmiş verileri içermektedir. Ancak 1845 yılına ait kayıtlar tutulurken hangi kıstaslara göre bir gerçekleşme tahmininde bulunulduğu tespit edilememiştir. Bu yüzden araştırmacılar tarafından bu kayıtlardan kesin veri içeren 1844 yılına ait veriler kullanılmaktadır (Öztürk, 2003: 289; Efe, 2016: 27-34). İlgili sayımlara ait kayıtlar bugün "*T.C. Cumhurbaşkanlığı Devlet Arşivleri Başkanlığı Osmanlı Arşivi*" kataloglarında muhafaza edilmektedir. Bu kayıtların çoğunluğu ise "*Maliye Nezareti*" tasnifi altında yer almaktadır (Devlet Arşivleri, 2023). İlgili arşiv evrakları ilk defa Tevfik Güran (1985) tarafından kullanılmıştır. O günden bugüne değin ise ilgili arşiv kayıtları yoğun bir şekilde kullanılmaya devam edilmektedir (Bizbirlik ve Atar, 2009; Çakılcı, 2017a; Çakılcı, 2017b; Çam, 2022; Doğanay, 2023; Doğruyol, 2023; Duran, 2021; Durdu, 2022; Karaduman ve Tabakoğlu, 2021; Kaya, 2015; Küçükkalay ve Efe, 2006; Öztürk, 2003; Seyyar, 2019; Temizyürek, 2023; Yaldırak, 2023; Yükçü, Fidancı ve Soysal, 2014;).

Temettüat defterleri köy, mahalle ve/veya nahiye gibi en küçük idari yapılardan herhangi biri için hane bazında; hane reisi başta olmak üzere ilgili hanede vergi ödemekle yükümlü diğer bireylerin isimleri ve hane reisi ile olan yakınlığının derecesi, hane reisi ve hanede bulunan diğer vergi mükelleflerinin meslekleri, hane reisi ve hanede bulunan diğer vergi mükelleflerinin mülkiyetinde veya tasarrufunda bulunan menkul ve/veya gayrimenkul servetin niceliği ve niteliği, hane reisi ve hanede bulunan diğer vergi mükelleflerinin ödemekle yükümlü oldukları ayni ve/veya nakdi vergilerin niceliği ve niteliği ile vergiye konu gelirin ne şekilde elde edildiği, hane reisi ve diğer vergi mükelleflerinin mülkiyetinde bulunan hayvan varlığının niceliği ve niteliğine yönelik iktisadi verileri ihtiva etmektedir (Öztürk, 2000; Güran, 2000: 77-78). Bu veriler, Osmanlı İmparatorluğu başta olmak üzere Türkiye ve aynı zamanda diğer birçok ülkenin de iktisadi ve sosyal tarihi ile ilgili yapılması muhtemel araştırmalar için çok önemlidir. Verilere konu arşiv kayıtlarının çözümlenmesi önceliği ise araştırma alanına dair bir sınırlılık oluşturmaktadır. Fakat arşivdeki kayıtlar gerek lisansüstü tezler gerekse de akademik diğer yayınlar vasıtası ile literatüre kazandırılmaktadır. Böylece araştırma alanına dair ilk sınırlılık bir ölçüde araştırmacılar için ortadan kaldırılmaktadır. Bu ise başta iktisadi ve sosyal disiplinler olmak üzere diğer tüm disiplinlerde de verilerin kullanılabilmesinin önünü açmaktadır (Karaduman ve Tabakoğlu, 2021; Küçükkalay ve Efe, 2006). Bu çalışmada da, T.C. Cumhurbaşkanlığı Devlet Arşivleri Başkanlığı Osmanlı Arşivi kataloglarında Maliye Nezareti tasnifi (ML.VRD.TMT.d…) içerisinde 11748 numara ile kayıtlı temettüat defteri verilerinin benzer surette kullanılması amaçlanmaktadır. İlgili defter kayıtları, XIX. yüzyılda Osmanlı İmparatorluğu idaresi altında, Selanik (Θεσσαλονίκη) Merkez Kazası dâhilinde yer alan Gelmeriye (Καλαμαριά)'ye bağlı olarak idare edilen bir yerleşim yeri iken bugün ise Yunanistan'nın Orta Makedonya Bölgesi'nde Halkidiki (Χαλκιδική) iline bağlı Nea Propontida (Νέα Προποντίδα) Belediyesi sınırları içerisinde ve Selanik'e 35 km mesafede yarı dağlık bir köy olan Petralona (Πετράλωνα) isimli yerleşim yerine ait iktisadi ve sosyal veriler içermektedir (BOA, ML.VRD.TMT.d… 11748; Güvenç, 2014: 46). İlgili bölgeye ait elde edilen verilerin, Selanik ve çevresi özelinde daha önce yapılmış çalışmalar (Çakılcı, 2017a; Çakılcı, 2017b; Çam, 2022; Duran, 2021; Kaya, 2015; Seyyar, 2019) ve bundan sonra yapılması muhtemel çalışma verileri ile birlikte değerlendirildiğinde başta Osmanlı İmparatorluğu olmak üzere Yunanistan iktisat tarihi literatürüne de katkı sunması amaçlanmaktadır. Bu bakımdan, Selanik ve çevresinde yer alan en küçük idari birimlerden birine ait vergi mükelleflerinin gelir dağılımı ve vergi yükleri ile vergi yüklerine konu gelir kalemlerinin niceliği ve niteliğinin tespit edilerek sonuçlarının analiz edilmesi, ilgili arşiv evrakına ait verilerin literatüre ilk defa kazandırılıyor olması ile birlikte çalışmanın özgünlüğüne vurgu yapmaktadır.

TILKILI (PETRALONA) MAHALLESI (1844)

Tilkili, 1845 yılına ait arşiv evrakına göre "*Selanik Eyaleti dâhilinde kâin bizzat idare olunan Selanik Sancağı kazalarından Nefs-i Selanik Kazası nevahisinden Gelmeriye Nahiyesi'nde vaki*" bir mahalle olarak idare olunmaktaydı (BOA, ML.VRD.TMT.d… 11478). İlgili deftere göre Selanik (Θεσσαλονίκη) Merkez Kazası dâhilinde yer alan Gelmeriye (Καλαμαριά)'ye bağlı olarak idare edilen bir yerleşim yeridir. Bugün ise burası, Yunanistan'nın Orta Makedonya Bölgesi'nde Halkidiki (Χαλκιδική) iline bağlı Nea Propontida (Νέα Προποντίδα) Belediyesi sınırları içerisinde ve Selanik'e 35 km mesafede yarı dağlık bir köy olan Petralona (Πετράλωνα) isimli

yerleşim yeri olarak idare olunduğu tespit edilmiştir (Güvenç, 2014: 46). Bu bölge daha çok 1959 yılında Katsika Dağı'nda yer alan mağaranın keşfi ile tanınmaktadır. Yerleşim yeri ile aynı isimdeki bu mağarada 700.000 yıldan daha eski bir tarihte yaşadığı düşünülen bir insana ait kafatası bulunmuştur. 1960 yılında keşfedilen bu kafatası "*Archanthropus Europaeus Petraloniensis*" olarak adlandırılmış olup en eski Avrupa Homo Erectus örneklerinden biri olarak kabul edilmektedir (Poulianos, 1980).

Tilkili (Petralona) Mahallesi'nin Demografik Yapısı (1844)

Temettüat defterleri, hane bazında hazırlanan ve vergi mükelleflerinin gelir kaynakları ve bu kaynaklara ait vergi yükleri ile birlikte kayıt altına alındığı defterlerdir. Bu defterler ilgili kaydın ait olduğu bölgedeki mevcut hane sayısına ulaşmamıza yardımcı olmaktadır. Osmanlı İmparatorluğu'nda sakin nüfusun tespitine yönelik literatürdeki çalışmalara bakıldığında ise hane sayısı ile bölgede sakin toplumların yapısal özellikleri arasında bir ilişkinin varlığına işaret edilmektedir. Buna göre, analize konu bölgede sakin toplumların nüfusu, hane sayısının belli bir katı olacak şekilde tahmini olarak hesaplanabilmektedir. Bu katsayı ise, ilgili toplumun tek eşli veya çok eşli, çekirdek veya geniş aile gibi yapısal özelliğine göre değişmekte olup literatürde genellikle 3 veya 5 olarak kullanılagelmiştir (Barkan, 1943; Cook, 1972; İnalcık, 2010; Lewis, 1951; McGowan, 1969; Russell, 1960: 265-266). Tablo 1'de gösterildiği üzere, Tilkili (Petralona) Mahallesi'nde 1844 yılında mevcut 91 hane bulunmaktadır. Buna göre, 1844 yılında Tilkili (Petralona) Mahallesi'nin nüfusu tahmini olarak 273 ile 455 arasında değişmektedir. Her bir hanede tespit edilen vergi mükellefleri sadece hane reislerinden oluşmaktadır. Buna göre, ilgili hanelerde sakinlerin çekirdek aile tipinde yaşamlarını idame ettirdikleri görülmektedir. Aksi bir durumda ise, temettüat defterlerinin diğerlerinde olduğu gibi, aynı hane içerisinde yaşayan ve vergi mükellefi olduğu için bu sayımlarda kayda geçirilen kardeş, amca ve çocuk gibi hane reisinin aile ve akrabalarının da kaydına rastlanılabilirdi. Hanelerde sakin ahalinin isimlerine bakıldığında ise Tilkili (Petralona) Mahallesi'nin 1844 yılı ve öncesinde Müslüman reayanın iskân edildiği bir idari alan olduğu görülmektedir. İlgili hanelere ait herhangi bir cizye kâğıdına dair bir kaydın varlığına rastlanılmamış olması da bu tespitimizi desteklemektedir. Zira cizye, Islahat Fermanı'na (1856) kadar uygulanan ve gayrimüslim erkeklerden yılda bir defa olmak üzere tahsil edilen bir vergi türüdür (İnalcık, 1993; BOA, KK.d… 3503-3799, BOA, ML.VRD.TMT.d… 11478).

Tablo 1. Tilkili (Petralona) Mahallesi Vergi Mükellefleri ve Haneleri (1844)

Hane	Sıra	Hane Reisi	Hane	Sıra	Hane Reisi	Hane	Sıra	Hane Reisi
1	**1**	İbrahim oğlu Süleyman	**31**	**31**	Halil oğlu İsa	**61**	**61**	Halil oğlu Ahmed
2	**2**	İbrahim oğlu Hasan	**32**	**32**	Ahmed oğlu Mehmed	**62**	**62**	Hasan oğlu Ahmed
3	**3**	İbrahim oğlu İsmail	**33**	**33**	İbrahim oğlu Mehmed	**63**	**63**	Ahmed oğlu Yusuf
4	**4**	Halil oğlu Hasan	**34**	**34**	Mehmed oğlu …	**64**	**64**	Osman oğlu İsmail
5	**5**	Halil oğlu Mehmed	**35**	**35**	Ali oğlu Hüseyin	**65**	**65**	Salih oğlu Ali
6	**6**	Ali oğlu İbrahim	**36**	**36**	İbrahim oğlu Osman	**66**	**66**	Ömer oğlu Mehmed
7	**7**	Mehmed oğlu Ali	**37**	**37**	Osman oğlu Ali	**67**	**67**	Salih oğlu Ali
8	**8**	Mehmed oğlu İbrahim	**38**	**38**	Musa oğlu Halil	**68**	**68**	Osman oğlu Ömer
9	**9**	Halil oğlu Halil	**39**	**39**	Musa oğlu Hasan	**69**	**69**	Ali oğlu Ahmed
10	**10**	İsmail oğlu Ömer	**40**	**40**	Abdürrah oğlu Ahmed	**70**	**70**	Musa oğlu Ahmed
11	**11**	Osman oğlu Agos	**41**	**41**	Halil oğlu Mehmed	**71**	**71**	Mehmed oğlu Ali
12	**12**	Osman oğlu Mustafa	**42**	**42**	İsmail oğlu Ahmed	**72**	**72**	İbrahim oğlu İsmail
13	**13**	Mehmed oğlu Yusuf	**43**	**43**	Ahmed oğlu Selim	**73**	**73**	Mehmed oğlu Ali
14	**14**	Halil oğlu Musa	**44**	**44**	Osman oğlu Ahmed	**74**	**74**	Sarraf oğlu Halil
15	**15**	Ahmed oğlu Ali	**45**	**45**	Osman oğlu Mustafa	**75**	**75**	Mehmed oğlu İsmail
16	**16**	Mehmed oğlu Ömer	**46**	**46**	Veli oğlu İbrahim	**76**	**76**	Mehmed oğlu Hasan
17	**17**	Mehmed oğlu Mehmed	**47**	**47**	Ahmed oğlu Abdülbaki	**77**	**77**	Hüseyin oğlu Hasan
18	**18**	Ömer oğlu Ömer	**48**	**48**	Mehmed oğlu Hasan	**78**	**78**	Ahmed oğlu Mehmed
19	**19**	İbrahim oğlu Mehmed	**49**	**49**	Ahmed oğlu İsa	**79**	**79**	İsmail oğlu Mustafa
20	**20**	Ömer oğlu İbrahim	**50**	**50**	Halil oğlu İbrahim	**80**	**80**	Mehmed oğlu Ali
21	**21**	Ömer oğlu Ahmed	**51**	**51**	Hasan oğlu Ali	**81**	**81**	Mehmed oğlu Hasan
22	**22**	Ömer oğlu Abdürrah	**52**	**52**	Ömer oğlu İbrahim	**82**	**82**	İbrahim oğlu Ali
23	**23**	Hüseyin oğlu Halil	**53**	**53**	Abdürrah oğlu Halil	**83**	**83**	İbrahim oğlu Mehmed
24	**24**	Mustafa oğlu Sinan	**54**	**54**	Mehmed oğlu Yusuf	**84**	**84**	Mehmed oğlu İbrahim
25	**25**	İsmail oğlu İsmail	**55**	**55**	Musa oğlu Hasan	**85**	**85**	Veli oğlu Ömer
26	**26**	Veli oğlu Osman	**56**	**56**	Abdürrah oğlu Hacı	**86**	**86**	Ahmed oğlu Salih
27	**27**	Halil oğlu Ömer	**57**	**57**	İsa oğlu Ali	**87**	**87**	Haydar oğlu Halil
28	**28**	Abdürrah oğlu Salih	**58**	**58**	Ahmed oğlu Hüseyin	**88**	**88**	Mehmed oğlu Abdi
29	**29**	Halil oğlu Hüseyin	**59**	**59**	Süleyman oğlu Süleyman	**89**	**89**	Mehmed oğlu Musa
30	**30**	Musa oğlu Mustafa	**60**	**60**	Süleyman oğlu Ömer	**90**	**90**	Mehmed oğlu Halil
						91	**91**	Ahmed …

Tilkili (Petralona) Mahallesi Gelir Kaynakları (1844)

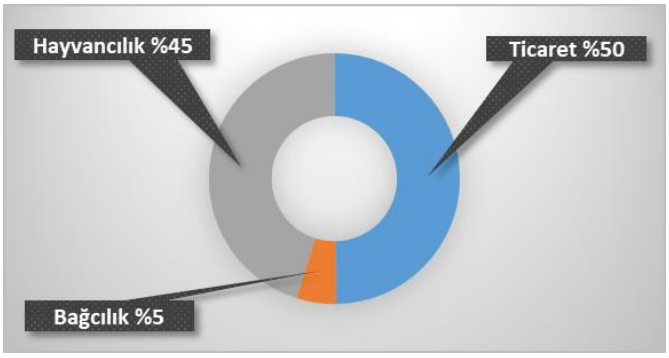
Tilkili (Petralona) Mahallesi'nde sakin 91 hanenin 1844 yılı gelirleri ve bu gelirlerin kaynakları Tablo 2 ve Şekil 1'de verilmiştir. Buna göre mahallenin 1844 yılı gelirleri ticaret, hayvancılık ve bağcılık faaliyetlerinden elde edilen gelirlerden oluşmaktadır. Mahalle sakinlerinin ana gelir kaynağı hayvancılık ve hayvancılığa bağlı ticaret olarak görülmektedir. Hayvancılık faaliyeti ise genel olarak küçükbaş hayvancılıktan elde edilen geliri temsil etmektedir. Bağcılık faaliyeti ise hemen hemen her hanede görülmekte olup hane başına 0,50 veya 1,00 dönüm büyüklüğünde bir alanda icra edilmektedir. Şekil 1'e göre toplam gelirin %50'si ticaret, %45'i hayvancılık ve geriye kalan %5'i ise bağcılık faaliyetinden elde edilen gelirlerden oluşmaktadır.

Tablo 1'e göre Tilkili (Petralona) Mahallesi'nde sakin 91 hanenin 1844 yılı toplam geliri 90.432,75 kuruştur. Toplam gelirin 45.000,00 kuruşu ticaret, 40.817,50 kuruşu hayvancılık ve 4.615,25 kuruşu ise bağcılık faaliyetlerinden elde edilmiştir. Ticaretten elde edilen gelir hanelerde 150,00-1.200,00 kuruş arasında değişirken ortalama olarak ise hane başına 494,51 kuruştur. Hayvancılıktan elde edilen gelir hanelerde 8,00-2.550,00 kuruş arasında değişirken ortalama olarak ise hane başına 448,54 kuruş düzeyindedir. Bağcılıktan elde edilen gelirler ise hanelerde 17,50-150,00 kuruş arasında değişirken ortalama olarak ise hane başına 50,72 kuruş düzeyindedir.

Tablo 2. Tilkili (Petralona) Mahallesi 1844 Yılı Gelir Kaynaklarının Hanelere Göre Dağılımı (Kuruş)

Hane	Ticaret	Bağcılık	Hayvancılık	Toplam Gelir	Hane	Ticaret	Bağcılık	Hayvancılık	Toplam Gelir
1	600,00	60,00	1.860,00	2.520,00	**48**	600,00	27,50	522,50	1.150,00
2	600,00	57,50	585,00	1.242,50	**49**	150,00	22,50		172,50
3	650,00	37,50	410,50	1.098,00	**50**	600,00		214,00	814,00
4	400,00	47,50		447,50	**51**	500,00	80,00	780,00	1.360,00
5	100,00	21,25		121,25	**52**	600,00	50,00	170,00	820,00
6	1.200,00	67,50	1.663,75	2.931,25	**53**	500,00	65,00	450,00	1.015,00
7	200,00	37,50	143,50	381,00	**54**	400,00	40,00	85,00	525,00
8	900,00	50,00	1.220,00	2.170,00	**55**	600,00	65,00	900,00	1.565,00
9	500,00	70,00	660,00	1.230,00	**56**	400,00	80,00	85,00	565,00
10	800,00	80,00	855,00	1.735,00	**57**	700,00	55,00	315,00	1.070,00
11	600,00	100,00	2.550,00	3.250,00	**58**	300,00	65,00	195,00	560,00
12	500,00	80,00	2.450,00	3.030,00	**59**	600,00	22,50	163,00	785,50
13	400,00	75,00	400,00	875,00	**60**	700,00	20,50	221,25	941,75
14	600,00	60,00	610,00	1.270,00	**61**	600,00	20,00	236,25	856,25
15	500,00	47,50	198,00	745,50	**62**	500,00	47,50	305,00	852,50
16	350,00	22,50	322,50	695,00	**63**	300,00	40,00	195,00	535,00
17	600,00	21,25	240,50	861,75	**64**	500,00	50,00	630,00	1.180,00
18	300,00	47,50	216,00	563,50	**65**	400,00	60,00	182,50	642,50
19	700,00	22,50	621,50	1.344,00	**66**	500,00	45,00	172,50	717,50
20	650,00	22,50	554,50	1.227,00	**67**	500,00	75,00	1.120,00	1.695,00
21	600,00	37,50	1.613,50	2.251,00	**68**	300,00	60,00	170,00	530,00
22	500,00	35,00	652,50	1.187,50	**69**	700,00	80,00	340,00	1.120,00
23	400,00	80,00	450,00	930,00	**70**	300,00	50,00	85,00	435,00
24	300,00	50,00	340,00	690,00	**71**	450,00	27,50	124,00	601,50
25	500,00	65,00	375,00	940,00	**72**	600,00	22,50	151,00	773,50
26	300,00	40,00	255,00	595,00	**73**	300,00	27,50	39,00	366,50
27	500,00	50,00	315,00	865,00	**74**	300,00	47,25	220,00	567,25
28	400,00	75,00	400,00	875,00	**75**	700,00	47,50	348,00	1.095,50
29	400,00	80,00	425,00	905,00	**76**	600,00	17,50	324,00	941,50
30	650,00	40,00	560,00	1.250,00	**77**	350,00	27,50	112,50	490,00
31	1.000,00	37,50	465,75	1.503,25	**78**	250,00	22,50	184,00	456,50
32	600,00	75,00	375,50	1.050,50	**79**	600,00	60,00	250,00	910,00
33	600,00	45,00	189,00	834,00	**80**	400,00	45,00	390,00	835,00
34	500,00	37,50	136,00	673,50	**81**	400,00	120,00	195,00	715,00
35	800,00	120,00	1.912,50	2.832,50	**82**	350,00	80,00	8,00	438,00
36	350,00	40,00	255,00	645,00	**83**	350,00	75,00	8,00	433,00
37	400,00	75,00	315,00	790,00	**84**	600,00	60,00	425,00	1.085,00
38	300,00	60,00	110,00	470,00	**85**	400,00	85,00	225,00	710,00
39	800,00	100,00	630,00	1.530,00	**86**	400,00	150,00	8,00	558,00
40	600,00	75,00	750,00	1.425,00	**87**	750,00	27,50	237,00	1.014,50
41	400,00	50,00	552,50	1.002,50	**88**	500,00		147,00	647,00
42	200,00	50,00	46,00	296,00	**89**	450,00		322,00	772,00
43	600,00	57,50	560,00	1.217,50	**90**	150,00			150,00
44	600,00	37,50	1.050,00	1.687,50	**91**		27,50	8,00	35,50
45	750,00	37,50	468,00	1.255,50	**Toplam**	**45.000,00**	**4.615,25**	**40.817,50**	**90.432,75**
46	400,00	47,50	622,50	1.070,00	**Ortalama**	**494,51**	**50,72**	**448,54**	**993,77**
47	250,00		170,50	420,50					

Şekil 1. Tilkili (Petralona) Mahallesi 1844 Yılı Gelirlerinin Kaynaklarına Göre Dağılımı (%)



Tilkili (Petralona) Mahallesi Gider Kaynakları (1844)

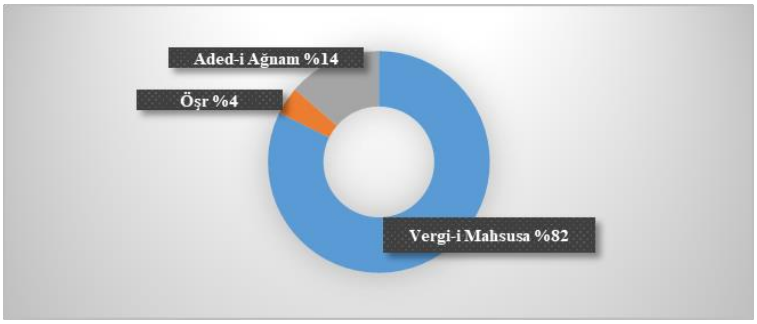
Tilkili (Petralona) Mahallesi'nde sakin 91 hanenin 1844 yılına ait giderlerinin kaynağı birtakım vergi kaleminden oluşmaktadır. Bunlar sırasıyla "vergi-i mahsusa", "öşr" ve "aded-i ağnam" olarak adlandırılan vergilerdir. Bu vergilerin niceliksel ağırlıkları hane bazında Tablo 3'te ve oransal dağılımları ise Şekil 2'de verilmiştir. Tablo 3'e göre Tilkili (Petralona) Mahallesi'nde sakin hanelerin 1844 yılı için ödemekle yükümlü oldukları vergi yükünün toplamı 11.475,75 kuruş ve hane başına toplam ortalama vergi yükü ise 126,11 kuruş olarak tespit edilmiştir. Aynı zamanda her bir hanenin ortalama vergi yükü gelirlerinin %12,69'una tekabül etmektedir.

Vergi-i mahsusa, Tanzimat Fermanı (1839) ile birlikte fermanın uygulandığı yerlerde "tekâlif-i örfiye" adı altındaki vergilerin kaldırılarak yerine mükelleflerin geliri/kazancı ve servetleri ölçüsünde Maliye Nezareti'nin eyaletler düzeyinde belirlediği bir vergi türüdür (Akkuş, 2017: 44-45). Hanelerin 1844 yılı toplam vergi yükünün 9.444,88 kuruşunu (ortalama olarak %82,30'unu) Vergi-i Mahsusa tek başına oluşturmaktadır ve bu vergi her bir hanede hane reisinden tahsil edilmektedir. Hane başına ortalama Vergi-i Mahsusa miktarı ise 103,79 kuruş olarak tespit edilmiştir. Buna göre Vergi-i Mahsusa her bir hane ortalama gelirinin %10,44'üne tekabül etmektedir. Öşr ise miri araziler üzerinde gerçekleştirilen her bir tarımsal faaliyetten elde edilen ürün miktarına göre genel itibariyle onda bir oranında aynı olarak tahsil edilen bir vergi türüdür (Tabakoğlu, 2007). Tilkili (Petralona) Mahallesi sakinlerinden ise bu vergi "öşr-ü üzüm" olarak bağcılık faaliyetlerinden elde edilen gelire karşılık olarak onda bir oranında tahsil edilmiştir. Buna göre 1844 yılın için hanelerin toplam vergi yükü içerisinde öşr miktarı 463,73 kuruş ve hane başına ortalama ise 5,10 kuruş olarak tespit edilmiştir. Bir diğer vergi olan aded-i ağnam resmi ise mükelleflerin sahip olduğu küçükbaş hayvanlar (koyun ve keçi) üzerinden sağman veya kısır olmasına göre değişen fakat sahip olduğu hayvan başına tahsil edilen bir vergidir (Emecen, 1988). 1844 yılında hanelerin vergi yükleri içerisinde aded-i ağnam toplam 1.567,15 kuruş ve hane başına ortalama ise 17,22 kuruş olarak tespit edilmiştir. Aded-i ağnam kalemi hanelerin ortalama vergi yükünün %13,66'sına, hayvancılıktan elde ettiği gelirlerin ise %3,84'üne tekabül etmektedir (BOA, ML.VRD.TMT.d… 11748; Tablo 3; Şekil 2)

Tablo 3. Tilkili (Petralona) Mahallesi 1844 Yılı Vergi Yükünün Hanelere Göre Dağılımı (Kuruş)

Hane	Vergi-i Mahsusa	Öşr	Aded-i Ağnam	Toplam Gider	Hane	Vergi-i Mahsusa	Öşr	Aded-i Ağnam	Toplam Gider
1	253,13	6,00	67,50	326,63	**48**	125,63	2,75	18,75	147,13
2	129,50	5,75	22,50	157,75	**49**	22,13	2,25		24,38
3	111,63	3,75	14,25	129,63	**50**	83,63		7,80	91,43
4	38,25	4,75		43,00	**51**	135,63	8,00	30,00	173,63
5	18,75	2,13		20,88	**52**	74,88	5,00	6,00	85,88
6	295,00	6,75	76,50	378,25	**53**	119,88	6,50	16,50	142,88
7	33,75	3,75	5,25	42,75	**54**	55,50	4,00	3,00	62,50
8	196,00	5,00	48,00	249,00	**55**	176,00	6,50	33,00	215,50
9	122,75	7,00	27,00	156,75	**56**	49,25	8,00	3,00	60,25
10	175,00	8,00	34,50	217,50	**57**	127,00	5,50	10,50	143,00
11	186,50	10,00	100,50	297,00	**58**	48,63	6,50	7,50	62,63
12	285,00	8,00	105,00	398,00	**59**	74,00	2,25	6,00	82,25
13	83,50	7,50	13,50	104,50	**60**	122,50	2,05	10,00	134,55
14	125,50	6,00	24,00	155,50	**61**	122,50	2,00	10,70	135,20
15	67,75	4,75	8,55	81,05	**62**	87,00	4,75	10,95	102,70
16	58,00	2,25	12,00	72,25	**63**	58,50	4,00	7,50	70,00
17	87,00	2,13	8,55	97,68	**64**	129,38	5,00	21,00	155,38
18	59,00	4,75	7,50	71,25	**65**	75,88	6,00	6,75	88,63
19	155,75	2,25	23,85	181,85	**66**	93,00	4,50	7,50	105,00
20	128,63	2,75	20,25	151,63	**67**	186,50	7,50	42,00	236,00
21	186,75	3,75	40,65	231,15	**68**	54,50	6,00	6,00	66,50
22	122,50	3,50	23,25	149,25	**69**	122,50	8,00	12,00	142,50
23	98,50	8,00	16,50	123,00	**70**	43,50	5,00	3,00	51,50
24	87,50	5,00	12,00	104,50	**71**	57,63	2,75	4,50	64,88
25	98,50	6,50	12,00	117,00	**72**	88,50	2,50	5,70	96,70
26	69,50	4,00	9,00	82,50	**73**	44,25	2,75	1,50	48,50
27	78,88	5,00	10,50	94,38	**74**	57,75	4,73	7,95	70,43
28	110,50	7,50	13,50	131,50	**75**	120,50	4,75	12,90	138,15
29	86,50	8,00	15,00	109,50	**76**	98,50	1,75	12,30	112,55
30	135,63	4,00	21,00	160,63	**77**	48,50	2,75	3,60	54,85
31	187,63	4,75	22,05	214,43	**78**	49,88	2,25	7,30	59,43
32	116,50	7,50	13,50	137,50	**79**	110,50	6,00	9,75	126,25
33	107,00	4,50	6,00	117,50	**80**	86,50	4,50	15,00	106,00
34	85,00	3,75	4,80	93,55	**81**	86,50	12,00	7,50	106,00
35	295,00	12,00	75,00	382,00	**82**	24,00	8,00	7,50	39,50
36	68,75	4,00	9,00	81,75	**83**	24,13	7,50		31,63
37	87,75	7,50	10,50	105,75	**84**	113,25	6,00	15,00	134,25
38	43,75	6,00	4,50	54,25	**85**	63,00	8,50	8,25	79,75
39	185,63	10,00	32,00	227,63	**86**	43,75	15,00		58,75
40	134,50	7,50	35,00	177,00	**87**	119,25	2,75	8,55	130,55
41	122,50	5,00	26,00	153,50	**88**	83,50		5,25	88,75
42	27,63	5,45	1,50	34,58	**89**	84,13		11,55	95,68
43	177,25	5,75	21,00	204,00	**90**	11,00			11,00
44	188,00	3,75	42,00	233,75	**91**	46,00	2,75		48,75
45	148,00	3,75	18,00	169,75	**Toplam**	**9.444,88**	**463,73**	**1.567,15**	**11.475,75**
46	87,50	4,75	23,70	115,95	**Ortalama**	**103,79**	**5,10**	**17,22**	**126,11**
47	48,50		6,45	54,95					

Şekil 2. Tilkili (Petralona) Mahallesi 1844 Yılı Vergi Yükü Oransal Dağılımı



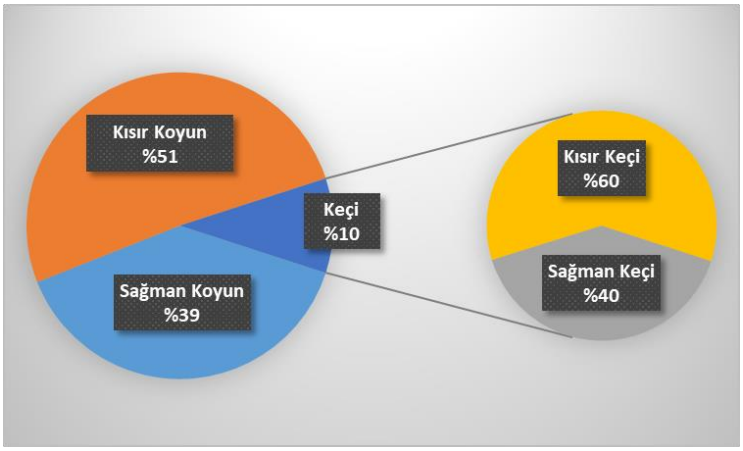
Tilkili (Petralona) Mahallesi Hayvancılık Faaliyetleri (1844)

Tilkili (Petralona) Mahallesi'nde sakin 91 hanenin 1844 yılı itibariyle ana hayvancılık faaliyeti küçükbaş hayvancılıktır. Küçükbaş hayvancılıkta ise hâkim hayvan varlığı koyun olarak tespit edilmiştir. Birkaç hanede keçi varlığı ayrıca tespit edilmiştir. Mahallenin coğrafi olarak dağlık bir bölgede konuşlu olması küçükbaş hayvancılık için uygun koşulları beraberinde sağlamaktadır. Mahalle sakinlerinin 1844 yılı hayvan varlığına dair veriler Tablo 4'te, hayvan varlığının oransal dağılımı ise Şekil 3'te verilmiştir. Buna göre 1844 yılında Tilkili (Petralona) Mahallesi'nde sakin 91 hanenin toplam hayvan varlığı 10.986'sı küçükbaş, 21'i büyükbaş ve 252'si ise binek hayvanı olmak üzere toplam 11.259 baştır. Küçükbaş hayvanların ise 4.285 başı sağman ve 5.604 başı kısır olmak üzere 9.889 baş koyun ile 441 başı sağman ve 656 başı kısır olmak üzere 1.097 baş keçi varlığından oluşmaktadır. Hane başına ortalama küçükbaş hayvan varlığı ise 120,73 olarak tespit edilmiştir. Hane başına koyun varlığı ortalama 108,67 baş ve keçi varlığı ortalama 12,05 baş olarak tespit edilmiştir.

Tablo 4. Tilkili (Petralona) Mahallesi 1844 Yılı Hayvan Varlığının Dağılımı (Baş)

Hane	Küçükbaş					Büyükbaş	Binek	Hane	Küçükbaş					Büyükbaş	Binek
	Sağman Koyun	Kısır Koyun	Sağman Keçi	Kısır Keçi	Toplam				Sağman Koyun	Kısır Koyun	Sağman Keçi	Kısır Keçi	Toplam		
1	210	240			450		5	**49**							1
2	60	90			150		4	**50**	24	28			52		3
3	43	61			104		3	**51**	80	120			200		3
4							1	**52**	20	20			40		3
5							1	**53**	50	60			110		2
6	140	145	90	135	510		3	**54**	10	10			20		2
7	16	19			35		2	**55**	100	120			220		5
8	120	200			320		3	**56**	10	10			20		2
9	60	120			180		3	**57**	40	30			70		2
10	80	150			230		5	**58**	20	30			50		2
11	250	420			670		5	**59**	18	22			40		1
12	200	500			700		6	**60**			45	55	100		2
13	50	40			90	1	1	**61**			48	59	107		2
14	60	100			160	1	4	**62**	35	38			73	2	2
15	23	24			47	2	5	**63**	20	30			50		1
16	35	45			80		2	**64**	80	60			140		3
17	28	29			57		3	**65**	20	25			45		3
18	24	26			50		2	**66**	25	25			50		2
19	64	95			159		3	**67**	120	160			280		3
20	62	73			135		3	**68**	20	20			40		2
21	196	175			371		7	**69**	40	40			80		3
22	75	81			156		3	**70**	10	10			20		2
23	50	60			110		4	**71**	14	16			30		2
24	40	40			80		3	**72**	16	22			38	1	2
25	50	30			80		3	**73**	4	6			10	1	1
26	30	30			60		2	**74**	25	28			53		2
27	40	30			70		2	**75**	38	48			86		2
28	50	40			90		3	**76**	34	48			82		2
29	60	50			110		2	**77**	15	9			24		2
30	60	80			140		3	**78**	19	28			47		2
31	35	17	38	57	147		3	**79**	25	40			65		3
32	43	47			90		4	**80**	40	60			100		2
33	19	21			40		2	**81**	20	30			50		3
34	16	16			32		3	**82**						2	2
35	150	200	100	150	600		10	**83**						2	2
36	30	30			60		2	**84**	50	50			100		2
37	40	30			70		2	**85**	25	30			55		2
38	10	20			30		2	**86**						2	2
39			120	200	320		3	**87**	27	30			57		3
40	150	200			350	4	6	**88**	18	18			36		2
41	110	150			260		3	**89**	37	40			77		1
42	6	4			10		3	**90**							
43	60	80			140		6	**91**						2	2
44	100	180			280		4	**Toplam**	**4.285**	**5.604**	**441**	**656**	**10.986**	**21**	**252**
45	48	72			120	1	3	**Ortalama**	**47,09**	**61,58**	**4,85**	**7,21**	**120,73**	**0,23**	**2,77**
46	65	93			158		3		**108,67**		**12,05**				

Şekil 3. Tilkili (Petralona) Mahallesi 1844 Yılı Hayvan Varlığının Oransal Dağılımı



SONUÇ VE ÖNERILER

Bu çalışmada, XIX. Yüzyılda Osmanlı İmparatorluğu'nun Selanik Eyaleti, Selanik Sancağı, Selanik Merkez Kazası, Gelmeriye Nahiyesi'ne bağlı olarak idare altında bir mahalle iken; bugün Yunanistan'ın Orta Makedonya Bölgesi'nde Halkidiki iline bağlı Nea Propontida Belediyesi sınırları içerisinde ve Selanik'e 35 km mesafede dağlık bir köy olan Tilkili (Petralona) Mahallesi'nin 1844 yılı için iktisadi ve sosyal yapısının 11748 numaralı temettüat defteri yardımıyla tespit edilerek sonuçlarının paylaşılması amaçlanmıştır. Buna göre 1844 yılında bölgede sakin 91 hane bulunmaktadır. Hanelerin tamamında yaşayan nüfus ise tahminen 273 ile 455 arasındadır. Her bir hanede birer vergi mükellefi bulunurken kendileri ile birlikte aynı hanede yaşayan bir akraba veya aile üyesine ayrıca rastlanılmamıştır. Ayrıca hem vergi mükelleflerinin isimleri hem de cizye kâğıdına dair bir verinin bulunmayışı ilgili mahalle ahalisinin Müslüman reayalardan müteşekkil olduğunu kanıtlamaktadır. Hanelerdeki tüm vergi mükelleflerinin mesleği Erbab-ı Ziraat olarak kayıtlarda tespit edilirken hâkim gelir kaynaklarını hayvancılık ve hayvancılığa konu ticaret ile bağcılıktan elde ettikleri gelir kalemleri oluştururken buna karşılık ödemekle yükümlü oldukları vergi yükünü ise vergi-i mahsusa, öşr ve aded-i ağnam kalemleri oluşturmaktadır. Hanelerin zirai faaliyetine konu bağcılık ise hane başına 0,50 veya 1,00 dönüm arazi üzerinde icra edilmektedir. Hanelerin 1844 yılı için toplam geliri 45.000,00 kuruşu ticaret, 40.817,50 kuruşu hayvancılık ve 4.615,25 kuruşu bağcılıktan olmak üzere toplam 90.432,75 kuruştur. Hane başına ortalama gelir ise 993,77 kuruştur. Hanelerin vergi yükleri incelendiğinde ise 9.444,88 kuruşu vergi-i mahsusa, 1.567,15 kuruşu aded-i ağnam ve 463,73 kuruş olmak üzere toplam 11.475,75 kuruş olarak tespit edilmiştir. Hane başına vergi yükü ise ortalama 126,11 kuruştur. Vergi-i Mahsusa hane gelirinin ortalama %10,44'üne, aded-i ağnam ise hayvancılıktan elde edilen gelirlerin ortalama %3,84'üne tekabül ettiği ve bağcılıktan elde edilen gelirden ise öşr vergisinin onda bir oranında ve ayni olarak tahsil edildiği ayrıca tespit edilmiştir. Hanelerde hayvancılık genel itibari ile küçükbaş hayvancılık üzerinden icra edilirken hâkim hayvan varlığı ise koyundur. Bölgenin dağlık bir coğrafi yapıda olması küçükbaş hayvancılığı destekler niteliktedir. Hanelerde 4.285'i sağman ve 5.604'ü kısır olmak üzere toplam 9.889 baş koyun, 441'i sağman ve 656'sı kısır olmak üzere toplam 1.097 baş keçi tespit edilmiştir. Buna göre hanelerdeki toplam küçükbaş hayvan 10.986 baştır. 21 baş büyükbaş ve 252 baş binek hayvan da bu rakama dâhil edildiğinde ise hanelerdeki hayvan varlığı toplam 11.259 baş olarak tespit edilmiştir.

Temettüat defterleri iktisadi ve sosyal tarih çalışmalar için değerli veriler içeren birer arşiv evrakı olmasının yanı sıra diğer araştırma sonuçları ile bütünlüklü olarak değerlendirildiğinde ise başta Osmanlı İmparatorluğu ve Türkiye iktisat tarihi olmak üzere diğer birçok ülke iktisat tarihi araştırmaları için ön açıcı olacaktır. Bu araştırma verileri diğer benzer bölgelerin araştırma verileri ile bütünlük olarak değerlendirildiğinde bu bölgelerin gelir dağılımları üzerine çalışmalar geliştirilebileceği gibi aynı bölgede mikro düzeyde karşılaştırma yapılabilmesine imkân verebilecektir. Mikro düzeyde elde edilen verilerin makro düzeyde yapılması muhtemel araştırmalara kaynak teşkil edeceği düşünülmektedir.

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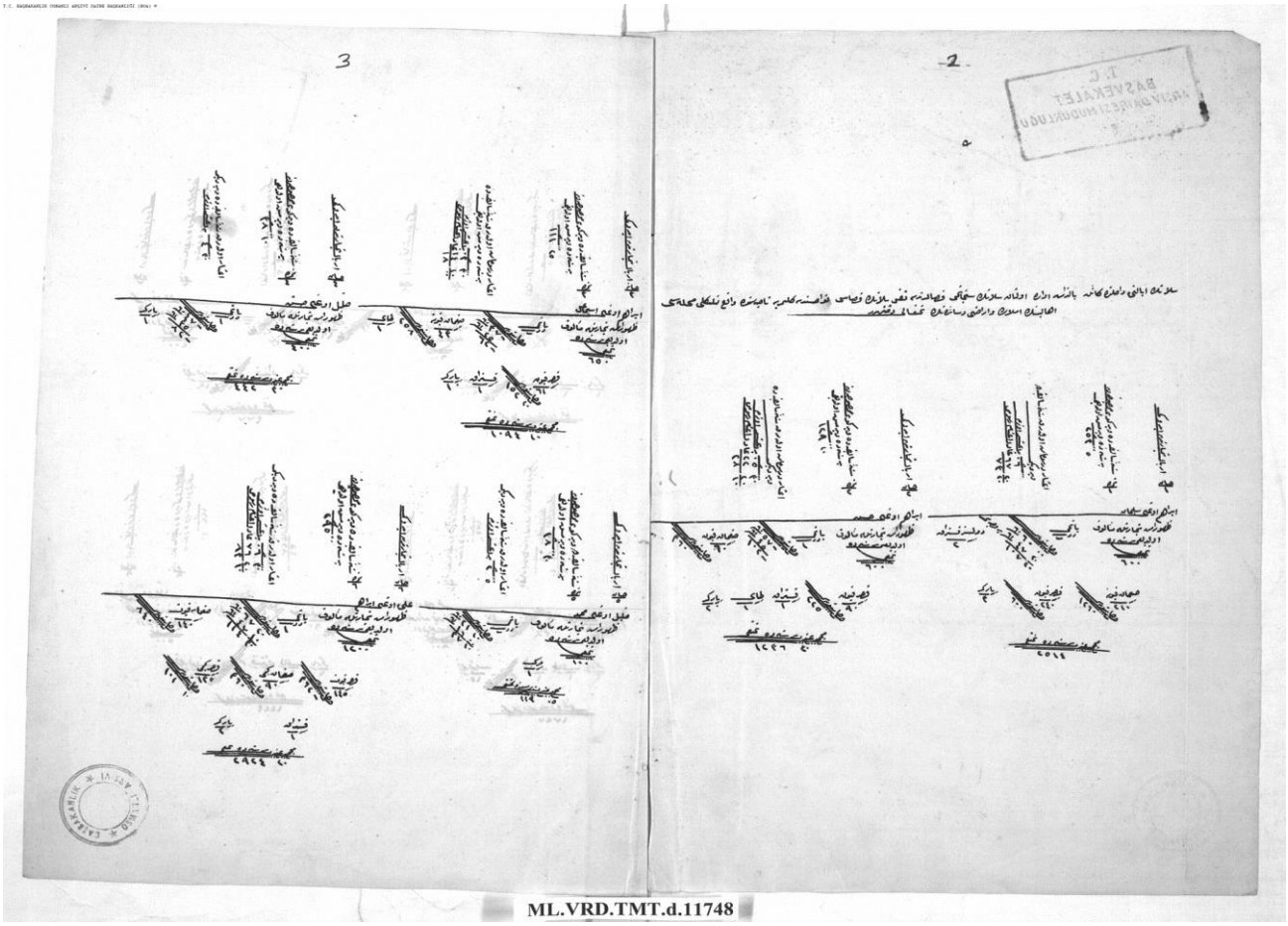
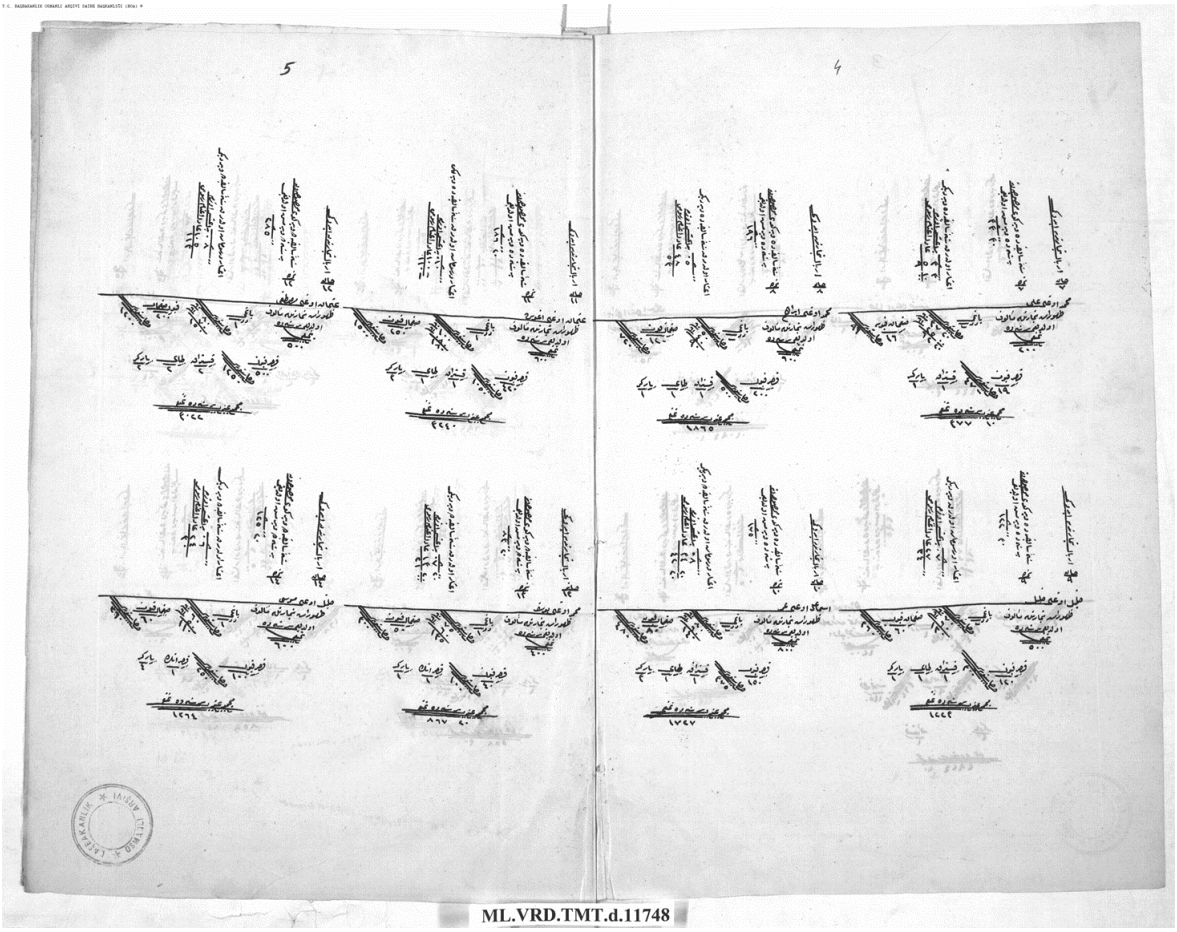
EK-1: Tilkili (Petralona) Mahallesi Temettüat Defteri (BOA, ML.VRD.TMT.d… 11748) Örnek-1



EK-2: Tilkili (Petralona) Mahallesi Temettüat Defteri (BOA, ML.VRD.TMT.d… 11748) Örnek-2



PROCURING PARETO EFFICIENCY IN ECOLOGICAL ECONOMICS: THE MEDIATING ROLES OF INDUSTRY 5.0 AND HUMAN BEHAVIOR

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Abstract

The anthropogenically induced climate change is widely acknowledged as one of the most significant market failures on a global scale. Currently, a conundrum exists where countries prioritizing Environmental Restoration (ER) experience diminished Economic Growth (EG) and vice versa. There is a pressing need for interdisciplinary research to comprehend the strategies required to effectively address environmental restoration comprehensively. In this paper, we aim to undertake a three-dimensional study, considering economic, ecological, and behavioral variables, and recognizing their interdependent nature. Our study proposes an innovative graphical framework to evaluate the trade-off between EG and ER, ultimately striving for Pareto efficiency in ecological economics. The data is categorized into Developed Countries (DCs) and Less Developed Countries (LDCs) spanning the years 1995 to 2022. Structural Equation Model (SEM) has been employed to conduct mediation analysis. In developed countries, the correlation between economic growth and environmental restoration is direct, as it remains unaffected by Industry 5.0 and pro-environmental human behavior. Consequently, the "Pareto optimal ER hypothesis" is refuted in this context. Conversely, in less developed countries, economic growth reduces ecological footprints, with Industry 5.0 and pro-environmental human behavior serving as mediators. Notably, Industry 5.0 exerts a "complete" mediation, while pro-environmental human behavior exerts a "partial" mediation in this nexus. Thus, the postulated "Pareto optimal ER hypothesis" holds in less developed countries, suggesting a possible harmonization of economic growth and environmental restoration. In instances of discord, less developed countries may resort to the application of the Coase Theorem. In these settings, government interventions, such as eco-innovation and renewable energy consumption, and public interventions, such as social trust, religiosity, and confidence in governments, can effectively mitigate market failures in the ecological sector, reduce ecological footprints, and facilitate environmental restoration.

Keywords: Ecological Footprints, Industry 5.0, human behavior, renewable energy, patents, Structural Equation Modeling, Pareto efficiency, market failure

INTRODUCTION

Undeniably, the Industrial Revolution is one of the most destructive factors that paved the way for environmental demolition (Baysal, 2023; He et al., 2023). Consequently, environmental economist Lord Stern has pronounced *climate change* as one of the biggest market failures the world has ever observed. The anthropogenically stimulated environmental deterioration and ecological imprints are intimidatingly high and their aftermath is certainly challenging the intellect of inter alia, social, economic, geological, genomic, financial, and governance spheres (Kalkuhl & Wenz, 2020; Dassargues & Orban, 2023). However, the literature has failed to take into account the fierce dynamism and broader spectrum of environmental challenges, which certainly calls for multidimensional research (Miocic et al., 2023; Compernolle et al., 2023). Industry 5.0. can potentially leash the environmental fiasco since it is environment and human-friendly, efficient, and based on innovative technology (Stephanie et al.,

2022; Alves et al., 2023). The Intergovernmental Panel on Climate Change (IPCC) has also identified that all the available tools of intervention have not been explored by researchers and governments and behavioral interventions are one of them (Nielsen et al., 2020).

Countries on the whole and developing countries to be specific are contaminating the global environment rapidly in the wake of economic growth (Jahanger et al., 2022). To be specific the developing and emerging economies are exacerbating environmental deterioration. According to the statistics of the World Bank (2019), the share of developing countries in the global economy has increased by 32 percent since 1990. Still, on the flip side, they attained this Economic Growth (EG) by doubling the carbon emanations. In the wake of debilitating environmental deterioration, the United Nations (UN) has declared this decade (2021-2030) as "A Decade on Ecosystem Restoration".

The inefficient allocation of resources between EG and environmental restoration endeavors impedes the quest for sustainable economies and the environment. On top of it, *i)* lack of perfect competition, *ii)* persistently escalating negative externalities e.g. greenhouse gas (GHG) emissions, ecological footprints, water pollution, soil contamination, *iii)* free-rider problems in public goods e.g. public parks, forests, water bodies e.g. lakes, rivers, and seas, and *iv)* information asymmetries between government and general masses about environmental challenges and mitigation goals constitute the market failure in environmental economics (Liu et al., 2019). That requires a two-way stream of integrated actions/ interventions from the government and masses in the form of advanced green technology and pro-environmental behavior respectively (Stern et al., 2016; Nielsen et al., 2021).

However, the countries be they developed or less developed, are confronted with a contemporary dilemma when these countries inadvertently focus on EG, they end up having poor environmental quality, conversely while seeking Environmental Restoration (ER) they observe decelerating EG (Ritu & Kaur, 2023; Li et al., 2023). Against this backdrop, there has been a heated debate in the economic, behavioral, and ecological spheres on how to strike a balance between increased EG and decreased environmental destruction simultaneously. However, little empirical research analyzes and digs deeper into the factors. Therefore, this tri-dimensional research is a torch bearer in filling this gap by investigating the interplay of behavioral, economic, and ecological variables (as mediators) that can tweak and improve the impact of EG on environmental quality.

The adoption of and compliance with Industry 5.0 improves production quality and reduces environmental devastations by curbing carbon emissions (ElFar et al., 2021). Therefore, it is also likely to fulfill sustainable development goals/SDG 7 (affordable and clean energy), SDG 9 (industry, innovation, and infrastructure) SDG 12 (responsible consumption and production), and SDG 13 (climate action) (Kasinathan et al., 2022). It can also sustain a firm's competitive edge without compromising the ecological environment (Kolaro et al., 2023). In developed and emerging economies Industry 5.0 can accelerate technological competitiveness and EG if they have apt education, advanced skill sets, trained personnel and digitization, and contemporary/ eco-friendly organizational strategy (Alvarez-Aros et al., 2021; Kasinathan et al., 2022). It is also said to assist the urban development process, and the design and regulation of smart cities (Sharma et al., 2020) through robotics and artificial intelligence (Alves et al., 2023). The literature projects the positive implications of Industry 5.0, however, its direct impact on EFs particularly in the EG and environmental nexus is nevertheless unknown and calls for an investigation.

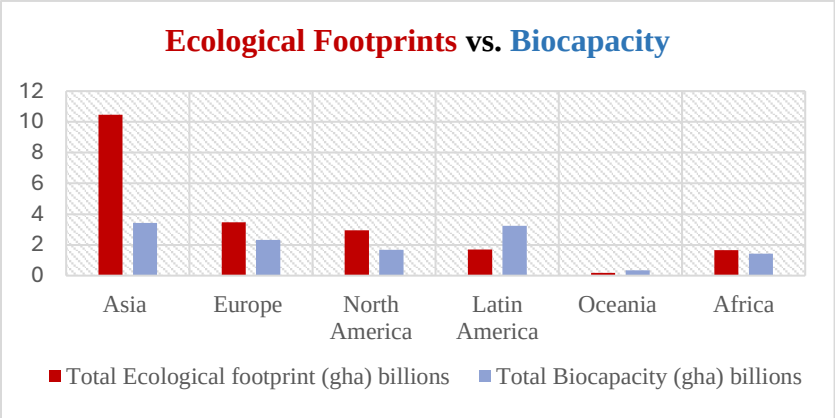
The concept of Industry 5.0 is nevertheless in the neonate stage. Regarding its impact on ER, the literature is muted. One of the major reasons is there is not a single sound proxy to empirically regress the industry 5.0 variable and explore its relation with other variables. However, the literature does hint at its constituents such as renewable energy consumption, and green technology that is environment and human-friendly, relatively easier to put into practice and proliferate (Stephanie et al., 2022). Therefore, after analyzing these nuances from the literature a new Industry 5.0 variable is formed to underpin the empirical and inferential-based scaffold in environmental research.

The anthropogenically induced environmental deterioration ought to be rectified through the involvement of humans and their behavioral modification. The term "Behavioral interventions" refers to those sets of actions that reap more fruits in terms of lower GHG emissions, either on their own or by interacting with conventional economic policies (Lippke et al., 2023). Behavior interventions independently or in aggregation with conventional policy interventions tend to exert a positive and paramount impact on environmental restoration. Such interventions are designed keeping in view the awareness, cognition, culture, education, motivation, habits, norms, and biases of the targeted masses (Stern et al., 2016). This ensures the implementation of tailored policies, helps

in better action adaptations, and maximizes the outcome of interventions (Nielsen et al., 2021). On the flip side, the efficacy of behavioral interventions in a society entails a specific set of human behaviors and characteristics such as "social trust", the extent of "religiosity", "confidence in the incumbent government", "confidence in native institutions", and confidence in international environmental organizations, etc.

The recent streak of behavioral surveys has partially helped in studying the behavioral and cognitive characteristics of humans (Lieberman et al., 2023; Polychronakis, 2023), subsequently, the concepts like; "behavioral interventions" (Lippke et al., 2023) and "nudging for nature" (Mills & Whittle, 2023) are attracting widespread attention. One of the most important human behavioral characteristics is the prevalence of "social trust" to evade the free-rider problem (Podlipniak, 2023) Social trust improves the quality of the natural environment (Gür, 2020; Wilson et al., 2023) by reducing Co2 emissions (Zhang & Fu, 2023; Carattini & Jo, 2018). In quest of infinite EG, propagation of globalization prospects, and proliferation of industrialization, human beings have altered the earth's ecosystems (Hartsell, 2023; Laurent, 2023; Cooke et al., 2019). The global economy has been going through a transition period from industrialized/ polluted economies to environmental sustainability (Bashir et al., 2023; Afshan et al., 2022). Therefore, to keep environmental destruction to a bare minimum and onset ER, the Paris Agreement (2015) signatories pledged to retain the rise in temperature around 1.5 to 2 degrees Celsius by 2030 and attain carbon neutrality by 2050 (Denchak, 2018). Since then, countries have strived to devise comprehensive, and feasible measures to restrain Greenhouse Gases emanations.

The gravity of the problem can be estimated from the fact that 80 percent of the Earth's residents are already living in ecologically deficient countries (GFN, 2022). The distinct depiction of regional ecological accounts can be seen in Figure 1, which clearly illustrates that the "***Ecological deficit"*** is highest in the Asian region followed by Europe, North America, and Africa.



(Source: Fetched data from Global Footprint Network and Graphed by Author)

Figure 1: Comparative Analysis of Regional Ecological Footprints (2018)

Europe, North America, and Africa are also known as *"ecological debtors*", whereas only two regions have the leverage of "***ecological surplus"*** namely, Latin America and Oceania (including Australia) they are also known as *"ecological creditors."* Such a state of affairs calls for comprehensive restoration measures.

Paul Romer has modified his endogenous growth theory and proposed a roadmap to address environmental deterioration and climate change (and secured a Nobel Prize in 2018) stating that "Both the speed and nature of EG, (whether sustainable or based on resource depletion) will depend on the policy choices undertaken today, concerning infrastructure and technologies. The same goes for de-carbonization". Therefore, apt policy formulation is the key to addressing the said issue, which should be backed by implementation by the government and the masses at large.

Therefore, keeping in view neoteric theoretical postulations, it has been deemed inevitable to empirically measure the two-way stream of environmental restoration (ER) endeavors. Therefore, this paper firstly takes into account the government initiatives to address ER which entails Industry 5.0's indigenous development or foreign acquisition in Developed Countries (DCs) and Less Developed Countries (LDCs). However, the second stream

focuses on behavioural interventions such as the role of social trust and religiosity in ER. Stern et al., (2016) also validate and suggest that households and organizations are the two central catalysts in the reduction of fossil fuel consumption, carbon emissions, and overall environmental decay. Therefore, it has been hypothesized that Industry 5.0 and pro-environmental human behavior (PEHB) interventions could potentially be the lost pieces of the environmental restoration puzzle that researchers have been looking for.

LITERATURE REVIEW

The anthropogenic activities are the major contributor to GHG emissions and environmental destruction followed by natural instances (Wang et al., 2023; Voumik et al., 2023). Ironically, plentiful research on Economic Growth (EG) and environmental dynamics does not do justice, since major players (human behavior) or stakeholders (human beings) have not been represented adequately in the literature. The role of human behavior is under-explored in the wake of scant behavioral data. The rationale of any specific human behavior and its decision-making process is quite challenging to estimate (Sáenz-Royo et al., 2023). Additionally, the behavioral anomalies, for instance; the commons dilemma and free-rider problem are difficult to modify since these are deeply engraved and imprinted in social norms. However, these issues have been exacerbating as free and open access and over-exploitation of natural resources have posed several environmental challenges and market failures (Williams et al., 2023; Ding & Song, 2023) which are quite evident in the form of global warming, climate change, sea-level rise, incidence of natural calamities, deteriorating biocapacity and EFs, extinction of biologically diverse species and so forth. Fortunately, the era of felonious ignorance and silence is subsiding, as governments and individuals have started taking some practical steps that need to be researched and highlighted (Tedesco et al., 2023). Interdisciplinary research has been deemed necessary to study behavioral, socio-economic, and environmental dynamics (Ogaga et al., 2023; Hagen, 2023).

Countries on the whole and developing countries to be specific are contaminating the global environment rapidly because environmental policies, rules, and regulations are not indigenously acted upon (Nabiebu & Ijiomah, 2023; Murshed et al., 2021). When it comes to the exploration of viable eco-friendly alternatives and smooth transition to renewable energy consumption, the underdeveloped infrastructure, lack of technological innovations (Gonzalez & Peña-Vinces, 2023; Ahmad et al., 2021; Kumar et al., 2023), inability to reduce their dependency on the deeply instilled fossil fuels (78% as per WB, 2019), and resource constraints make the progress slow (Murshed et al., 2021; Sánchez et al., 2023).

Additionally, the contemporary dilemma is, that when countries want to restore the environment, it obstructs EG, and when acquiring EG, it deteriorates the environmental quality (Jahanger et al., 2022; Li et al., 2023). This tri-dimensional research would depict a clear inference for policymakers to formulate insightful policies for Environmental Restoration (ER) in native countries, particularly through technological and behavioral interventions. Similarly, equitable resource allocation between EG and ER will be crucial to achieving Pareto efficiency in ecological economics. Once governments know how to potentially leash the environmental issue in their home country, they can negotiate their environmental targets and interests with neighboring countries as well as with the global communities in bilateral meetings and at multilateral conferences respectively.

Industry 5.0 Envisions the Welfare of Humanity and the Planet

It's evident from the literature that, the conventional industrial sector fueled by nonrenewable energy has been causing havoc to the environment. Hence, it would be better to consider the industry in its modernized and contemporary aspects. The advent of steam engines is termed as 1st Industrial Revolution (IR), followed by mechanization/ electrification (2nd IR), automation (3rd IR), and digitization (4IR / industry 4.0). But very recently the realization of environmental perils and the importance of "DE Carbonization" particularly in the industrial sector has marked the advent of the 5th Industrial Revolution/Industry 5.0 (Kuok et al., 2024; Mhlanga, 2023).

The 5th Industrial Revolution (5IR) and Industry 5.0 are used as alternate terminologies. The industry 5.0 concept has not reached a unanimous definition and a comprehensive explanation yet. Evergy research presents a slightly different definition. However, one aspect is common Industry 5.0 promotes the collaboration between humans and machines where efficient and intelligent/ smart machines let human creativity flourish (Stephanie et al., 2022). Industry 5.0 is said to transform the industrial sectors and simultaneously prioritize the well-being of humans, their prosperity, and sustainable development (Leng et al., 2022). Industry 5.0's other descriptions include, that it has to be human and environmentally friendly, slack inhumane use of technology to mint undue profits, utilize

renewable energy, and produce sustainable products and services (Stephanie et al., 2022). Industry 5.0 is also pronounced as value-driven since it has prospects to produce personalized/customized/consumer-preferred goods and services cost-effectively and efficiently that add value for consumers and producers (Xu et al., 2021). It also ensures coordination between humans and robotics (Pizoń & Gola, 2023).

The use of Industry 5.0 posits multifaceted benefits for it can transform industrial activities and industrial waste to be less detrimental to the environment (Mesjasz-Lech, 2023). Industry 5.0 is more human-centric and complements Industry 4.0 however; its research is in the neonate stage and quite overlooked. Whereas it needs to be streamlined (Madhavan et al., 2022). Industry 5.0 amplifies the use of renewable energy in industry and society and entails industrial expansion keeping in view the Sustainable Development Goals (Masoomi et al., 2023). Furthermore, Industry 5.0 has been deemed indispensable for resource efficiency, sustainable consumption, and exploitation of green energy by striking a balance between automation and the human workforce (Górny, 2023).

Implementation of Industry 5.0 can lead to efficient supply chain management, rampant use of Artificial Intelligence (AI), digitization, machine learning, and the proliferating Internet of Things (IoT) (Akundi et al., 2022; Masoomi et al., 2023). IoT can help in building smart cities, recycling waste, and efficiently distributing scarce resources e.g. water. It can also spur energy conservation, and preventive maintenance hence promoting a sustainable environment (Fraga-Lamas et al., 2021). Since the environmental stakes are so high lately, the appropriate enactment of Industry 5.0 and subsequent innovations are imperative to maintain a competitive advantage, sustain the environment, and accelerate economic growth (Aslam et al., 2020). The synergized human and technological activity at production units can improve societies, economies, and the natural environment. Industry 5.0 can also reduce industrial and urban wastes, promote sustainable resource consumption, and eco-friendly raw materials (Paschek et al., 2019). The literature lacks empirical evidence on the relationship between Industry 5.0 and EFs or environmental restoration. Since the Industry 5.0 concept is in the stage of infancy, a novel variable will be formed with the help of its constituents e.g. renewable energy and technological innovations which are described as follows.

Constituent of Industry 5.0 - Renewable Energy (RE)

Industry 5.0 is a newfangled phenomenon that emerged in 2019-2020, which is why the literature on its relation to the environmental spectrum is inadequate. In Industry 5.0, the underlying primary objective is the well-being of humans to protect the environment, and exploit sustainable renewable energy (Stephanie et al., 2022). Therefore, insights into the literature on renewable energy's relationship with the environment will give a sound footing to form the industry 5.0 variable by incorporating RE as one of the constituents. In the Asia Pacific Economic Cooperation (APEC) utilization of RE tends to slash the EFs (Usman & Hammar, 2021). Another study validates similar findings in Turkey (Sharif et. al., 2020) and BRICS countries (Usman, & Makhdum, 2021). The segregated group of countries has demonstrated the presence of EKC in High, lower-middle, and low-income countries, and findings imply that initially, economic growth exacerbates EFs in these groups. However, the utilization of RE restrains the proliferation of EFs (Ali et al., 2021). In 26 DCs the EG and Renewable energy depicted bidirectional causality which improves environmental quality (Aydin, 2019).

On top of it, the literature exhibits the industry 5.0 phenomenon as an amalgamation of more advanced technology that is human-friendly (Pizoń & Gola, 2023) and simultaneously concerned about the environment/ use of renewable energy (Stephanie et al., 2022). Therefore, it would be appropriate to merge both aspects while forming a novel variable to empirically estimate Industry 5.0 through "renewable energy and technological innovation" The latter employs patents or intellectual property (IP) for estimation. The following section shall give a detailed insight.

Constituent of Industry 5.0 - Technological Innovation/ Intellectual Property Rights

Although technological innovations (TI) nurture and disseminate superior knowledge and abet sustainable development (Keller, 2002), the relationship between TI and ecological footprints is nevertheless underexplored (Salman, M. et al., 2022). However, an ample amount of research unveils the impact of innovations on carbon emissions. In literature, innovations exhibit solicited negative relation with carbon emanations in ASEAN countries and help to reduce environmental destruction (Salman et al., 2022), in developed countries (Du et al., 2019), G-20 economies (Nguyen et al., 2020), and China (Long et al., 2020). Meanwhile, innovations also flaunt

unsolicited positive relations with carbon emanations in the top ten renewable energy-exploiting economies exempting the UK and India (Sharif et al., 2021).

Technological innovations have been metaphorically pronounced as a savior against the perils of the environment (Balsalobre-Lorente et al. 2020; Li et al., 2022). It also helps in the generation of renewable energy (Bekun et al. 2019), and the realization of energy efficiency (Wang et al., 2020). *"Patents"* (one of the types of Intellectual Property) have predominantly been used as a *proxy* for *technological innovations* in the sparsely available literary articles. A study that was conducted in South Africa, employed patents as a proxy for technological innovation (TI). Between 1981 and 2017, it was observed that the adoption of TI in the coal mining industry pertinently diminishes environmental destruction (Hassan, A. S., 2022). Similar findings overlaid in China, where the relation between eco-innovation and the environment was empirically estimated through quintile-ARDL. The study infers that eco-innovation (patents) pragmatically diminishes ecological deterioration trends that ultimately help to achieve sustainable development and a sustainable environment (Afshan et al., 2022). Another study depicts a similar empirical crux in 52 selected Belt and Road Initiative (BRI) countries. By employing CS-ARDL and Driscoll & Kraay techniques, the study shows that in BRI countries exploitation of renewable energy and technological innovation (patents) demonstrate a negative relation with the environmental destruction scenario (Yasmeen, R., 2022).

In contrasting evidence, patents in China render a negative relation with carbon emissions but establish a statistically positive relation with the EFs (Li et al., 2021). However, in 4 selected ASEAN countries, it has been observed that innovations (patents) depict a positive relation with environmental wreckage in the short run whilst, as time proceeds, they form a preferred negative relation (Salman, M. et al., 2022). The findings – regarding the nexus in question – have been inconclusive (Zeraibi, A. et al., 2022) and plea for further investigation.

Within the Industry 5.0 phenomenon, human beings can take aback from monotonous tasks and focus on creativity which can lead to efficient production and increased income returns and help businesses and humans reach their full potential (Paschek et al., 2019). It may also elevate their living styles, leisure consumption, utilization of energy, and economic and natural resources. However, research proclaims that pro-environmental thinking and endeavors are more strongly correlated with home behavior as compared to the behavior of people at work (Page & Page, 2014). Henceforth, after innovating and working in the proximity of robotics, digitization, and eco-friendly technology at the workplace, humans need to exercise pro-environmental behavior at home to sustain the benefits of Industry 5.0 in the long run (Muzaffar et al., 2024).

Human Behavior and Environmental Degradation Nexus

Human behavior is the most crucial yet extremely overlooked variable in environmental literature. In contemporary literature "Nudging for nature" has become a profound area of interest to anchor pro-environment behavior (Moeti, 2023). The nudging for nature has been acknowledged in the disciplines of psychology, economics, ecology, sociology, anthropology, and geography. However, all the typical policies (budget allocation, upright governance, technological advancement, financial exemptions, or incentives) become more prudent when these are supported by self-regulatory behavioral interventions (Nielsen et al., 2020). Dietz et al. (2009) evaluated Reasonably Achievable Household Emissions Reduction (RAER) in the United States. The study inferred that with the help of behavioral interventions, approximately 7.5% of terrestrial GHG emissions could be reduced (Dietz et al., 2009). However, such outcomes need a hefty amount of effort to sustain. Even though, most of the environmental destruction has been accredited to anthropogenic activities. On the flip side, human beings, their respective behaviors, and activities are also affected by environmental destruction. Whereas the current eminent wave of enlightenment amongst the residents of Earth has been driving environment-friendly behavior (Akyüz & Elcil, 2023; Abel, 2023). The two aspects/ characteristics of human behavior; namely trust and religiosity are anticipated to have positive ramifications on pro-environmental behavior and for environmental restoration.

The amalgamation of human psychology and economics formed a thriving cross-over; that is "behavioral economics". It not only looks into nudging but also studies innate and intrinsic human behavior to maneuver it for the greater good (Zhang, 2023; Thaler, 2018). Several theories justify the rationale of human behavior when it comes to opting for pro-environmental choices. One theory is the "social norms" theory, which states that individuals' behavior is influenced by the norms and expectations of their social group. Trust in institutions and individuals promotes pro-environmental behaviors (Cai et al., 2023). Another theory is the "pro-social behavior", which states that individuals are more likely to engage in behaviors that benefit others, including the environment.

Therefore, when people trust and feel connected to their surrounding individuals and communities who are prone to be affected by their behaviors and perceptions, they practice pro-environmental behavior (Yao et al., 2020; Podlipniak, 2023).

The "public trust theory" states that trust in government and other institutions is important for the effectiveness of environmental policies. When individuals trust the government to devise and introduce clean and green interventions, they are more likely to support and comply with green policies (Ruan et al., 2022; Sagarin & Turnipseed, 2012). Mutual trust significantly reduces energy consumption (Volland, 2017; Shahab et al., 2023). Conversely, primary data from the USA revealed that consumers promote but do not purchase environment-friendly goods (Mannemar Sønderskov, 2011) but societal and institutional trust are said to lessen the gap between intention and behavior (Cai et al., 2023).

However, when it comes to the role of religion in stimulating pro-environmental behavior, few theories describe the underlying cognition. One theory is the "values" theory, which states that religious beliefs can shape individuals' values and attitudes toward the environment (Trautwein et al., 2023; Chakraborty & Sadachar, 2023). For example, some religious beliefs may place a high value on earth stewardship and may lead to pro-environmental behaviors (Eom & Ng, 2023). Another theory is the "worldview" theory, which propagates that religious beliefs can shape individuals' understanding of the world and their place within it. For example, some religious worldviews may emphasize the interconnectedness of all living things and may lead to greater concern for the environment (Johnson et al., 2023; Eise & Rawat, 2023). Therefore, the human behavior variable will be formed with the help of these trust and religiosity variables.

THEORATICAL FRAMEWORK

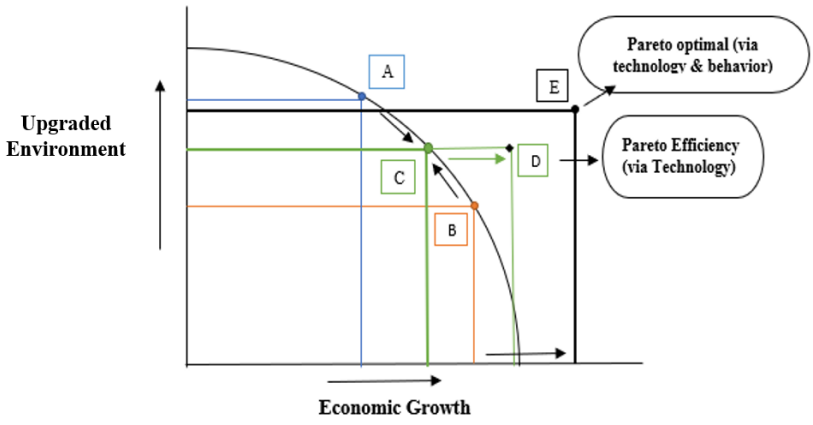
The theoretical framework of this research and proposed sub-sections along with graphical illustrations have been discussed below. The impact of economic growth (EG) on the environment would be empirically estimated which is presumably contingent upon two interventions/ variables, i.e., Industry 5.0 and pro-environmental human behavior (PEHB).

Way Forward to Achieve Pareto Efficiency and Optimality in Ecological Economics

Ever since the advent of the Industrial Revolution, Economic Growth (EG) has accelerated but this did not happen without penalties. The ecological environment bore the cost. In the early 20th century, the clean and green environment implied moderate EG (Figure 2: Point A). However, the imprudent EG in the wake of the Industrial Revolution sternly impaired the environment (Figure 2: point B). The space between points A and B exhibits the "opportunity cost" that the entire globe has forgone to attain EG. This entails "good quality of air, water, and soil". Ecological, behavioral, and social scientists should not let this happen unabatedly.

Keeping in view the aforementioned instances, there is a dire need to inaugurate an introspective trade-off between environmental degradation and EG along the frontier (Figure 2: Point C), as the propagation of merely one of the aspects in question will not yield sustainable development and environment. The world as a whole has (or countries individually have) to forgo some of their respective Economic Growth (EG) prospects to refurbish the depleting environment. If sincere attempts are made by diverting financial resources toward environmental restoration, this would reflect in unintended slower EG for the time being, that is why countries need to make peace with this fact and should not panic. By keeping in view, the larger perspective, the betterment of the human race and their heirlooms the environment shall always come first even at the cost of EG (Figure 2: Point C).

As per the economists Gerard and Kenneth, Pareto efficiency is achieved in an economy, when goods and services are traded without bearing transaction costs. Similarly, it has been proposed that Pareto efficiency in ecological economics can be achieved when Economic Growth (EG) does not cause any harm to the environment rather it stays intact (Figure 2: Point D). However, this is only possible when countries adopt Industry 5.0 in letter and spirit since eco-friendly technology will hamper further environmental damage. A more optimistic scenario is Point E (Figure 2), where Industry 5.0 coupled with pro-environmental human behavior is set to achieve Pareto optimality by attaining net-zero carbon emissions (this is the best that could be done in human capacity). The inbound Foreign Direct Investment (FDI) can help these countries go beyond the available resources and stretch their capacities to attain a clean and green environment, which can be seen at point E. Therefore, EG and ER will go hand in hand. But bear in mind the environment could not be restored to the pre-industrial revolution era as depicted in Figure 2 (the difference between point A and point E levels is a testimony of that).



(Source: Proposed by Author)

Figure 2: Way Forward to Attain Pareto Efficiency and Optimality

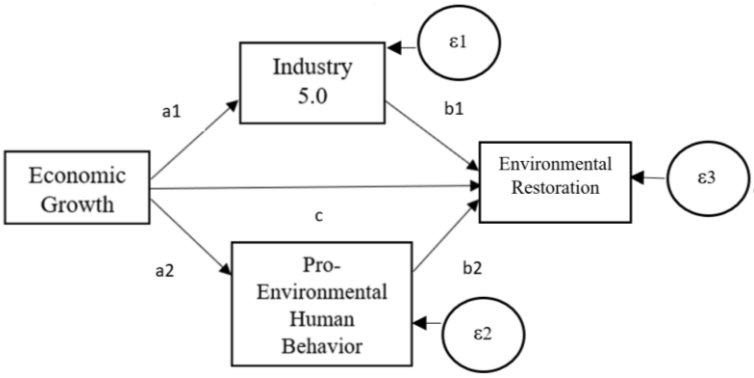
The pace of EG and ER would be unequal, and a tug-of-war is likely to happen between the two. However, the overall net effect would be beneficial to address the market failure in ecological economics. Even though Pareto efficiency and optimality are hard to attain in real, however, gradual Pareto improvement can relax its strict assumptions and requirements. Furthermore, in the following scenarios Pareto efficiency is considered acceptable I) The *"Kaldor- Hicks Efficiency"* states a change is efficient if the overall gains outweigh the consequent damages. II) The "*Coase Theorem"* considers the change efficient if all individuals bargain their respective gains and losses and reach an efficient result without involving any transaction cost.

MATERIALS AND METHODS

The methodology and data sources are mentioned below.

Basic Mediation Analysis in the Presence of Two MVs

In some instances, mediation analysis may contain more than one mediating variable (Hansen, 1999; Hansen & Graham, 1991) which is the case here. This proposed mediation analysis has two Mediating Variables (MV) namely, Industry 5.0 and pro-environmental human behavior. The MVs are not caused by one another rather both are caused by the treatment variable (Economic Growth) and then simultaneously project their respective impacts on the outcome variable; Environmental Restoration (Thoemmes et al., 2010). In the two-mediator scenario, MVs can establish either a negative or positive relationship with both treatment and outcome variables (MacKinnon, 2008). However, for case in point, the MVs have been hypothesized to form a positive relationship with the treatment/ independent variable (paths a1 and a2) and a negative relationship with the outcome/ dependent variable (paths b1 and b2). Table 1 shows the proposed hypotheses.



Source: Proposed and Illustrated by Author

Figure 3: Graphical Illustration of Mediation Model/ Analysis

Empirical Equation in Generic Form

$DVit = \alpha 0 + \beta 1MV1it + \beta 2MV2it + \beta 3IVit + \varepsilon it$ (1)

Where, DV= Dependent Variable, MV= Mediating Variable, IV= Independent Variable

Let's put variables in the equation

$ERit = \alpha 0 + \beta 1INDit + \beta 2PEHBit + \beta 3EGit + \varepsilon it$ (2)

Where, ER= Environmental Restoration, IND= Industry 5.0, PEHB= Pro-environmental Human Behavior, and EG= Economic Growth

The SEM for the *i*th subject ($1 \leq i \leq n$) is denoted as follows.

The relation between the independent and mediation variables is mentioned in equations 3 & 4.

$INDit = \alpha 0 + \alpha a1*EGit + \varepsilon INDit$ (3)

$PEHBit = \beta 0 + \beta a2*EGit + \varepsilon PEHBit$ (4)

The relation of the independent variable and the first MV (Industry 5.0) with the dependent variable is symbolized in equation 5, whereas equation 6 exhibits the relation of the independent and the second MV (Pehb) with the dependent variable which is depicted as follows.

$ERit = \delta 0 + \delta b1*INDit + \gamma C*EGit + \varepsilon ERit$ (5)

$ERit = \lambda 0 + \lambda\ b2*PEHBit + \gamma C*EGit + \varepsilon ERit$ (6)

Where in DC's panel, i= 23 and t= 28 while in LDC's panel, i= 18 and t= 28

Here the important assumption is that error terms (εIndit, εErit) and (εPehbit, εErit) are uncorrelated. This prerequisite yields efficient *direct, indirect, and total effects.* It is also important to note that all the equations are not independent but rather linked. The structural equations 3 & 5 and 4 & 6 are interlinked and will give results simultaneously. The ***direct effect*** **(γc)** will estimate the relation between the independent and dependent variables while controlling for MVs. The ***indirect effect*** illustrates the pathway from the independent variable to the dependent variable **(γc)** via the MV (**αa1δb1** and **βa2λb2** separately). Whereas the ***total effect*** is the summation of the direct effect and indirect effects of independent variables on dependent variables **(γc + αa1δb1)** and **(γc + βa2λb2)**. Furthermore, the model's goodness of fit will be estimated through the Root Mean Squared Error of Approximation (RMSEA).

$$\boldsymbol{RMSEA = \frac{\sqrt{\chi^2/(df-1)}}{N-1}} \quad \textbf{(7)}$$

Table 1 demonstrates the proposed hypotheses and their verification status. The list of variables and data sources are listed in Table 2.

Table 1: Postulated Pareto Optimal Environmental Restoration (ER) Hypotheses

Sr. No.	Hypotheses	Verification	
		DCs	LDCs
H1	Economic growth (EG) positively affects Industry 5.0 (a1).	No	Yes
H2	Proliferation of Industry 5.0 leads toward ER (b1).	No	Yes
H3	EG acceleration induces ER (c).	Yes	No
H4	EG positively influences the PEHB (a2).	No	Yes
H5	Pervasive/omnipresent PEHB is likely to induce ER (b2).	No	Yes

Collectively these hypotheses will be termed as "Pareto optimal Environmental Restoration (ER) hypothesis".

Table 2: List of Variables and Sources of Data

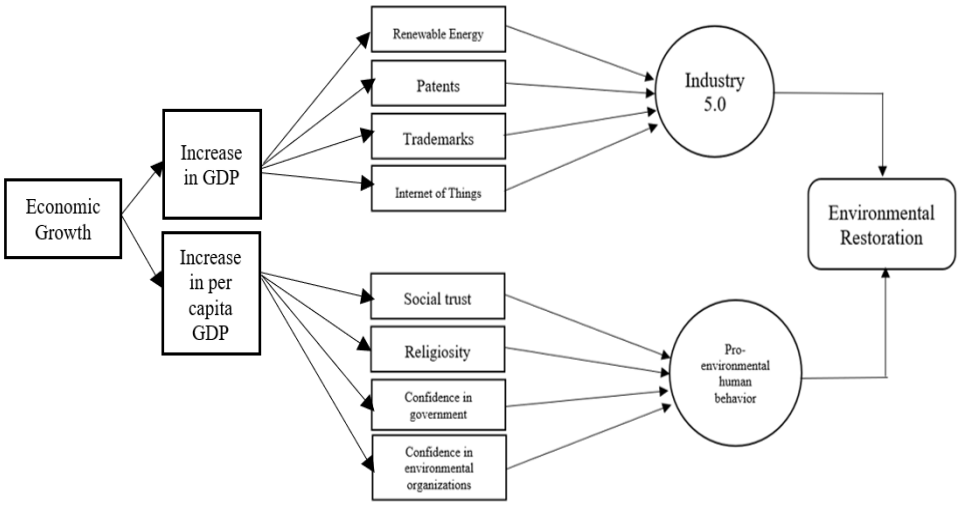
Variables	Unit	Source	Expected Sign
Ecological footprints	Global hectares	GFN	
Economic growth	Current $US	WDI	-
PEHB			
Social Trust	Survey-Based	WVS	±
Religiosity	Survey-Based	WVS	±
Confidence in Government	Survey-Based	WVS	±
CIEO	Survey-Based	WVS	±
Industry 5.0			
Renewable energy	% of total energy consumption	WDI	-
Patents (R & NR)	No. of applicants	WDI	-
Trademarks (R & NR)	No. of applicants	WDI	-
Internet users	% of total population	WDI	-

Where, GFN= Global Footprint Network, WVS= World Value Survey, and WDI= World Development Indicators

Note: R and NR are the acronyms for Residents and Non-Residents' applications. The data of R and NR for respective Intellectual Property types (IP: patents and trademarks) is separately available on WDI. The survey-based data is comprised of the number of respondents.

Formation of Variables

Both mediators are slightly unconventional and reasonably novel variables; hence their data was not readily available. Against this backdrop, both mediating variables are formed from scratch for empirical estimation, with the help of available data. The rationale of the study and the formation of the variables is illustrated in Figure 4.



Source: Illustrated by Author

Figure 4: Trajectory of Study's Rationale and Formation of Variables

Industry 5.0 has to be human, environmental, and economic/ business-friendly (Stephanie et al., 2022). Therefore, the Industry 5.0 variable consists of renewable energy consumption and technological innovations (Stephanie et al., 2022) and the Internet of Things (IoT) that make the use of technology, digitization, automation, and energy efficiency possible (Swamy & Kota, 2020). For empirical estimation, literature uses patents (one of the types of

Intellectual Property Rights (IPRs)) as a proxy for technological innovations. 1. "Patents" are incorporated because Industry 5.0 is resource-efficient and promotes eco-innovation and the development of intelligent machines (Aslam et al., 2020; Stephanie et al., 2022). Furthermore, patent registrations indicate the extent of innovation in an economy (Garavito & Rueda, 2021). 2. "Trademarks" are incorporated since Industry 5.0 is said to be value-driven for consumers and producers, spur competitiveness, meet consumer requirements cost-effectively, and provide them with eco-friendly alternatives (Xu et al., 2021). Trademarks are known as an indicator of new business registrations in an economy. 3. Industry 5.0. also entails the *Internet of Things (IoT)*, which abets the integration of multiple technologies, sensors, computing, energy efficiency, and interoperability. IoT ensures the provision of services at any time and place. IoT also supports automation and digitization which was the precursor of Industry 4.0/ 4th Industrial Revolution (Hossain et al., 2024). Therefore, the IoT is also a part of Industry 5.0 where it can surpass the impact of Information and Communication Technology (ICT) and the Internet (Swamy & Kota, 2020).

The pro-environmental human behavior variable has been formed by calculating the weighted averages of 1. social trust as it evades the free-rider problem, over-exploitation of natural resources, and energy conservation and hence reduces carbon emissions and improves the environment (Podlipniak, 2023; Wilson et al., 2023, and Zhang & Fu, 2023). 2. Religiosity, plays an important role in making human beings consistent in their pro-environmental behavior, enlightening them to value the natural environment and exhibit gratitude by protecting it (Ng & Eom, 2023; Trautwein et al., 2023; Chakraborty & Sadachar, 2023). 3. Confidence in government and 4. Confidence in environmental organizations and institutions is associated with pro-environmental behavior (Yang & Weber, 2019). Conceding that, all of the four human behavior indicators will be merged to form a composite variable of pro-environmental behavior (PEHB).

The data on human behavior is obtained from the five waves of the World Value Survey (WVS) comprised of wave three (1995-1999) to wave seven (2017-2022). The prior two waves were more of pilot studies on a small cohort of countries. However, they have expanded the list of surveyed countries since 1995. They collect data by getting random respondents on board, asking them questions listed in the questionnaires, and filling in their first-hand responses. The human behavior variable is formed by taking the weighted averages of 4 questions (51, 71, 79, and 173 respectively) regarding social trust, religiosity, confidence in government, and confidence in environmental organizations. The variables of Industry 5.0 and PEHB are formed by computing the Principal Component Analysis (PCA) and then by multiplying the constituents with their respective proportionate values and finally taking averages (Tables 3 & 4).

Principal Component Analysis (PCA)

The variables of Industry 5.0 and PEHB shall be formed through PCA. It is an extensively used statistical technique that transforms large, correlated data sets into a weighted index (Jolliffe & Cadima, 2016). The derived series are uncorrelated and characterized by maximum variance (Abdi & Williams, 2010). Since high correlations are prone to exhibit multicollinearity and likely to compromise the efficiency of the empirical results". However, PCA is tailored to reduce the dimensionality of large datasets making the regression and interpretation relatively easier (Eriksson, 2020). Symbolically, PCA can be narrated as follows

$$Ultimate\ Index = Wa*CIa + WbCIb + ... + WmCIm = m\Sigma iWi*CIi \qquad (8)$$

Where.

Ultimate Index = represents the concluding composite index

CIi = characterizes factor scores of respective constructing indicators

Wi = symbolizes the allocated weights found by each of the contributing indicators.

The apportioned weights are measured as follows:

$$W_i = \left(\frac{\theta_i}{\sum_i^n \theta_i} \right) \times 100$$

Where, Wi denotes the apportioned weight allotted to the *i*th factor and θi is the variance of the *i*th factor (Chen 2010; Katircioğlu and Taşpinar 2017).

Table 3 PCA: Formation of Industry 5.0 variable

Component	Industry 5.0 Indicators	DCs Proportion (Weights)	LDCs Proportion (weights)
1	Patents	0.7412	0.7582
2	Trademarks	0.1401	0.1926
3	Internet of Things	0.0859	0.0509
4	Renewable energy	0.0280	0.0189
Table 4 PCA: Formation of Pro-environmental Human Behavior (PEHB) variable			
Component	Industry 5.0 Indicators	DCs Proportion (Weights)	LDCs Proportion (weights)
1	Social trust	0.3926	0.3671
2	Religiosity	0.2424	0.2416
3	CIG*	0.1972	0.2327
4	CIEO**	0.1678	0.1586

*CIG= confidence in government and **CIEO= confidence in environmental organizations.

FINDINGS

The "Structural Equation Modeling" technique is employed to test the mediating role of "Industry 5.0" and "pro-environmental human behavior" intervention in Economic Growth (EG) and Environmental Restoration (ER) nexus. However, the robustness of the mediating analysis was ensured by estimating the model by the "Structural Equation Modeling" (SEM) illustrated in Figure 3. There are two approaches to "Medsem/ SEM" analysis. The first one is the renowned "Baron and Kenny" (1986) approach whereas, Iacobucci et al., (2007) modified it to make it more consistent. This approach captures the indirect effects through the Sobel test (Ghouse et al., 2021). If the value of Sobel's z-test comes out as significant but the relation between the dependent variable (EFs) and the independent variable (EG) is insignificant, then it's an indication of full mediation. Conversely, if the value of Sobel's z-test is insignificant but the relationship between dependent and independent variables is significant then it happens to be the case of partial mediation. On the other hand, if the values of both indicators turn out to be significant then it also validates the incidence of partial mediation. Similarly, if Sobel's z-test and the relationship between dependent and independent variables is insignificant then this is also a case of partial mediation (Iacobucci et al., 2007).

The second approach applies Monte Carlo sampling/ bootstrapping to test for the indirect effect of MVs. It is a more flexible and intuitive approach, as it somewhat mimics the primary data collection procedure. It identifies a population and then draws and replicates samples as prespecified in the model/ command, then exhibits results by averaging the significance level of all replications, hence likely to depict the best estimates of the actual population along with accurate confidence intervals (Thoemmes et al., 2010). If the Monte Carlo z-test is significant but the relationship between dependent (EFs) and independent variables (EG) is insignificant, it denotes full mediation. However, if both indicators are significant and their coefficients depict the same signs, it indicates the presence of "complementary partial mediation". On the contrary, if the Monte Carlo z-test and the relation between dependent and independent variables are significant but signs of their respective coefficients are in the opposite direction then it highlights the presence of "competitive partial mediation" (Zhao et al., 2010; MacKinnon, 2008).

The countries have been segregated into two groups of Developed and less developed countries as distinctly defined by the World Bank (WB). As per the availability of WVS data, the model of Developed Countries (DC) contains 45 countries, whereas 18 Less Developed Countries (LDC) are incorporated in the second model. Furthermore, the data from 1995 to 2022 consists of five-year averages, because WVS publishes human behavior data every five years, therefore, taking the averages of annual data was a more feasible option instead of converting the five-yearly behavior data into annual frequency.

Empirical Estimation Results and Interpretation

The empirical inferences have been exhibited and interpreted as follows.

Developed Countries					Less Developed Countries			
	EF	lneg	lnind5	Hbv	EF	lneg	lnind5	hbv
EF	1.000	-	-	-	1.000	-	-	-
lneg	-0.233	1.000	-	-	-0.035	1.000	-	-
lnind5	-0.012	-0.0302	1.000	-	-0.384	0.2846	1.000	-
hbv	-0.039	0.0337	0.1000	1.0000	-0.422	0.216	0.093	1.000

Source: Estimated by Authors

Table 6: Summary Statistics

Developed Countries (DCs) Panel							
	Obs.	Mean	S.D.	Min.	Max.	Skewness	Kurtosis
EF	225	4.682	2.011	1.086	10.471	0.0183	0.4404
lnEG	192	1.357	3.583	-4.6	22.618	0.0002	0.0001
lnind5	225	8.697	1.537	5.1212	14.022	0.0016	0.107
Hbv	225	0.264	0.0512	4.84	45.99	0.0096	0.0002

Source: Estimated by Authors

Table 7: Summary Statistics

Less Developed Countries (LDCs) Panel							
	Obs.	Mean	S.D.	Min	Max	Skewness	Kurtosis
EF	90	1.7802	1.4681	0.0796	7.0786	0.0081	0.0169
lnEG	82	0.8626	0.9198	-1.9213	2.3301	0.0005	0.0808
lnind5	90	9.6538	1.3329	6.8708	12.606	0.5696	0.6722
Hbv	90	0.3261	0.0667	21	53.05	0.0042	0.1568

Source: Estimated by Authors

Table 5 indicates the correlation between the variables and Tables 6 and 7 exhibit the descriptive statistics of DC and LDCs' variables respectively.

Table 8a: Structural Equation Model (Developed Countries)

Dependent Variable (ER)	Coefficient	OIM S.E	P-value
Ecological Footprint			
Industry 5.0	-0.016	0.071	0.820
Pro-environmental human behavior	-0.030	0.071	0.671
EG	-0.235	0.067	0.001
Constant	2.661	0.573	0.000
Industry 5.0			
EG	-0.030	0.072	0.675
Constant	5.763	0.303	0.000
Pro-environmental Human Behavior			
EG	0.034	0.072	0.640
Constant	6.065	0.320	0.000
Variance			
Industry 5.0	0.999	0.004	
Pro-environmental human behavior	0.999	0.005	
Ecological footprint	0.944	0.032	

Table 8b: Mediation Analysis of Structural Equation Model (Industry 5.0)			
Estimates	**Delta**	**Sobel**	**Monte Carlo**
Industry 5.0			
Indirect effect	0.000	0.000	0.000
Standard error	0.001	0.001	0.003
z-value	0.200	0.200	0.098
p-value	0.841	0.841	0.922
coefficient Interval	-0.000, 0.003	-0.002,0.003	-0.006, 0.008
Baron and Kenny's approach to testing mediation			
STEP 1 – Industry: EG (X -> M) with B= -0.013 and p= 0.675			
STEP 2 – EF: Industry (M -> Y) with B= - 0.021 and p= 0.820			
STEP 3 – EF: EG (X -> Y) with B= -0.074 and p= 0.058			
As either STEP 1, STEP 2 (or both) are not significant, therefore the no mediation.			
Table 8c: Mediation Analysis of Structural Equation Model (PEHB)			
Estimates	**Delta**	**Sobel**	**Monte Carlo**
PEHB			
Indirect effect	-0.001	-0.001	-0.000
Standard error	0.002	0.002	0.003
z-value	-0.314	-0.314	-0.089
p-value	0.753	0.753	0.929
coefficient Interval	-0.004,0.003	-0.004, -0.003	-0.009,0.007

Baron and Kenny's approach to testing mediation

STEP 1 – PEHB: EG (X -> M) with B= 0.000 and p= 0.640

STEP 2 – EF: PEHB (M -> Y) with B= - 1.377 and p= 0.671

As either STEP 1, STEP 2 (or both) are not significant, hence there is no mediation.

Developed Countries Results

Having employed Baron and Kenny's approach, modified by lacobucci et al., (2007), the results of DCs are exhibited through Tables 8a to 8c. The impact of economic growth (EG) on Industry 5.0 is negative but PEHB is negative (step 1), however, the relationship is statistically insignificant. Industry 5.0 and PEHB exhibit a negative relation with EFs (step 2) but the coefficients are statistically insignificant (Table 8a). Therefore, the DCs panel estimation rejects the H1 , H2 , H4 and H5 hypothesis. Similarly, the Sobel z-test for Industry 5.0 (table 8b) and PEHB (table 8c) is also insignificant (it is less than 1.96). On the contrary, EG forms a negative yet significant relationship with EFs in DCs, this indicates the acceptance of the H3 hypothesis and a no-mediation scenario. Although it implies that one unit increase in EG can directly abate the proliferation of EFs and hence promote Environmental Restoration (ER) by 0.235 units in the DCs panel (without these two MVs). In addition to this, the alternative approach proposed by Zhao et al., (2010) exhibits an insignificant Monte Carlo value. Since steps 1 and 2 are insignificant consequently, Industry 5.0 and PEHB stand no chance of inflicting a mediating impact on EG and environmental restoration nexus in DCs. This implies EG solely is sufficient to restore the environment and does not entail the mediating roles of Industry 5.0 and PEHB in DCs. The results are consistent with the findings of Ali et al., (2021) that suggest EG directly reduces EFs in DCs but not in LDCs. However, this inference goes against the findings of Kirikkaleli et al., (2023), who portrayed technological innovations (Industry 5.0) as a source of reduction in EFs. This could be accredited to the use of different proxies/ measures. DC's results also contradict the findings of Gupta & Ogden (2009), Gifford (2014), Ng & Eom (2023), and Mo et al., 2023 since they claimed the prevalence of social trust and religiosity escalate "green choices" hence PEHB. However, the results are in line with (Mannemar Sønderskov, 2011) as in the USA people promote eco-friendly behavior but do not buy green goods if they are costly.

The DCs' model rejects the overall "Pareto optimal ER hypothesis" due to a few possible reasons. i) DCs seem to have Kaldor-Hicks efficiency in place instead, which suggests that either gains from EG outweigh the damages done by slower ER or the gains from faster ER may outweigh the damages done by slower EG. ii) DCs might have different mediators to help EG cast its positive impact on ER. iii) DCs have outsourced a major chunk of their manufacturing hence they have already reduced indigenous EFs as compared to LDCs and emerging economies and EG is now less detrimental to the environment. iv) LDCs have already initiated a trade-off between EG and ER nexus hence experiencing a slower economic growth rate than that of emerging economies. v) they are addressing the market failures in ecological economies through taxation, penalties, and incentives.

Less Developed Countries Results

The mediation dynamics of LDCs are illustrated in Tables 9a, 9b, and 9c. Table 9a depicts a positive and significant relation of EG with both the mediators; Industry 5.0 and PEHB (step 1). An increase in EG leads to an increase in Industry 5.0 and PEHB. The relation between Industry 5.0 on EFs (step 2) is negative and significant. Therefore, an increase in these two mediators reduces EFs. However, the relationship between EG and ER (step 3) is positive and significant at 10%. The Sobel z-test in the case of "Industry 5.0 as a mediator" is significant. Since steps 1 and 2 viz-a-viz Sobel test exhibit significant values, however, step 3 demonstrates an insignificant relationship, it collectively infers industry 5.0 completely mediates the impact of EG of ER in LDCs.

However, given the fact that Step 1 is significant and the impact of PEHB on EFs (Step 2) is also significant, whereas the Sobel z-test in the case of "PEHB as an MV" (table 9c) has turned out to be insignificant (it is less than 1.96). Therefore, such a scenario refers to partial mediation. It implies that "Pro-environmental human behavior" partially mediates the EG and ER nexus in LDCs. A unit increase in EG inflicts a 0.169 unit increase in EFs and does not directly lead to ER in LDCs. However, the turn of events begins when the mediators intersect the said nexus. Therefore, it is imperative to establish the relationship of EG with Industry 5.0 (a1) and PEHB (a2) first. In LDCs, a unit increase in EG encompasses an increase in Industry 5.0 and PEHB by 0.285 and 0.217 units respectively. Against this backdrop, technological and behavioral interventions reduce the negative implications of EG on the ecological environment. A unit increase in Industry 5.0 stimulates a 0.395 unit decrease in EFs which supports ER (b1). By the same token, a unit increase in PEHB paves the way for a 0.424 unit decrease in the EFs that can be pronounced encouraging for ER in LDCs (b2). To encapsulate, LDC's findings accept the H1, H2, H4, and H5 hypotheses whereas, reject the H3.

Industry 5.0 is a scarcely explored topic; however, the results are in line with the bifurcated constituents of Industry 5.0 (renewable energy consumption and eco-friendly technological innovations). Li et al. (2022) inferred that when EG accelerates it certainly reduces EFs with the help of renewable energy consumption. Such an initiative slacks EFs and hence reflects in ER. The results are in line with Du et al., (2019), Balsalobre-Lorente et al., (2020), and Li et al., (2021). Likewise, when EG is led by technological innovations or patents, it can reduce the perils inflicted by EFs and subsequently lay the foundation for sustainable development and the environment. The results are consistent with the findings of Hassan, A. S., (2022), Yasmeen, R., (2022), and Afshan et al., (2022). This inference is also in line with Nahavandi, (2019) who asserted that since Industry 5.0 is human-centric, based on advanced manufacturing, human customization, and harmony between humans and robotics, therefore, it creates more jobs, accelerates EG, and simultaneously protects the environment (Nahavandi, 2019). Therefore, the constituents of Industry 5.0 (renewable energy and intellectual property) certainly assume a protagonist role in creating and proliferating Industry 5.0. When EG is backed by Industry 5.0, it possesses the potential to significantly reduce EFs and restore the environment in LDCs. Hence Industry 5.0 happens to "completely mediate" the impact of EG on EFs in the panel of LDCs.

The results of human behavior endorse the inference of Chiang et al (2019) research where PEHB ultimately counters EFs and plays a crucial role in environmental restoration. While bifurcating the constituents of PEHB and micro-analyzing trust and religiosity the results conform with the literature. The prevalence of social trust is said to escalate efficacy in making "green choices" (Gupta & Ogden, 2009; Gifford, 2014) and reduce environmental devastation (Carattini & Jo, 2018; Sønderskov, 2011) through smart domestic energy consumption patterns (Volland, 2017), they abstain from damaging the environment Gür (2020) Results are also in line with Cai et al., (2023) as societal and institutional trust is said to lessen the gap between intention and behavior. Additionally, religious believers are more likely to conduct PEHB than atheists (Mo et al., 2023).

The second approach gives further insights by shedding light on the indirect effect (ζa1ψb1 and δa2 λb2) of these two mediators in terms of percentage. Astoundingly, the mediated effect of industry 5.0 is 0.7 times greater than the direct effect of EG on the EFs' reduction in LDCs (indirect effect to direct effects). Consequently, if there is a 1% increase in EG it would diminish the incidence of EFs by 16% in LDCs. Put another way, this decrease in EFs and amplification of the ER process is going to be 0.7 times greater than it would have been in the absence of Industry 5.0. However, when it comes to PEHB, the impact of EG on EFs is mediated by the prevalence of PEHB, which is a good omen for the ER process (indirect effect to total effect). Additionally, this impact is 0.5 times greater than that of the direct impact (c) of EG on EFs in LDCs. The mediation analysis by both SEM (Baron and Kenny, 1986) and post-estimation hypothesis testing via Medsem (Zhao et al., 2010) approaches yield consistent inferences.

Table 9a: Structural Equation Model (Less Developed Countries)

	Coefficient	OIM S.E	P-value
Ecological Footprint			
Industry	-0.395	0.090	0.000
Pro-environmental human behavior	-0.424	0.087	0.000
EG	0.169	0.096	0.077
Constant	6.074	0.606	0.000
Industry 5.0			
EG	0.285	0.099	0.004
Constant	6.858	0.589	0.000
Pro-environmental Human Behavior			
EG	0.217	0.104	0.037
Constant	4.800	0.430	0.000
Variance			
Industry	0.919	0.057	
Pro-environmental human behavior	0.953	0.045	
Ecological footprint	0.684	0.081	

Table 9b: Mediation Analysis of Structural Equation Model

Estimates	Delta	Sobel	Monte Carlo
Industry			
Indirect effect	-0.161	-0.161	-0.154
Standard error	0.071	0.071	0.069
z-value	-2.256	-2.256	-2.217
p-value	0.024	0.024	0.027
coefficient Interval	-0.300,-0.021	-0.300,-0.020	-0.312,-0.039

Baron and Kenny's approach to testing mediation

STEP 1 – Industry: EG (X -> M) with B= 0.422 and p= 0.007

STEP 2 – EF: Industry (M -> Y) with B= - 0.380 and p= 0.000

STEP 3 – EF: EG (X -> Y) with B= 0.242 and p= 0.082

As STEP 1, STEP 2 and Sobel's test mentioned above are significant but STEP 3 is insignificant, therefore the mediation is complete.

Table 9c: Mediation Analysis of Structural Equation Model

Estimates	Delta	Sobel	Monte Carlo
PEHB			
Indirect effect	-0.131	-0.131	-0.125
Standard error	0.071	0.071	0.070
z-value	-1.838	-1.838	-1.777
p-value	0.066	0.066	0.076
coefficient Interval	-0.272,0.009	-0.272,0.009	-0.286,-0.004

Baron and Kenny's approach to testing mediation

STEP 1 – PEHB: EG (X -> M) with B= 0.016 and p= 0.044

STEP 2 – EF: PEHB (M -> Y) with B= -8.461 and p= 0.000

STEP 3 – EF: EG (X -> Y) with B= 0.242 and p= 0.082

As STEP 1, and STEP 2 mentioned above are significant and neither STEP 3 nor the aforementioned Sobel's test is significant, hence the mediation is partial.

Mediation Analysis Models' Goodness of Fit

It has been deemed imperative to check for the goodness of SEM analysis. The first approach is that of Satorra and Saris (1985) which calculates the asymptotic power of one parameter's path (a1) or more. However, this approach inflicts a problem, if the magnitude/ power of path 1 (a1) and path 2 (b2) differs it cannot identify which path is predominantly contributing more to the outcome variable and conceding that when the SEM's goodness of fit (GFI) is determined through the likelihood ratio it should be insignificant (greater than 0.05) which is the case in the DCs' model (p>chi2: 0.160). However, it is not considered a reliable measure. To this end, other tests/ measures are also taken into consideration.

The Root Mean Squared Error of Approximation (RMSEA) method comprehensively analyses the power of SEM as opposed to merely focusing on one parameter or path (MacCallum et al., 1995). Therefore, it not only takes into account "chi-squared values" but also the "degree of freedom" (df) and tests the hypothesis of not good or close fit as (H0: RMSEA > 0.05).

The value of RMSEA has to be less than 0.08, which is the case in DCs (0.071) hence rejecting the null hypothesis of not a good fit SEM. However, Maxwell (2004) found out that in the case of multiple hypotheses testing, the hypothesis can be often over, under, and sometimes amply powered (Thoemmes et al., 2010). Table 10 shows the goodness of fit of the model given below.

Table 10: Models' Goodness of Fit

Fit Statistic	DCs	LDCs	Description
Likelihood ratio			
Chi_ms(1)	1.973	0.091	Model vs. saturated
P > chi2	0.160	0.763	
Population Error			
RMSEA	0.071	0.000	Root mean2 error of approximation
Baseline Comparison			
CFI	0.868	1.000	Comparative fit index
Size of Residuals			
SRMR	0.032	0.012	Standardized root mean2 residual

CFI identifies any discrepancies in the actual data and hypothetically tested models with values ranging between 0 to 1, where a higher value is pronounced as a good fit. Its value should be > 0.08 while if the value of SRMR is up to 0.05, it indicates the model is a close fit but if it falls between the range of 0.05-0.10 then the model is an

acceptable fit. In the DCs' model, CFI is 0.868, whereas SRMR is 0.032 which is less than 0.05 hence this model is a good fit. Similarly, in the case of LDCs, all the measures indicate the model's goodness of fit. The first one is the likelihood ratio which is 0.763. The second one is RMSEA which is highly significant at 1%, then CFI and SRMR are 1.000 and 0.012 respectively, therefore, the model of LDCs is also a good fit.

DISCUSSION AND CONCLUSION

The industrial revolution has caused havoc by escalating anthropogenically induced Ecological Footprints. The unwarranted production and consumption of goods and services did not happen without penalties, ecological environment bore its cost. As per environmental economist Lord Stern, "Climate change is the biggest failure the world has ever witnessed". The Developed and particularly less developed countries' unhinged EG has been aggravating the EFs. Conceding that, the United Nations (UN) has declared this decade as a *"Decade on Ecosystem Restoration"* that not only calls for novel multidimensional research. In the environmental research niche, rarely does any study take into account the multidimensional variables that can potentially restore the environment. Furthermore, ER requires a two-way stream of action from the government and the masses at large. Therefore, the primary objective of this research endeavor is to explore the interplay amongst tri-dimensional economic, ecological, and behavioral variables and to underpin the underlying mediators that can potentially constitute a positive relation between Economic Growth (EG) and Environmental Restoration (ER). It has been presumed that if EG is backed by pro-environmental behavioral and technological interventions then it can restore the environment.

A graphical hypothetical framework is illustrated in (Figure 2), which postulates that technological and behavioral interventions are likely to adjourn the market failures of ecological economics. The two MVs namely, Industry 5.0 and Pro-environmental Human Behavior (PEHB) were formed by employing PCA. The hypothesis testing is carried out through the "Structural Equation Model" (SEM). The results depict that, in Developed Countries (DC) the EG does not form a relation with Industry 5.0 and PEHB mediators rather it is directly linked with EFs and Environmental Restoration (ER) hence rejecting the "*Pareto optimal ER* hypothesis". An increase in EG directly ceases the proliferation of EFs in DCs, whereas Industry 5.0 and PEHB are not mediating the said relation. It infers the drivers of Pareto efficiency are different from those of Industry 5.0 and PEHB in DCs, therefore some other policy interventions will work here. Furthermore, these results also suggest that DCs are either already heading towards green growth by addressing the ecological market's failures or the Kaldor-Hicks efficiency is in practice, which suggests that gains from EG might outweigh the damages done from slower ER and vice versa. Additionally, DCs have outsourced their manufacturing which results in lower EFs.

Conversely, in LDCs, the direct impact of EG on EFs is negative. However, if EG is backed by Industry 5.0 and PEHB it slacks EFs. Industry 5.0 completely mediates this effect. If the governments in LDCs develop Industry 5.0 (by opting for renewable energy and strengthening Intellectual Property rights to spur green technological innovations) then an increase in EG will not harm the environment but rather would be able to restore it. However, PEHB is "partially" mediating the said nexus since the chances of human error/ behavioral inconsistency or intention and action discrepancies would still be there due to costly green choices, lack of awareness, and information asymmetries. Hence, it entails continuous awareness campaigns, nudging for nature, green policies, inexpensive green alternatives, a halt to greenwashing, incentives for green technology, tax exemptions, and penalties. The LDCs results suggest that the amalgamation of Industry 5.0 and human behavior (technological and behavioral interventions) can potentially move toward Pareto optimality and address ecological market failure by equitable resource allocation. It also infers that EG and ER can go hand in hand in LDCs. However, the pace of EG and ER may differ at times. In such a situation *the Coase Theorem* comes into play, where there could be a bargain between the intensity of and resource distribution between EG and ER. The empirical inferences also imply that there are different mediators/ interventions in DCs and LDCs, that can tweak the impact of EG on EFs and have altogether different drivers of Pareto optimality. Hence, this tri-dimensional approach seems to work in LDCs better.

In the twentieth century, the onus of environmental protection was on producers > consumers, government > masses, and politicians/ policymakers > scientists/ empirical research. The ER requires a two-way stream of action from the government and the masses so that the outcomes of Industry 5.0's proliferation are not undone by environmentally damaging human actions. The incumbent governments need to take ambitious measures and alleviate information asymmetries in government and mass spheres regarding environmental perils. They shall incentivize the use of renewable energy, and green technology by strengthening Intellectual Property Rights, and

pro-environmental human behaviors. It also requires a paradigm shift where the onus will lie on all of the aforementioned stakeholders. Therefore, the sign of greater responsibility (>) on a particular stakeholder ought to be replaced with the sign of equality (=). Equal responsibility can also foster five-tiered coordination e.g. individual, societal, national, regional, and international, which is inevitable to address market failures in ecological economics and attain sustainable development and environment simultaneously.

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BİLGİ İLETİŞİM TEKNOLOJİLERİ VE EKONOMİK BÜYÜME İLİŞKİSİ: G-8 ÜLKELERİ ÖRNEĞİ

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Özet

Çalışmada, 1990-2022 döneminde G-8 ülkelerinde bilgi iletişim teknolojileri (BİT) ve ekonomik büyüme ilişkisinin Emirmahmutoğlu ve Köse (2011) panel nedensellik analizinden faydalanarak incelenmesi amaçlanmaktadır. BİT'i temsil etmek üzere bireysel internet kullanımı değişkeni modelde kullanılmıştır. Analiz bulguları, panel genelinde G-8 ülkelerinde bireysel internet kullanımı ile ekonomik büyüme arasında çift yönlü nedensellik ilişkisi bulunduğunu ortaya koymaktadır. Ülkelerin nedensellik analizi sonuçlarından elde edilen bulgular, Rusya ve ABD'de ekonomik büyüme ve bireysel internet kullanımı arasında çift yönlü nedensellik ilişkisi bulunduğunu ortaya koymaktadır. Öte yandan, Kanada'da bireysel internet kullanımından ekonomik büyümeye doğru tek yönlü nedensellik ilişkisi tespit edilmiştir. Fransa'da ise ekonomik büyümeden bireysel internet kullanımına doğru tek yönlü nedensellik ilişkisi tespit edilmiştir. Bulgular, BİT ile ekonomik büyüme arasında anlamlı bir nedensellik ilişkisi bulunduğunu ortaya koymaktadır.

Anahtar Kelimeler: Ekonomik Büyüme, Bilgi İletişim Teknolojileri, G-8 Ülkeleri

THE RELATIONSHIP BETWEEN INFORMATION COMMUNICATION TECHNOLOGIES AND ECONOMIC GROWTH: THE CASE OF G-8 COUNTRIES

Abstract

The study aims to examine the relationship between information communication technologies (ICT) and economic growth in G-8 countries in the period 1990-2022 by utilising Emirmahmutoğlu and Köse (2011) panel causality analysis. Individual internet usage variable is used in the model to represent ICT. The analysis findings reveal a bidirectional causality relationship between individual internet use and economic growth in G-8 countries across the panel. Conclusions of the causality analyses of the countries reveal that there is a bidirectional causality relationship between economic growth and individual internet usage in Russia and the USA. On the other hand, a unidirectional causality relationship was found between individual internet use to economic growth in Canada. A unidirectional causality relationship was found between economic growth and individual internet use in France. The findings reveal that there is a significant causal relationship between ICT and economic growth.

Keywords: Economic Growth, Information Communication Technologies, G-8 Countries

GİRİŞ

18. yüzyılda Sanayi Devrimi ile su ve buhar gücüyle çalışan makinelerin üretimde kullanılmaya başlanması dünya ekonomisinde hızlı değişim ve dönüşümleri beraberinde getirmiştir. Akabinde elektrik gücünün üretim sürecinde kullanılması, seri üretime geçilmesi ve 1970'li yıllarda BİT alanında yaşanan gelişmelerle birlikte internetin yükselişi yeni bir dönemin başlangıcını oluşturmaktadır. Sanayi Devrimi ile başlayan hızlı büyüme olgusunun ardından BİT alanında yaşanan gelişmeler, internetin bireylerin hayatına girmesi ve üretim sürecinde kullanılması ülkeler arasında rekabetin artmasına neden olmuştur (Bunse vd., 2014; Lin vd., 2017). BİT 1980'lerin başından bu yana üretim süreçlerinde giderek artan bir rol oynamaktadır. BİT günümüz toplumunun temel taşlarından biri olmakla birlikte, sadece profesyonel ve özel hayatlarımız üzerinde değil, aynı zamanda ekonomik büyümenin de en önemli itici güçlerinden biri haline gelmiştir (Saidi vd., 2017: 790). BİT ülkeler arasındaki büyüme farklılıklarını açıklayan temel faktörlerden biri olarak kabul edilmektedir. BİT'e yapılan yatırımlar genel sermaye derinleşmesine katkıda bulunarak ekonomik büyümenin artmasına yardımcı olmaktadır (Moradi ve Kebryaee, 2010).

Sanayi Devrimi ile ortaya çıkan hızlı büyüme olgusu ekonomik büyüme teorilerinin ortaya çıkmasına katkı sağlamıştır. Öncelikle Klasik yaklaşım sermaye birikimi ve iş bölümünün ekonomik büyümenin kaynağı olduğunu ileri sürmüştür. Solow Neo-klasik büyüme modeli (1956) teknolojik gelişmeyi büyümenin kaynağı olarak kabul etmiştir. Fakat modelde teknoloji dışsal kabul edilmiştir. İçsel büyüme modelinde (Romer, 1986; Lucas, 1988) ise

Solow Neo-klasik büyüme modelinde teknolojinin dışsal olması varsayımı eleştirilerek beşerî sermaye ve teknolojik gelişmenin büyümenin temel kaynağı olduğu kabul edilmiştir. Büyüme teorileri incelendiğinde teknolojinin büyüme süreci içerisindeki önemine değinildiği görülmektedir.

Günümüzde ülkeler, diğer üretim faktörlerinin yanı sıra BİT'in de ekonomik büyümeyi gerçekleştirmek için önemli bir kaynak olduğunun farkındadır. Bu durum, ekonomik büyüme ile BİT arasındaki bağlantıyı önemli kılmaktadır. Tablo 1'de G-8 ülkelerinde 2013-2022 dönemi bireysel internet kullanımı (nüfusun yüzdesi) verileri yer almaktadır. Tablo 1 incelendiğinde 2022 yılında bireysel internet kullanımında yüzde 97,12 ile ABD ilk sırada yer almaktadır. İkinci sırada ise yüzde 95,34 ile Birleşik Krallık yer almaktadır. Kanada ise 2022 yılında yüzde 94 bireysel internet kullanımı ile üçüncü sırada yer almaktadır.

Tablo 1: G-8 Ülkelerinde Bireysel İnternet Kullanımı (Nüfusun Yüzdesi)

Yıllar	Kanada	Fransa	Almanya	İtalya	Japonya	Rusya	B.Krallık	ABD
2013	85,8	81,91	84,17	58,45	88,21	67,97	89,84	71,4
2014	87,12	83,75	86,1937	55,63	89,10	70,51	91,61	73
2015	90	78	87,5898	58,14	91,05	70,09	92,00	74,55
2016	91,16	79,26	84,1652	61,32	93,18	73,09	94,77	85,54
2017	92,70	80,50	84,3942	63,07	91,72	76,00	90,42	87,27
2018	94,64	82,04	87,0371	74,38	88,74	80,86	90,69	88,49
2019	91,91	83,33	88,1345	67,85	92,73	82,64	92,51	89,43
2020	92,3	84,70	89,8129	70,48	90,21	84,99	94,81	96,57
2021	93,29	86,09	91,4306	74,86	82,91	88,21	95,25	96,77
2022	94	85,33	91,6298	85,06	84,92	90,41	95,34	97,12

Kaynak: World Bank, 2024.

Diğer taraftan BİT'in hızlı gelişimi, giderek artan sayıda araştırmacıyı BİT ile ekonomik büyüme arasındaki ilişkiyi incelemeye teşvik etmiştir. Literatürde farklı ülke gruplarında farklı dönemlerde BİT ve ekonomik büyüme bağlantısını ele alan yerli ve yabancı çalışmalar bulunmaktadır. Örneğin yerli literatür incelendiğinde, Yapraklı ve Sağlam (2010) 1980-2008 döneminde BİT ve ekonomik büyüme bağlantısını ampirik bir analiz ile incelemişlerdir. Bulgular, kısa ve uzun dönemde ekonomik büyümenin BİT'den pozitif yönde etkilendiğini ortaya koymaktadır. Artan vd. (2014) 1994-2011 döneminde 17 geçiş ekonomisinde BİT ve ekonomik büyüme bağlantısını panel regresyon yöntemini kullanarak incelemişlerdir. Bulgular, BİT'de yaşanan gelişimin ekonomik büyümeyi olumlu etkilediğini ortaya koymaktadır.

Alper (2017) 1996-2016 döneminde Avrupa Birliği ülkeleri ve Türkiye'de BİT'in ekonomik büyüme ve işsizlik üzerindeki etkisini ampirik bir analiz ile incelemiştir. Araştırma sonuçları BİT'in ele alınan ülkelerde ekonomik büyümeyi olumlu etkilediğini, işsizliği ise azalttığını ortaya koymaktadır. Özkan ve Çelik (2018) Türkiye'de 1998-2015 döneminde BİT'in ekonomik büyüme üzerindeki etkisini ekonometrik analiz kullanarak incelemişlerdir. Bulgular BİT'in ekonomik büyümeyi olumlu etkilediğini ortaya koymaktadır. Özgün ve Akın (2024) ise 1993-2022 döneminde Türkiye'de çevre kalitesi ve BİT bağlantısını Artırılmış Otoregresif Dağıtılmış Gecikmeli (ARDL) analizi ile incelemişlerdir. Bulgular, uzun dönemde internet kullanımının ekolojik ayak izi üzerinde anlamlı bir etkiye sahip olduğunu ortaya koymaktadır.

Çebişli (2021) tarafından 2004-2018 döneminde G-7 ülkelerinde BİT'in ekonomik büyüme üzerindeki etkisini panel veri analizi yardımıyla incelenmiştir. BİT, işsizlik, ekonomik büyüme ve enflasyon arasında anlamlı bir ilişki bulunduğu tespit edilmiştir. Çelik ve Memiş (2023) 1990-2020 döneminde Yükselen Piyasa Ekonomilerinde ticari serbestleşme ve BİT'in ekonomik büyüme üzerindeki etkisini ampirik bir analiz ile incelemişlerdir. Bulgular, BİT'in ekonomik büyümeyi pozitif yönde, ticari serbestleşmenin ise büyümeyi negatif yönde etkilediğini ortaya koymaktadır. Akın ve Özgün (2024) Kırılgan Beşli ülkelerinde 1995-2021 döneminde çevre kalitesi ile BİT arasındaki ilişkiyi panel Artırılmış Otoregresif Dağıtılmış Gecikme (ARDL) sınır testi yöntemi kullanılarak incelemişlerdir. Bulgular, BİT'in kısa ve uzun vadede ekolojik ayak izini azalttığını ortaya koymaktadır.

Yabancı literatürde BİT ve ekonomik büyüme konusunu ele alan çalışmalar da mevcuttur. Örneğin, Moradi ve Kebryaee (2010) 1995-2005 döneminde 48 İslam ülkesinde BİT yatırımlarının ekonomik büyüme üzerindeki etkisini panel veri analizinden faydalanarak ele almışlardır. Bulgular, ele alınan ülkelerde ekonomik büyümenin ana motorlarının BİT sermayesi, BİT dışı sermaye ve beşerî sermaye olduğunu ortaya koymaktadır. Yousefi (2011)

2000-2006 döneminde gelişmiş ve gelişmekte olan 62 ülkede BİT ve ekonomik büyüme bağlantısını ele almıştır. Bulgular, BİT'in ekonomik büyümeye etkisinin ülkelerin farklı gelir grupları arasında farklılık gösterdiğini ortaya koymaktadır.

Pradhan vd. (2015) 2001-2012 döneminde Asya ülkelerinde BİT altyapısı, finansal kalkınma ve ekonomik büyüme arasındaki nedensel ilişkisini panel eşbütünleşme yöntemini kullanarak incelemişlerdir. Bulgular BİT altyapısı ile ekonomik büyüme, finansal kalkınma ile ekonomik büyüme ve BİT altyapısı ile finansal kalkınma arasında kısa ve uzun dönemli nedensellik ilişkisinin bulunduğunu ortaya koymaktadır. Salahuddin ve Alam (2016) 1985-2012 döneminde OECD ülkelerinde BİT kullanımı ile ekonomik büyümenin elektrik tüketimi üzerindeki etkisini panel veri analizinden faydalanarak incelemişlerdir. Bulgular, BİT kullanımı ve ekonomik büyümenin elektrik tüketimini teşvik ettiğini ortaya koymaktadır.

Hodrab vd. (2016) 1995-2013 döneminde seçilmiş 18 Arap ülkesinde BİT ve büyüme bağlantısını panel regresyon analizinden faydalanarak incelemişlerdir. Bulgular ele alınan ülkelerde BİT'in ekonomik büyüme üzerinde olumlu etkiye sahip olduğunu ortaya koymaktadır. Majeed ve Ayub (2018) 149 ülkede 1980-2015 döneminde bölgesel ve küresel düzeyde BİT'in ekonomik büyüme üzerindeki etkisini Sıradan En Küçük Kareler (OLS), Havuzlanmış OLS, İki Aşamalı En Küçük Kareler (2SLS) ve Genelleştirilmiş Momentler Yöntemini (GMM) kullanarak incelemişlerdir. Bulgular BİT'in hem küresel hem de bölgesel olarak ekonomik büyümeyi hızlandırdığını ortaya koymaktadır. Toader vd. (2018) Avrupa Birliği ülkelerinde 2000-2017 döneminde BİT ve ekonomik büyüme bağlantısını panel veri analizi yöntemi ile ele almışlardır. Bulgular AB üye ülkelerinde BİT kullanımının ekonomik büyüme üzerinde önemli bir etkisi olduğunu göstermektedir. Ancak bulgular etkinin büyüklüğünün incelenen teknoloji türüne bağlı olarak farklılık göstermekte olduğunu ortaya koymaktadır.

Haftu (2019) 2006-2015 döneminde 40 Sahra Altı Afrika ülkesinde cep telefonu ve internetin kişi başına düşen gelir üzerindeki etkisini panel veri analizi ile incelemiştir. Bulgular, cep telefonu kullanımındaki artışın, bölgenin kişi başına düşen gelirine katkıda bulunduğunu ortaya koymaktadır. Ancak internetin, kişi başına düşen gelire katkıda bulunmadığı sonucuna ulaşılmıştır. Bahrini ve Qaffas (2019) 2007-2016 döneminde seçilmiş Orta Doğu ve Kuzey Afrika (MENA) ile Sahra Altı Afrika ülkelerinde BİT ve büyüme bağlantısını Genelleştirilmiş Momentler yöntemini (GMM) kullanarak incelemişlerdir. Büyümenin ele alınan ülkelerde BİT'in ekonomik büyümenin ana itici güçleri olduğunu ortaya koymaktadır. Bunun yanı sıra, bulgular MENA ülkelerinin internet kullanımı ve genişbant benimsenmesi alanlarında Sahra Altı Afrika ülkelerine göre daha iyi durumda olduğunu ortaya koymaktadır.

Tripathi ve Inani (2020) Güney Asya Bölgesel İşbirliği Birliği (SAARC) üyesi ülkelerde 1990-2014 döneminde BİT ve ekonomik büyüme bağlantısını panel veri analizi ile incelemişlerdir. Bulgular, BİT'in ekonomik büyüme üzerinde anlamlı bir etkiye sahip olduğunu ortaya koymaktadır. Kurniawati (2022) ise 2000-2018 döneminde yüksek gelirli ve orta gelirli Asya ülkelerinde BİT ve ekonomik büyüme ilişkisini panel veri analizi ile incelemiştir. Bulgular, yüksek gelirli Asya ülkelerinin yüksek internet penetrasyonundan olumlu ekonomik gelişme elde ettiklerini oraya koymaktadır. Camba ve Camba Jr. (2020) 2000-2016 döneminde 10 ASEAN ülkesinde internet penetrasyonu ve geniş bant aboneliğinin ekonomik büyüme üzerindeki nedensellik ilişkisini incelemişlerdir. Bulgular, internet penetrasyonu ve genişbant aboneliğinden ekonomik büyümeye doğru uzun dönemli bir nedensellik ilişkisi olduğunu ortaya koymaktadır.

Literatürde farklı ülke gruplarında BİT ile ekonomik büyüme ilişkisini konu alan çok sayıda çalışma gerçekleştirildiği görülmektedir. Yerli ve yabancı literatür incelendiğinde gerçekleştirilen çalışmalarda BİT ile ekonomik büyüme arasında önemli bağlantılar bulunduğu görülmektedir. Ayrıca literatürde G-8 ülkelerinde BİT ile ekonomik büyüme ilişkisine odaklanan çalışmaların oldukça sınırlı olması bu çalışmanın ortaya çıkmasında etkili olmuştur.

YÖNTEM

Bu çalışmada, 1990-2022 döneminde G-8 ülkelerinde BİT ve ekonomik büyüme ilişkisi Emirmahmutoğlu ve Köse (2011) panel nedensellik analizi yöntemi ile incelenmiştir. Çalışmada nedensellik analizi gerçekleştirilmeden önce tanımlayıcı istatistikler ve korelasyon matrisi verilmiştir. Daha sonra yatay kesit bağımlılığının bulunup bulunmadığını test etmek amacıyla yatay kesit bağımlılığı testi ile eğim katsayısı heterojenliğini test etmek amacıyla homojenlik testleri gerçekleştirilmiştir. Çalışmada kullanılan model Denklem 1'de yer almaktadır:

$$GDP_{it} = \beta_0 + \beta_{i1} INT_{it} + \varepsilon_{it} \quad \textbf{(1)}$$

Tablo 2'de veri seti yer almaktadır. Çalışmada BİT'i temsil etmek üzere bireysel internet kullanımı değişkeni (INT) ve ekonomik büyüme (GDP) değişkeni kullanılmıştır. Modelde ekonomik büyüme (kişi başına 2015 sabit fiyatlarla ABD doları) ve bireysel internet kullanımı (nüfusun yüzdesi) verileri Dünya Bankası web sitesinden elde edilmiştir.

Table 2: Veri Seti

Değişkenler	Kısaltmalar	Veri Kaynağı
Ekonomik Büyüme	GDP	World Bank
Bireysel İnternet Kullanımı	INT	

Tablo 3'te tanımlayıcı istatistikler yer almaktadır. Ortalama büyüme 10.33, ortalama bireysel internet kullanımı 3.20 olarak bulunmuştur. Ekonomik büyümenin maksimum değeri 11.06, minimum değeri ise 8.41 olarak bulunmuştur. Bireysel internet kullanımının maksimum değerinin ise 4.57 olduğu görülmektedir. Büyümenin standart hata değeri 0.57, bireysel internet kullanımının standart hata değeri 1.93'tür. Çalışmada kullanılan veri setinin 248 gözlem sayısından oluştuğu görülmektedir.

Table 3: Tanımlayıcı İstatistikler

Değişkenler	LNGDP	LNINT
Ortalama	10.33256	3.208814
Medyan	10.46375	4.177671
Maksimum	11.06227	4.576049
Minimum	8.415273	-7.304461
Standart Hata	0.577863	1.930619
Çarpıklık	-1.981298	-2.033710
Basıklık	6.043785	7.538761
Jarque-Bera	257.9902	383.8239
Jarque-Bera Olasılık	0.000000	0.000000
Gözlem Sayısı	248	248

Tablo 4'te korelasyon matrisi yer almaktadır. Tablo 4 incelendiğinde, ekonomik büyüme ve bireysel internet kullanımı arasındaki korelasyon ilişkisinin pozitif olduğu görülmektedir.

Table 4: Korelasyon Matrisi

Değişkenler	LNGDP	LNTRA
LNGDP	1.000	
LNINT	0.4364	1.000

BULGULAR

Serilerin durağanlığının sınanması için CD_{LM1}, CD_{LM2} ve CD birim kök testleri kullanılmaktadır. Seriler yatay kesit bağımlılığa sahip değilse birinci nesil birim kök testi, seriler yatay kesit bağımlılığa sahipse ikinci nesil birim kök testi kullanılmalıdır (Bucak ve Saygılı, 2022:355). Modelde T>N koşulu sağlanıyorsa yatay kesit bağımlılığını test etmek için CD_{LM1}ve CD_{LM2} testleri kullanılmaktadır. Modelde T<N koşulu sağlanıyorsa yatay kesit bağımlılığını test etmek için CD testi kullanılmaktadır.

Çalışmada 33 yıl (T) ve 8 ülke (N) olduğundan T>N koşulu sağlandığından dolayı CD_{LM1}ve CD_{LM2} yatay kesit bağımlılık testleri kullanılmıştır (Brush ve Pegan, 1980; Pesaran, 2004). Tablo 5'te yatay kesit bağımlılık testi sonuçları yer almaktadır. Sonuçlar incelendiğinde değişkenler arasında yatay kesit bağımlılığının bulunduğu (p=0.00<0.05) görülmektedir.

Table 5: Yatay Kesit Bağımlılık Test Sonuçları

	LNGDP	LNINT
CDlm (BP,1980)	627.87 (0.000) *	840.10 (0.000) *
CDlm (Pesaran, 2004)	80.161 (0.000) *	108.52 (0.000) *
LMadj (PUY, 2008)	80.028 (0.000) *	108.38 (0.000) *
CD (Pesaran, 2004)	24.353 (0.000) *	28.982 (0.000) *

Not: * p<0.1

Tablo 6'da homojenlik testi sonuçları yer almaktadır. Swamy (1970) tarafından geliştirilen homojenlik testi sonuçlarına göre olasılık değerleri 0.05'ten küçüktür. Yani değişkenlerin homojen yapıda olmadığı birimden birime farklılık gösterdiği görülmektedir. (p=0.00<0.01). Dolayısıyla model heterojen yapıdadır.

Table 6: Homojenlik Testi Sonuçları

Test	Test İstatistiği	Olasılık Değeri
Delta Tilde	17.974	0.000*
Delta Tildeadj	18.912	0.000*

Not: * p<0.1

Çalışmada G-8 ülkelerinde ekonomik büyüme ve BİT arasındaki nedensellik ilişkisinin test edilebilmesi için Emirmahmutoğlu ve Köse (2011) panel nedensellik analizi kullanılmıştır. Fisher testi, heterojen panellerde yatay kesit bağımlılığının bulunduğu durumlarda kullanılabilmektedir. Tablo 7'de Emirmahmutoğlu & Köse nedensellik testi sonuçları yer almaktadır. Panel geneli için Fisher nedensellik testi sonuçları incelendiğinde, ekonomik büyümeden bireysel internet kullanımına (GDP- INT) ve bireysel internet kullanımından ekonomik büyümeye doğru (INT-GDP) çift yönlü nedensellik bulunduğu tespit edilmiştir. Ülkelerin nedensellik analizi sonuçları incelendiğinde, Rusya ve ABD'de hem ekonomik büyümeden bireysel internet kullanımına hem de bireysel internet kullanımından ekonomik büyümeye doğru çift yönlü nedensellik bulunduğunu ortaya koymaktadır. Öte yandan, Kanada'da bireysel internet kullanımından ekonomik büyümeye doğru tek yönlü bir nedensellik ilişkisi tespit edilmiştir. Fransa'da ise ekonomik büyümeden bireysel internet kullanımına doğru tek yönlü bir nedensellik ilişkisi tespit edilmiştir. Bulgular, bireysel internet kullanımı ile ekonomik büyüme arasında anlamlı bir nedensellik ilişkisi bulunduğunu ortaya koymaktadır.

Table 7: Panel Nedensellik Testi Sonuçları

INT-GDP	Gecikme Uzunluğu	İstatistik Değeri	Olasılık Değeri	GDP-INT	Gecikme Uzunluğu	İstatistik Değeri	Olasılık Değeri
Kanada	1	2.934	0.087**	**Kanada**	1	0.724	0.395
Fransa	1	51.560	0.212	**Fransa**	1	2.924	0.087**
Almanya	1	0.036	0.850	**Almanya**	1	0.502	0.479
İtalya	1	2.166	0.141	**İtalya**	1	1.181	0.277
Japonya	1	1.913	0.167	**Japonya**	1	2.072	0.150
Rusya	1	9.723	0.002***	**Rusya**	1	4.106	0.043**
Birleşik Krallık	1	0.957	0.328	**Birleşik Krallık**	1	0.128	0.721
ABD	1	3.071	0.080**	**ABD**	1	9.118	0.003***
Fisher Test İstatistiği		**35.730**	**0.003*** **	**Fisher Test İstatistiği**		**33.487**	**0.006*** **

Not: *** p<0.01, ** p<0.05, * p<0.1

TARTIŞMA VE SONUÇ

Bu çalışmada, 1990-2022 döneminde G-8 ülkelerinde BİT ve ekonomik büyüme ilişkisi Emirmahmutoğlu ve Köse (2011) panel nedensellik analizinden faydalanarak incelenmiştir. Panel nedensellik analizi gerçekleştirilmeden önce bazı ön testler gerçekleştirilmiştir. Öncelikle serilerin yatay kesit bağımlılığı analiz edilerek, değişkenler arasında yatay kesit bağımlılığının bulunduğu tespit edilmiştir. Gerçekleştirilen homojenlik testi sonucunda ise değişkenlerin homojen yapıda olmadığı, birimden birime farklılık gösterdiği tespit edilmiştir. Daha sonra heterojen panellerde ve yatay kesit bağımlılığının bulunduğu durumlarda kullanılabilen Emirmahmutoğlu ve Köse (2011) panel nedensellik analizi gerçekleştirilmiştir. Nedensellik analizinden elde edilen bulgular, panel genelinde ekonomik büyüme ve bireysel internet kullanımı arasında çift yönlü nedensellik bulunduğunu ortaya koymaktadır. Ülkelerin nedensellik analizinden elde edilen bulgular ise Rusya ve ABD'de ekonomik büyüme ve bireysel internet kullanımı arasında çift yönlü nedensellik ilişkisi bulunduğunu ortaya koymaktadır. Öte yandan, Kanada'da bireysel internet kullanımından ekonomik büyümeye doğru tek yönlü bir nedensellik ilişkisi tespit edilmiştir. Fransa'da ise ekonomik büyümeden bireysel internet kullanımına doğru tek yönlü bir nedensellik ilişkisi tespit edilmiştir. Bulgular, bireysel internet kullanımı ile ekonomik büyüme arasında anlamlı bir nedensellik ilişkisi bulunduğunu ortaya koymaktadır. Ekonomik büyüme ve BİT arasındaki nedensellik ilişkisine ilişkin bulguların Camba ve

Camba Jr. (2020) tarafından gerçekleştirilen çalışmadan elde edilen bulgular ile uyumlu olduğu görülmektedir. Bu çalışmayı izleyen çalışmalarda BİT'i temsilen farklı değişkenler kullanılarak BİT ve ekonomik büyüme ilişkisi farklı ülke grupları üzerinden ele alınabilir.

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DETERMINANTS OF INFLATION IN CONDITIONS OF GLOBAL CHANGES AND CONFLICTS - THE CASE OF NORTH MACEDONIA

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Abstract

The start of the Russian special operation in Ukraine caused the disruption of global supply chains, the destabilization of financial markets and the global growth of energy prices. Namely, the growth of energy prices, which are basically primary raw materials in the production process, was reflected on global inflation, causing significant growth. According to statistical data, it can be concluded that developing countries, which are import-dependent economies, recorded the highest rate of inflation growth compared to developed countries, primarily due to the high degree of macroeconomic volatility and import-substitution dependence. The focus of the research is the movement of inflation in the Republic of North Macedonia and the determinants of growth. The purpose of the research is to identify the determinants that cause the growth of inflation in the country during geopolitical changes and conflicts. The research is based on secondary methods, and based on the regression analysis, it can be concluded that most of the inflation growth is determined by the global growth in energy prices and the destabilization of the financial markets.

Keywords: Inflation, prices, exchange rate, financial markets, geopolitical conflicts, regression.

INTRODUCTION

Inflation as a macroeconomic phenomenon is determined by a series of domestic and international factors. In the conditions of a relatively unstable geopolitical environment where war hotspots appear, which imply the interruption of global supply chains and leading sanctions, international economic flows are destabilizing, the price of raw materials and energy is rising (Goes & Bekkers, 2022). A number of authors claim that global factors significantly drive inflation, Ascari & Fosso Ascari & Fosso (2024) based on the BVAR decomposition conclude that globalization has a significant impact on the inflation trend in countries, Kamber & Wong (2020) according to the FAVAR model which is based on two block variables, international and domestic argue that global factors play a significant role in driving the inflation gap considering global commodity price indices. The destabilization of global economic flows and the rise in the prices of energy, food, wheat and cereal crops and raw materials due to the Russian special operation in Ukraine caused a serious increase in inflation in Europe due to the dependence on energy imports, it especially recorded growth in small and open economies that which are fully import dependent economies (Hamza, Hamida, Mili, & Sami, 2024) (Maurya, 2023). The Republic of North Macedonia as a small and open and import-dependent economy, with the destabilization of global economic flows, recorded a significant increase in inflation. Similarly, the focus of the research is the identification of the determinants of inflation in North Macedonia during the destabilization of global economic flows and the growth of global prices for energy, raw materials and food. The research is based on secondary methods and is composed of descriptive statistics, correlation analysis and multiple linear regression, in the model, inflation is a dependent variable, and selected economic variables divided into global economic variables and domestic economic variables are independent variables.

LITERATURE REVIEW

Inflation is one of the key macroeconomic variables in maintaining the macroeconomic stability of economies. Namely, inflation is a common phenomenon that has a significant impact on the standard of the population (Stantcheva, 2024). Mohseni & Jouzaryan (2016) define inflation as a determinant that permanently causes an increase in the general level of prices, thus, the growth of inflation can affect employment, the distribution of

income in countries, the wealth of the national economy, as well as political and social life. Similarly, a large number of developing countries, due to the impact of inflation on economic flows, often use it as a proxy for economic growth and stimulating investment activities. It is characteristic of global inflation that in the 90s, Central Banks in most countries managed to stabilize inflation and align the real inflation rate with established corridors (Roncaglia de Carvalho, Ribeiro, & & Marques, 2017), Rogoff (2003) based on the measures of the Central Banks in the direction of stabilization of inflation claims that after the crises there follows a period of the so-called: an era of great moderation. Although Central Banks have the main role in regulating inflationary flows, to a large extent the national inflation rate is determined by global economic flows. Namely, world trade, world stock markets, international capital flows, as well as global and regional conflicts represent a significant factor for inflation, especially in developing countries, which mostly have an open economy (Parker, 2018). Ciccareli & Mojon (2010) claim that 70% of the variability of national inflation rates in OECD member countries is determined by global factors, and the remaining 30% by domestic factors. This is due to the degree of trade openness of the countries and the effects of import inflation. Dhakal et al. (1994) based on the results of the VAR model in order to identify the key determinants of inflation in the USA, claims that in addition to domestic factors such as the money supply (monetary aggregate M1), the level of wages and the budget balance, energy prices have a significant influence appear as a key resource or input in the production process. Canova et al. (2007) argue that the structural behavior of inflation in a large number of countries is relatively identical, and the most influential determinants of inflation are monetary policy shocks and supply side shocks. Ujkani & Gara (2023) in the research on the determinants of the inflation rate, using regression analysis, confirm that imports have a significant impact on the growth of inflation, importing inflation from the exporting country. Jovičić & Kunovac (2017) research on the factors driving inflation and GDP argue that global factors have the most prominent effects on inflation in Croatia. The emergence of the Russian-Ukrainian conflict, causing serious disruption, and for certain goods and interruption of global supply chains, caused an increase in the prices of raw materials and materials, food and energy, and as a result, an increase in global inflation, analogous to that a large number of countries, mostly from the European continent, recorded a significant increase in inflation (Paceskoski & Taskovski, 2024). Consequently, the harmonization of monetary policy and the design of stabilization measures between countries is of crucial importance for stabilization in conditions of disturbed global economic flows, especially in the domain of interest rates (Gross & Zahner, 2021).

MATERIALS AND METHODS

The subject of research is the movement of inflation in North Macedonia during the global growth of inflation and analysis of the factors influencing the growth of inflation in North Macedonia.

The purpose of the research is to identify the key determinants that encouraged the growth of inflation in North Macedonia and to analyze the reasons for their influence on the inflation rate.

The research is based on secondary methods: induction method, deduction method, analysis and synthesis. When choosing a source of data, and with the aim of increasing the degree of relevance of the research results, several criteria are taken into account, such as: the relevance of the institution that publishes the data, the date of publication, the relationship of the data with the objectives of the research and the degree of scientific contribution of data to research. The data in the research are monthly and refer to the period from 01/2015 to 12/2023, that is, a total of 108 observations. Empirical research is composed of: descriptive statistics, correlation analysis and multiple regression analysis.

Regression equation:

$$Y=\beta 0+\beta 1X1+\beta 2X2+\ldots+\beta nXn+\varepsilon \quad (1)$$

Y – The value of the dependent variable

$\beta 0$ – Constant

$\beta 1$, $\beta 2$, βn – Regression coefficients

X1, X2, Xn -Value of the independent variables

The regression equation for this research is:

$$INF=\beta0+\beta1IDPt+\beta2EXRt+\beta3MM1t+\beta4BOPt+\beta5GEPt+\beta6GGPt+\beta7IMIt+\beta8FPIt+\beta9GPWt+\varepsilon \quad (2)$$

t – 01/2015-12/2023

Research hypothesis:

H1: The growth of inflation in North Macedonia is driven by the destabilization of international economic flows.

Research variables:

Description	Unit	Source
Inflation rate	INF	NBRNM
Industrial production	IDP	SSO
Exchange rate USD/MKD	EXR	NBRNM
Monetary aggregate M1	MM1	NBRNM
BRENT oil price	BOP	FED St. Louis
Global price of energy index	GEP	FED St. Louis
Gas global price	GGP	FED St. Louis
Global price of industrial materials index	IMI	FED St. Louis
Global price of Food index	FPI	FED St. Louis
Global price of Wheat	GPW	FED St. Louis

*NBRNM – National Bank of the Republic of North Macedonia

*SSO – State Statistic Office of the Republic of North Macedonia

FINDINGS

Descriptive statistics

Descriptive statistics show that the mean value of inflation during the analyzed period is 3.47%, which is 16.33% less than the maximum percentage in the analysis. The average value of the global price of energy index is 154.65 USD, which is 59% less than the peak. The average value of the global price of industrial materials index is 134.99 USD, which is 34.2% less than the maximum value, the average value of the global price of food index is 113.17 USD, which is 31.7% less from the maximum value and the average value of the global price of wheat is 211.95 USD, which is 52.3% lower than the maximum value. Similarly, the largest deviation of the maximum from the mean value was observed in the global price of energy index. Descriptive statistics show that for most of the variables the distribution of data has a leptokurtic shape, and for the monetary aggregate M1, the global price of industrial materials index, the global price of food, a platykurtic shape of the data distribution is observed. The frequency distribution of the variables, with the exception of industrial production, has positive symmetry.

Table 1. Descriptive statistics

	INF	*IDP*	*EXR*	*MM1*	*BOP*	*GEP*	*GGP*	*IMI*	*FPI*	*GPW*
Mean	3,47	101,13	54,78	160743,23	65,09	154,65	11,03	134,99	113,17	211,95
Standard Error	0,51	1,08	0,26	4944,35	1,88	6,25	1,13	2,89	1,81	7,03
Median	1,50	101,08	54,82	154616,61	63,38	134,68	6,71	125,06	103,73	188,50
Mode	1,90	97,70	55,16	#N/A	#N/A	125,73	9,29	#N/A	#N/A	#N/A
Standard Deviation	5,27	11,22	2,66	51383,14	19,52	64,95	11,79	30,00	18,83	73,09
Sample Variance	27,79	125,92	7,06	2640227154,68	381,06	4217,85	139,01	899,88	354,56	5341,68
Kurtosis	2,38	6,21	0,41	-1,45	0,37	1,82	7,80	-0,56	-0,22	0,48
Skewness	1,85	-0,77	0,33	0,14	0,55	1,43	2,63	0,63	1,00	1,12
Range	21,30	97,20	13,62	175789,49	99,97	320,52	68,52	117,23	73,43	321,61
Minimum	-1,50	48,90	49,33	85615,06	22,74	55,89	1,46	87,70	92,32	122,55
Maximum	19,80	146,10	62,95	261404,55	122,71	376,41	69,98	204,92	165,75	444,16
Sum	375,00	10922,00	5916,19	17360269,19	7030,13	16702,31	1191,12	14579,21	12222,08	22890,73
Count	108,00	108,00	108,00	108,00	108,00	108,00	108,00	108,00	108,00	108,00
Confidence Level(95,0%)	1,01	2,14	0,51	9801,59	3,72	12,39	2,25	5,72	3,59	13,94

Source: Authors' calculation

Correlation analysis

According to the correlation analysis, inflation as a dependent variable in the model has a significant degree of positive correlation with all independent variables, except for industrial production in North Macedonia where a weak negative correlation was observed (-0.056). Inflation has the strongest positive correlation with the global price of wheat (0.828), with the global price of energy index (0.807) and with the global price of food index (0.806). Inflation has the weakest positive correlation with the exchange rate of USD/MKD (0.530).

Table 2. Correlation analysis

	INF	*IDP*	*EXR*	*MM1*	*BOP*	*GEP*	*GGP*	*IMI*	*FPI*	*GPW*
INF	1,000									
IDP	-0,056	1,000								
EXR	0,530	-0,072	1,000							
MM1	0,682	-0,139	0,172	1,000						
BOP	0,719	0,179	0,301	0,599	1,000					
GEP	0,807	0,073	0,415	0,598	0,928	1,000				
GGP	0,757	-0,027	0,469	0,504	0,733	0,926	1,000			
IMI	0,614	0,017	-0,005	0,847	0,733	0,705	0,562	1,000		
FPI	0,806	0,015	0,319	0,783	0,825	0,848	0,730	0,880	1,000	
GPW	0,828	-0,052	0,340	0,734	0,786	0,858	0,783	0,804	0,917	1,000

Source: Authors' calculation

Regression results

According to the results of the regression statistics, it can be concluded that 82.1% of the variability of inflation in North Macedonia is the result of the independent variables in the model, 17.9% is explained by the variability of variables that are not included in the regression model.

Table 3. Regression statistics

Regression Statistics	
Multiple R	0,906172
R Square	0,821148
Adjusted R Square	0,804722
Standard Error	2,3296
Observations	108

Source: Authors' calculation

According to the results of the ANNOVA test, the regression model is statistically significant, which proves that the results of the regression analysis are fully relevant.

Table 4. ANNOVA test

	df	*SS*	*MS*	*F*	*Significance F*
Regression	9	2441,827	271,3141	49,99307	9,94E-33
Residual	98	531,8494	5,427035		
Total	107	2973,677			

Source: Authors' calculation

Based on multiple regression, the exogenous variables have a statistically significant influence on the growth of inflation in North Macedonia, namely the growth of the global energy price index (p=0.02), the growth of the industrial materials price index (p=0.00), the growth of the global food price index (p=0.04) and the growth of the

global grain price (p=0.03). Among the endogenous variables, the monetary aggregate M1 has a statistically significant influence on the growth of inflation in North Macedonia (p=0.00).

Table 5. Regression analysis

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	-23,7068	7,285195	-3,25411	0,001562	-38,164	-9,24957
IDP	0,00716	0,022308	0,320958	0,748926	-0,03711	0,05143
EXR	0,225495	0,128465	1,7553	0,082333	-0,02944	0,48043
MM1	4,3E-05	9,43E-06	4,557895	1,49E-05	2,43E-05	6,17E-05
BOP	-0,12492	0,070742	-1,76591	0,080525	-0,26531	0,015461
GEP	0,094123	0,039769	2,366757	0,019911	0,015203	0,173043
GGP	-0,18788	0,114005	-1,64801	0,102553	-0,41412	0,038358
IMI	-0,0866	0,02589	-3,34513	0,001167	-0,13798	-0,03523
FPI	0,090503	0,044033	2,055359	0,042504	0,003122	0,177885
GPW	0,020256	0,008906	2,27447	0,025118	0,002583	0,037929

Source: Authors' calculation

DISCUSSION

The results of the survey of inflation in North Macedonia have a positive correlation with all independent variations in the survey, with the exception of industrial production in North Macedonia where a weak negative correlation is noted. The regression statistics show that 82% of the variability of inflation in North Macedonia is determined by the variability of the selected variables, which makes the model statistically significant. According to the regression analysis, the variables representing global economic flows have a statistically significant impact on inflation in North Macedonia. The results of the research are in accordance with the previously mentioned research whose results indicate the significance of impact of destabilization of global economic flows on the basis of inflation (Parker, 2018) (Ciccarelli & Mojon, 2010) (Ujkani & Gara, 2023). The resolution of the basis of the research can be stated that the great influence on the growth of inflation in North Macedonia during the Russian-Ukrainian conflict, the change in geographical conditions and global economic flows had global political factors. Consequently, research hypotheses are accepted. During the analysis, the effects of the economic structure, the behavior of businessmen and the economic policies of the economic authorities in the country cannot be excluded on the prices, and thus the inflationary pressure. The limitations of the research were not to determine the relevance of Sign Up but supplementing the research with options for variables that would reflect macroeconomic factors in the country is not excluded.

CONCLUSION

Global changes and conflicts in most cases cause a series of economic consequences, mostly small and open economies, which are fundamentally dependent economies, are the most affected. Russia's special operation in Ukraine directly implied an increase in the price of energy, food and primary raw materials for production, similarly, the countries dependent on shipping, including North Macedonia, faced a high rate of inflation characterized as import inflation. According to the regression analysis, it can be concluded that the growth of inflation in North Macedonia is to the greatest extent determined by global changes which are classified as exogenous factors, and a relatively significant influence on the growth of inflation, according to the model, is determined by the growth of the monetary aggregate M1. According to the research, it can be concluded that North Macedonia must create measures and policies that will stimulate domestic production, domestic industry and the macroeconomic capacity to stabilize the economy in conditions of global economic crises.

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TRANSMISSION OF MONETARY POLICY IN DEVELOPING COUNTRIES IN CONDITIONS OF GLOBAL INFLATION GROWTH- THE CASE OF NORTH MACEDONIA AND SERBIA

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Abstract

Monetary policy in coordination with fiscal policy is a key determinant for maintaining the macroeconomic stability of countries through the creation of conventional and non-conventional measures in crisis situations. The disruption of global supply chains and the limitation of the supply of oil and oil products resulted in a global increase in inflation, from which developing countries were the most affected countries. Similarly, the Central Banks undertook a series of measures aimed at cushioning the shock and returning inflation within the established corridor. The subject of the research paper is an analysis of the effectiveness of monetary policy in the stabilization of inflation in North Macedonia and Serbia. The purpose of the research is to evaluate the impact of monetary measures on the economic flows of North Macedonia and Serbia through the transmission channels by applying the SVAR model. The research was done using secondary methods and the SVAR model. According to the results of the research, it can be concluded that North Macedonia and Serbia recorded a significant increase in inflation caused by mostly global factors, and the monetary policy in both countries had a significant participation in the stabilization of inflation and the macroeconomic situation.

Keywords: Inflation, transmission mechanism, monetary policy, Central bank, interest rate.

INTRODUCTION

The emergence of the Corona crisis at the beginning of 2020 caused a significant global economic destabilization that contributed to the destabilization of the financial and commodity markets and conditions for the creation of a series of macroeconomic measures in the direction of the stabilization of national economies (di Giovanni, Kalemli-Özcan, Silva, & Yildirim, 2022). Namely, the beginning of the Russian special operation in Ukraine caused further disruption of global supply chains, interruption of trade in Russian oil and Russian gas, and difficult export of Ukrainian wheat, which is one of the key conditions for maintaining stable prices on the global stock markets (Peterson, 2022). The introduction of economic sanctions and the termination of trade relations between Western countries and the Russian Federation further disrupted international economic relations, conditions for the growth of prices of key energy sources, raw materials and food, resulting in a significant global increase in inflation (Pera, 2023) (Akindoyin, 2024). Although the sanctions were intended to slow down the Russian economy, the countries that introduced the sanctions faced a high rate of inflation, primarily the countries of Europe. It is characteristic that small and import-dependent economies faced the highest rates of inflation, which was characterized as import inflation.

After the beginning of the Russian special operation in Ukraine, North Macedonia and Serbia, as small and open economies, faced a series of economic consequences, mostly of an import nature. As a result of the high rate of inflation, the central banks of the countries undertook a series of conventional measures, the most widespread of which was the measure of growth of the reference interest rate, which was aimed at slowing down credit placements, and thus reducing the expectations of companies and the population for the so-called cheap borrowing, which would reduce consumption and stabilize inflation (Paceskoski & Taskovski, 2024).

The starting hypothesis in the research is that the reference interest rate is an effective transmission mechanism for the stabilization of inflation in North Macedonia and Serbia.

The research is based on secondary methods and applied descriptive statistics, correlational analysis and SVAR model respectively for North Macedonia and Serbia.

LITERATURE REVIEW

The research of inflation and the transmission of monetary policy is significant for the creation of monetary measures and policies. The start of the Russian special operation in Ukraine is causing significant damage to global supply chains that is contributing to global inflation. The interconnectedness of global supply chains makes change highly militarized on or protected. Fick & Tillmann (2022) argue that the disruption of global supply chains causes economic consequences for countries and the Eurozone as a monetary union, and also has a major impact on food price growth. Diaz, Cunado & de Gracia (2024) argue that since 2010 supply-side shocks are key drivers of inflation. They conclude that after the emergence of the Covid 19 pandemic, inflationary pressures on the supply side are strengthening. One of the most common macroeconomic models for inflation research is VAR models. Namely, VAR models provide guidance for predicting the movement of inflation and therefore creating macroeconomic policies (Bobeica & Hartwig, 2023). Lenza & Primiceri (2020) claim that after the emergence of Covid-19, the macroeconomic situation in a large number of countries is unstable, and as a result, macroeconomic analyzes and projections are a challenge due to the emergence of significant standard deviations of selected macroeconomic variables. Diegel & Nautz (2021) for the examination of long-term inflation expectations and transmission of monetary policy shocks, they apply the SVAR model, coming to the conclusion that long-term inflation expectations in the USA react immediately after the monetary shock and that the monetary policy of the Fed is a key factor for stabilizing the economy in conditions of destabilization or structural changes.

MATERIALS AND METHODS

The subject of research is the role of monetary policy and the efficiency of the transmission mechanism of monetary policy in North Macedonia and Serbia during the global growth of inflation. The purpose of the research is to identify the key monetary measures adopted by the Central Banks of North Macedonia and Serbia and to determine whether the channels of transmission of monetary measures are efficient and have a significant impact on the stabilization of inflation.

The research is based on secondary methods: induction method, deduction method, analysis and synthesis. When choosing a source of data, and with the aim of increasing the degree of relevance of the research results, several criteria are taken into account, such as: the relevance of the institution that publishes the data, the date of publication, the relationship of the data with the objectives of the research and the degree of scientific contribution of data to research. The data in the research are monthly and refer to the period from 01/2015 to 12/2023, that is, a total of 108 observations. Empirical research is composed of: descriptive statistics, correlation analysis and SVAR model.

Research hypothesis:
H1: The short-term domestic interest rate is a key intermediate target for controlling inflation.
H1.1: The short-term domestic interest rate is a key intermediate target for controlling inflation in North Macedonia.
H1.2: The short-term domestic interest rate is a key intermediate target for controlling inflation in Serbia.

Description	Unit	Source
Description	Unit	Source
Inflation rate	INFM/INFS	NBRNM/NBS
Industrial production	INPM/INPS	SSOM/SSOS
Exchange rate USD/MKD; USD/SRB	EXRM/EXRS	NBRNM/NBS
Monetary aggregate M1	MM1M/MM1S	NBRNM/NBS
Domestic interest rate	DIRM/DIRS	NBRNM/NBS
Euro Area interest rate	EUIR	ECB
Average global BRENT Oil price	BROL	FED St. Louis
Global price of energy index	GPEI	FED St. Louis
Gas global price	GSGP	FED St. Louis
Global price of Wheat	GPWH	FED St. Louis

*NBRNM – National Bank of the Republic of North Macedonia

*SSO – State Statistic Office of the Republic of North Macedonia

FINDINGS

Descriptive statistics

As shown in Table 1 it can be concluded that the average monthly value of inflation in North Macedonia in the research period is 3.47%, it has a significant deviation from the maximum and minimum value of 82.48%. A relatively high standard deviation is observed for the USD/MKD exchange rate. It is characteristic that the average value of the short-term interest rate in North Macedonia is 1.75 percentage points higher than the one in the Eurozone and is 1.92. According to the descriptive statistics, the variables representative of the global economic flows has a high standard deviation, which is evidence of the significant oscillations during the observed period.

Table 1. Descriptive statistics – North Macedonia

	INFM	INPM	EXRM	MM1M	DIRM	EUIR	BROL	GPEI	GSGP	GPWH
Mean	3.472222	101.1296	54.77954	160743.2	1.916019	0.167544	65.09380	154.6510	11.02889	211.9512
Median	1.500000	101.0750	54.81500	154616.6	1.690000	-0.318925	63.37500	134.6750	6.707019	188.4987
Maximum	19.80000	146.1000	62.95000	261404.6	4.500000	3.971636	122.7100	376.4100	69.98000	444.1566
Minimum	-1.500000	48.90000	49.33000	85615.06	1.310000	-0.581957	22.74000	55.89000	1.460000	122.5498
Std. Dev.	5.271752	11.22154	2.657267	51383.14	0.831942	1.239976	19.52078	64.94501	11.79010	73.08680
Skewness	1.822283	-0.756513	0.324838	0.138918	2.011374	2.208150	0.539821	1.411376	2.595094	1.108964
Kurtosis	5.213215	8.869249	3.333337	1.561218	5.917058	6.356977	3.299360	4.681064	10.38796	3.401316
Jarque-Bera	81.81531	165.3180	2.399363	9.662795	111.1127	138.4785	5.648601	48.57257	366.8401	22.86118
Probability	0.000000	0.000000	0.301290	0.007975	0.000000	0.000000	0.059350	0.000000	0.000000	0.000011
Sum	375.0000	10922.00	5916.190	17360269	206.9300	18.09480	7030.130	16702.31	1191.120	22890.73
Sum Sq. Dev.	2973.677	13473.75	755.5345	2.83E+11	74.05759	164.5167	40773.52	451310.4	14873.68	571559.8
Observations	108	108	108	108	108	108	108	108	108	108

Source: Author's calculation

As shown in Table 2 the mean value of inflation in Serbia is 4.41%, with a relatively high standard deviation. It is characteristic that the domestic short-term interest rate has a higher value than the one in the Eurozone by 3 percentage points.

Table 2. Descriptive statistics – Serbia

	INFS	INPS	EXRS	MM1S	DIRS	EUIR	BROL	GPEI	GSGP	GPWH
Mean	4.406481	101.1963	106.2126	907265.9	3.165093	0.167544	65.09380	154.6510	11.02889	211.9512
Median	2.150000	101.7000	106.4859	784782.1	3.065000	-0.318925	63.37500	134.6750	6.707019	188.4987
Maximum	16.20000	117.3000	119.5536	1751528.	10.13000	3.971636	122.7100	376.4100	69.98000	444.1566
Minimum	0.100000	73.00000	95.45240	396418.2	0.870000	-0.581957	22.74000	55.89000	1.460000	122.5498
Std. Dev.	4.573047	7.798453	5.651542	372046.0	1.843640	1.239976	19.52078	64.94501	11.79010	73.08680
Skewness	1.408628	-0.557247	0.085306	0.331539	0.935464	2.208150	0.539821	1.411376	2.595094	1.108964
Kurtosis	3.567484	3.525015	2.416227	1.707579	4.187332	6.356977	3.299360	4.681064	10.38796	3.401316
Jarque-Bera	37.16534	6.829810	1.664550	9.495111	22.09558	138.4785	5.648601	48.57257	366.8401	22.86118
Probability	0.000000	0.032880	0.435058	0.008673	0.000016	0.000000	0.059350	0.000000	0.000000	0.000011
Sum	475.9000	10929.20	11470.97	97984718	341.8300	18.09480	7030.130	16702.31	1191.120	22890.73
Sum Sq. Dev.	2237.665	6507.299	3417.572	1.48E+13	363.6939	164.5167	40773.52	451310.4	14873.68	571559.8
Observations	108	108	108	108	108	108	108	108	108	108

Source: Author's calculation

Correlation analysis

The correlation matrix in Table 3 shows that inflation in North Macedonia has a strong positive correlation with all variables except industrial production. The correlation between inflation and the domestic short-term interest rate is 0.43, and between inflation and variables representative of global economic flows in the interval from 0.72 to 0.83. The strongest positive correlation exists between the domestic short-term rate and the short-term rate prescribed by the ECB.

Table 3. Correlation analysis – North Macedonia

	INFM	INPM	EXRM	MM1M	DIRM	EUIR	BROL	GPEI	GSGP	GPWH
INFM	1.000000	-0.056204	0.530133	0.682433	0.428468	0.523830	0.718904	0.807361	0.756768	0.828050
INPM	-0.056204	1.000000	-0.072079	-0.138771	-0.028410	-0.033948	0.179072	0.072685	-0.027074	-0.051982
EXRM	0.530133	-0.072079	1.000000	0.171746	0.397720	0.418270	0.301459	0.415038	0.469150	0.339964
MM1M	0.682433	-0.138771	0.171746	1.000000	0.383579	0.523183	0.598816	0.597748	0.503944	0.734041
DIRM	0.428468	-0.028410	0.397720	0.383579	1.000000	0.972199	0.273872	0.187644	0.094679	0.221730
EUIR	0.523830	-0.033948	0.418270	0.523183	0.972199	1.000000	0.364436	0.276301	0.168982	0.334455
BROL	0.718904	0.179072	0.301459	0.598816	0.273872	0.364436	1.000000	0.927719	0.733166	0.785883
GPEI	0.807361	0.072685	0.415038	0.597748	0.187644	0.276301	0.927719	1.000000	0.925569	0.857585
GSGP	0.756768	-0.027074	0.469150	0.503944	0.094679	0.168982	0.733166	0.925569	1.000000	0.782792
GPWH	0.828050	-0.051982	0.339964	0.734041	0.221730	0.334455	0.785883	0.857585	0.782792	1.000000

Source: Author's calculation

The correlation matrix in Table 4 shows a strong positive correlation between inflation and M1, the short-term interest rate in the Eurozone and variables representative of global economic flows. The correlation between inflation and the domestic short-term interest rate is 0.23. The strongest correlation is observed between the Global Electricity Price Index. energy and the average monthly price of BRENT oil.

Table 4. Correlation analysis - Serbia

	INFS	INPS	EXRS	MM1S	DIRS	EUIR	BROL	GPEI	GSGP	GPWH
INFS	1.000000	0.012498	0.327868	0.732707	0.229293	0.700656	0.721529	0.766532	0.690464	0.801961
INPS	0.012498	1.000000	0.185510	-0.206423	0.284386	0.124732	0.073229	0.021989	-0.016996	-0.127611
EXRS	0.327868	0.185510	1.000000	-0.108025	0.433485	0.268834	0.068101	0.191318	0.283938	0.086999
MM1S	0.732707	-0.206423	-0.108025	1.000000	-0.215135	0.561767	0.604437	0.608993	0.518690	0.739942
DIRS	0.229293	0.284386	0.433485	-0.215135	1.000000	0.581921	0.036680	-0.026098	-0.053530	-0.056661
EUIR	0.700656	0.124732	0.268834	0.561767	0.581921	1.000000	0.364436	0.276301	0.168982	0.334455
BROL	0.721529	0.073229	0.068101	0.604437	0.036680	0.364436	1.000000	0.927719	0.733166	0.785883
GPEI	0.766532	0.021989	0.191318	0.608993	-0.026098	0.276301	0.927719	1.000000	0.925569	0.857585
GSGP	0.690464	-0.016996	0.283938	0.518690	-0.053530	0.168982	0.733166	0.925569	1.000000	0.782792
GPWH	0.801961	-0.127611	0.086999	0.739942	-0.056661	0.334455	0.785883	0.857585	0.782792	1.000000

Source: Authors' calculation

SVAR results

The ADF test tests the null hypothesis that the time series has a unit root. It has been determined that there is a single root in the time series, with the fact that the time series for North Macedonia and Serbia are differentiated from the first order. According to the post-differentiation test, it was determined that the time series are stationary.

According to the testing of the delay period for the specification of the VAR model, according to the Final prediction error, Akaike information criterion, Schwarz information criterion and Hannan Quinn information criterion tests for North Macedonia and according to FP and HQ for Serbia, it was determined that 1 delay period is the most optimal for The VAR model.

As shown in Table 5 in the case of North Macedonia, all variables with the exception of inflation from the previous period have a statistically significant impact. Namely, the monetary aggregate M1 has a positive impact on inflation, also the domestic short-term interest rate has a positive impact on inflation, which shows that it is an efficient transmission mechanism for controlling inflationary pressure, the growth of oil, gas, electricity and grain prices have a positive effect on inflation that matches expectations.

Table 5. Variance decomposition of inflation – North Macedonia

Variance Decomposition of D(INFM): Period	S.E.	Shock1	Shock2	Shock3	Shock4	Shock5	Shock6	Shock7	Shock8	Shock9	Shock10
1	0.708721	100.0000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
2	0.803199	94.07328	1.441484	0.147104	0.753865	0.788065	0.002937	0.831495	0.085768	0.027208	1.848794
3	0.837896	91.41830	1.438266	0.281497	0.870154	1.192059	0.124469	2.109792	0.154397	0.068628	2.342438
4	0.850424	89.81244	1.443819	0.449574	0.920379	1.343384	0.447753	2.758343	0.150164	0.096984	2.577157
5	0.855847	88.82178	1.428902	0.550229	0.938784	1.428782	0.885255	3.001616	0.164754	0.102792	2.677107
6	0.859266	88.11630	1.418057	0.613620	0.937135	1.489746	1.321517	3.081712	0.197381	0.103727	2.720805
7	0.862058	87.59018	1.412934	0.652720	0.932219	1.531220	1.707354	3.098780	0.236661	0.103893	2.734034
8	0.864511	87.19026	1.411696	0.677486	0.926964	1.557836	2.030170	3.093327	0.274399	0.103538	2.734320
9	0.866635	86.88502	1.412472	0.693521	0.922509	1.575187	2.289000	3.082268	0.307807	0.103124	2.729093
10	0.868413	86.65284	1.414159	0.704125	0.918994	1.586471	2.491749	3.070837	0.335650	0.102725	2.722444

Source: Authors' calculation

As shown in Table 6 Serbia, with the exception of inflation from the previous period, all variables have a statistically significant impact on inflation. It is characteristic that the domestic short-term interest rate has a significant negative impact on inflation, which makes it an effective intermediate target for inflation control.

Table 6. Variance decomposition of inflation – Serbia

Variance Decomposition of D(LINFS): Period	S.E.	Shock1	Shock2	Shock3	Shock4	Shock5	Shock6	Shock7	Shock8	Shock9	Shock10
1	0.325853	100.0000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
2	0.358178	83.95402	0.050602	0.000424	0.270594	10.78063	0.529277	4.187898	0.085081	0.065768	0.075703
3	0.363148	81.82448	0.229029	0.279794	0.516052	10.55087	0.532758	5.501304	0.101043	0.101730	0.362935
4	0.363723	81.57003	0.238670	0.329854	0.536477	10.54854	0.545628	5.483993	0.263894	0.106605	0.376311
5	0.363943	81.47226	0.250798	0.336311	0.563083	10.53608	0.544969	5.508876	0.266397	0.130913	0.390304
6	0.363973	81.45902	0.251207	0.337800	0.564731	10.53680	0.545554	5.511447	0.270428	0.132314	0.390702
7	0.363980	81.45620	0.251197	0.337808	0.564713	10.53715	0.545569	5.513472	0.270438	0.132683	0.390769
8	0.363980	81.45598	0.251248	0.337823	0.564717	10.53713	0.545627	5.513480	0.270481	0.132736	0.390780
9	0.363980	81.45591	0.251251	0.337823	0.564728	10.53712	0.545677	5.513475	0.270492	0.132743	0.390785
10	0.363980	81.45587	0.251251	0.337828	0.564728	10.53712	0.545702	5.513473	0.270492	0.132743	0.390790

Source: Authors' calculation

DISCUSSION

The research shows that inflation in North Macedonia has a strong correlation with all research variables except industrial production, in the case of Serbia a significant positive correlation is observed between inflation and the monetary aggregate M1 and the short-term interest rate in the Eurozone. A positive correlation is also found between inflation and the domestic interest rate. According to SVAR, all variables in the model, with the exception of inflation from the previous period, have a statistically significant impact on inflation in North Macedonia and Serbia. Consequently, the general research hypothesis is accepted.

CONCLUSION

North Macedonia and Serbia, in order to stabilize domestic inflation, which had significant growth as a result of world economic and political challenges and the growth of global inflation, permanently increased the reference interest rate on treasury bills. According to the research, it can be concluded that the short-term interest rate in North Macedonia is a significant intermediate target for controlling inflation, and in the case of Serbia, the interest rate has a statistically significant impact on the decline in inflation in Serbia, which makes it a significant intermediate target and an efficient channel of monetary policy transmission.

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YÜKSEK TEKNOLOJİ ÜRÜN İHRACATI VE EKONOMİK BÜYÜME İLİŞKİSİ: APEC ÜLKELERİ ÖRNEĞİ

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Özet

Ekonomik büyüme, küresel ölçekte ülke politikalarına yön veren önemli bir makroekonomik göstergedir. Günümüzde ekonomik büyümenin gerçekleşebilmesi için teknoloji kritik öneme sahiptir. Teknolojik gelişme, üretim sürecinde kaynakların verimli kullanımını sağlayarak maliyetlerin düşürülmesi ve rekabetin artırılması ekseninde ülkelerin ekonomik büyüme hedeflerine katkı sağlayabilmektedir. Diğer taraftan, küresel ölçekte bir ülkenin teknolojik yeniliklerden faydalanarak dış ticarette diğer ülkelerle rekabet edebilecek düzeyde önemli bir noktaya gelmesi ekonomik büyümeye ivme kazandırmaktadır. Dolayısıyla yüksek teknoloji ürün ihracatı ülkelerin ekonomik büyüme hedeflerine katkı sağlayacak önemli bir göstergedir. Bu noktadan hareketle çalışmada, 18 APEC ülkesinin 2007-2022 dönemi için yüksek teknoloji ürün ihracatı ve ekonomik büyüme arasındaki ilişkisinin Yilanci & Kilci (2021) tarafından geliştirilen Panel fourier granger nedensellik analizi kullanılarak incelenmesi amaçlanmaktadır. Çalışmada ekonomik büyüme ve yüksek ürün ihracatı değişkenleri kullanılmıştır. Çalışmada elde edilen bulgular, APEC ülkelerinde panelin geneli için yüksek teknoloji ürün ihracatı ile ekonomik büyüme arasında çift yönlü nedensellik ilişkisi tespit edilmiştir. Ülkelerin nedensellik analizinden elde edilen bulgular ise Japonya, Güney Kore ve ABD'de yüksek teknoloji ürün ihracatı ve ekonomik büyüme arasında çift yönlü nedensellik ilişkisi bulunmuştur. Ayrıca, Avustralya ve Rusya'da yüksek teknoloji ürün ihracatından ekonomik büyümeye doğru tek yönlü nedensellik ilişkisi bulunduğu, Şili, Çin, Endonezya, Yeni Zelanda, Filipinler ve Singapur'da ise ekonomik büyümeden yüksek teknoloji ürün ihracatına doğru tek yönlü nedensellik ilişkisi bulunmuştur. Bulgular, ekonomik büyüme ve yüksek teknoloji ihracatı arasında önemli bağlantılar olduğunu ortaya koymaktadır.

Anahtar Kelimeler: Yüksek Teknoloji Ürün İhracatı, Ekonomik Büyüme, APEC Ülkeleri, Panel Fourier Granger Nedensellik Analizi

THE RELATIONSHIP BETWEEN HIGH-TECHNOLOGY PRODUCT EXPORTS AND ECONOMIC GROWTH: THE CASE OF APEC COUNTRIES

Abstract

Economic growth is an important macroeconomic indicator that shapes country policies on a global scale. Today, technology is critical for the realization of economic growth. Technological development can contribute to the economic growth targets of countries on the axis of reducing costs and increasing competition by ensuring efficient use of resources in the production process. On the other hand, on a global scale, a country's ability to compete with other countries in foreign trade by utilizing technological innovations gives an impetus to economic growth. Therefore, the export of high-technology product exports is an important indicator that will contribute to the economic growth targets of countries. From this point of view, the study aims to examine the relationship between high-technology product exports and economic growth for the period 2007-2022 for 18 APEC countries using the Panel fourier granger causality analysis developed by Yilanci & Kilci (2021). Economic growth and high-technology product exports variables are used in the study. The findings of the study indicate that there is a bidirectional causality relationship between high-technology product exports and economic growth in APEC countries for the whole panel. The findings obtained from the causality analysis of countries indicate that there is a bidirectional causality relationship between high-technology product exports and economic growth in Japan, South Korea and the US. In addition, a unidirectional causality relationship was found from high-technology product exports to economic growth in Australia and Russia, while a unidirectional causality relationship was found from economic growth to high-technology product exports in Chile, China, Indonesia, New Zealand, Philippines and Singapore. The findings reveal that there are important links between economic growth and high-technology product exports.

Keywords: High-Technology Product Exports, Economic Growth, APEC Countries, Panel Fourier Granger Causality Analysis

GİRİŞ

Tarihsel süreç içerisinde, teknolojinin ekonomik büyümedeki rolü ilk olarak teknolojik ilerlemelerin verimliliği ve ekonomik çıktıyı önemli ölçüde artırdığı Sanayi Devrimi sırasında vurgulanmıştır (Reamer, 2014). Neoklasik büyüme modelleri, özellikle de Solow'un (1956) modeli, uzun vadeli ekonomik büyümeyi yönlendiren dışsal bir faktör olarak teknolojik ilerlemenin önemini vurgulamıştır (Solow, 1956). Ancak bu modeller teknolojiyi ekonomi politikaları ya da yatırımlardan etkilenmeyen dışsal bir faktör olarak ele almıştır. Buna karşılık, 1980'lerde Romer (1986) ve Lucas (1988) gibi ekonomistler tarafından geliştirilen içsel büyüme teorileri, teknolojik değişimin ekonomik sistemin içsel bir parçası olduğunu ve beşerî sermaye, inovasyon ve bilgiye yapılan yatırımlardan etkilendiğini öne sürmüştür (Romer, 1986; Lucas, 1988). Bu modeller, Ar-Ge ve yüksek teknoloji endüstrilerini teşvik eden politikaların, sürekli teknolojik ilerlemeleri teşvik ederek sürdürülebilir ekonomik büyümeye yol açabileceğini savunmaktadır (Mohamed vd., 2022).

Yüksek teknoloji ürünlerinin ihracatı ile ekonomik büyüme arasındaki ilişki, modern ekonomi çalışmalarında önemli bir yer tutmaktadır. İleri düzey elektronik, ilaç, havacılık ve bilgi teknolojileri gibi yüksek teknoloji ürünleri, genellikle yenilikçilik ve verimlilik artışlarının temel kaynağı olarak kabul edilir. Bu ürünler, teknolojik gelişmelerin en üst seviyesini temsil etmekle kalmaz, aynı zamanda bu ürünleri üreten ve ihraç eden ülkelerin ekonomik yapısını da belirgin bir şekilde etkilemektedir (Erdil Şahin, 2019; Erkişi & Boğa, 2019; Sojoodi & Baghbanpour, 2023). Yüksek teknoloji ürünlerinin ihracatı, ekonomik büyümeye katkıda bulunmasının en önemli yollarından birisi, bir ülkenin küresel pazardaki rekabet avantajını artırmasıdır. Ülkeler, yüksek katma değerli ve ileri teknolojiye sahip ürünler ihraç ederek, geleneksel ürünlere kıyasla daha yüksek kâr marjları elde edebilirler. Bu durum, gelirlerin artmasına ve ekonomik büyümenin temel unsurlarından biri olan pozitif ticaret dengesine katkı sağlamaktadır. Ayrıca, yüksek teknoloji ürünlerine olan talep, araştırma ve geliştirme (Ar-Ge) yatırımlarını teşvik eder ve bu da sürekli yenilik ve iyileştirme sürecini desteklemektedir. Bu döngü, ekonomik büyümeyi sürdürülebilir kılmak için kritik öneme sahiptir (Göçer, 2013; Erdil Şahin, 2019; Mohamed vd., 2022).

Yüksek teknoloji ürünlerinin ihracatı, yüksek vasıflı istihdam fırsatları yaratarak ekonomik kalkınmayı önemli ölçüde artırabilir. Bu pozisyonlar sadece daha iyi maaşlar sağlamakla kalmaz, aynı zamanda uzun vadeli ekonomik istikrar için hayati önem taşıyan vasıflı işgücünün yetiştirilmesine de yardımcı olmaktadır. Güçlü bir yüksek teknoloji sektörü, küresel şirketlerin ihracatçı ülkede mevcut olan ileri teknolojik uzmanlık ve vasıflı işgücünden yararlanmak istemesi nedeniyle doğrudan yabancı yatırımı (DYY) da çekebilir. Ayrıca yüksek teknoloji ürün ihracatı, ekonomi üzerinde önemli bir çarpan etkisi oluşturabilir. Bu ihracattan elde edilen gelirler, eğitim, altyapı ve sağlık hizmetleri gibi diğer sektörlere yeniden yatırılarak genel ekonomik kalkınmayı teşvik edebilir. Ayrıca, yüksek teknoloji ürünleriyle ilişkili teknolojik ilerlemeler, diğer sektörlere yayılabilir ve bu da tüm sektörlerde üretkenliği ve verimliliği artırabilir (Güneş vd., 2020; Sojoodi & Baghbanpour, 2023; Navarro Zapata vd., 2024).

1989 yılında Asya-Pasifik Ekonomik İşbirliği (APEC) Pasifik Kıyıları ülkeleri arasında ekonomik işbirliği ve entegrasyonu geliştirmek amacıyla kurulmuştur. Bu kavram ilk olarak Avustralya Başbakanı Bob Hawke tarafından aynı yılın Ocak ayında Güney Kore'nin Seul kentinde yaptığı bir konuşmayla tanıtılmıştır. Ardından Kasım ayında 12 ekonomiden delegeler Avustralya'nın Canberra kentinde bir araya gelerek APEC'i resmen tanıtmıştır. Günümüzde APEC'te 21 üye ülke bulunmaktadır5 (APEC, 2024). 18 APEC ülkesinde yüksek teknoloji ürün ihracatı verileri Tablo 1'de verilmiştir.

Tablo 1: 18 APEC Ülkesinde Yüksek Teknoloji Ürün İhracatının Görünümü (Üretilen İhracatın, %)

Ülkeler	2007	2009	2011	2013	2015	2017	2019	2021	2022
Avustralya	14.53	16.66	17.94	18.00	19.69	18.09	21.21	22.39	25.61
Kanada	14.77	17.87	14.71	15.49	14.83	14.35	16.10	15.05	13.67
Şili	7.82	6.61	5.12	6.69	6.71	7.10	7.63	12.44	6.29
Çin	30.15	31.94	30.48	31.57	30.42	30.91	30.82	30.41	23.12
Hong Kong	21.62	33.79	20.81	13.90	12.30	61.55	65.56	70.54	34.81
Endonezya	11.00	12.87	10.64	9.57	8.89	8.45	8.09	7.20	7.94
Japonya	20.02	20.40	18.35	17.73	18.02	17.57	17.00	17.98	13.37
Güney Kore	32.22	32.06	28.18	29.82	31.21	32.55	32.40	36.19	16.98

[5] Avustralya, Brunei, Kanada, Şili, Çin, Hong Kong, Tayvan, Endonezya, Japonya, Güney Kore, Malezya, Meksika, Yeni Zelanda, Papua Yeni Gine, Peru, Filipinler, Rusya, Singapur, Tayland, ABD ve Vietnam'dır. Brunei, Tayvan ve Papua Yeni Gine ülkelerinde veri eksikliği olduğu için analize dâhil edilmemiştir.

Malezya	52.28	50.86	47.21	48.45	48.47	51.12	51.59	51.68	28.20
Meksika	17.18	22.68	21.15	20.51	19.57	21.17	20.41	19.80	19.34
Yeni Zelanda	10.04	9.91	12.62	10.73	10.11	9.25	9.87	9.76	11.96
Peru	2.51	3.71	6.54	2.87	3.81	5.12	4.08	4.46	4.58
Filipinler	68.90	65.53	46.35	49.24	53.06	60.32	62.25	64.23	66.61
Rusya	7.16	9.63	8.39	10.61	15.95	12.29	12.87	9.69	9.87
Singapur	48.48	50.88	47.73	50.32	52.21	53.07	51.81	55.01	25.01
Tayland	27.89	27.47	22.68	22.12	23.91	25.09	23.54	24.78	21.79
ABD	29.88	24.35	20.61	20.18	21.38	19.26	18.67	19.89	17.85
Vietnam	8.95	10.52	18.81	33.60	36.37	41.74	40.43	41.54	38.63

Kaynak: World Bank, 2024.

Grafik 1'e göre APEC ülkeleri içerisinde Filipinler, Hong Kong, Vietnam, Malezya, Çin, Singapur, Tayland, ABD, Avustralya, Meksika, Japonya ve Güney Kore inovasyona yaptıkları stratejik yatırımlar, güçlü üretim kabiliyetleri ve güçlü ticaret altyapıları nedeniyle yüksek teknoloji ürün ihracatında üst sıralarda yer almaktadır. Bu ülkeler özellikle elektronik, yarı iletkenler ve bilgi teknolojileri alanlarında önemli araştırma ve geliştirme çabalarıyla desteklenen ileri teknoloji sektörleri geliştirmiştir. Ayrıca, stratejik konumları ve elverişli ticaret politikaları verimli küresel ticareti kolaylaştırmaktadır. Örneğin, Hong Kong ve Singapur önemli ticaret merkezleri olarak hizmet verirken, Çin ve Güney Kore elektronik üretiminde lider konumdadır. ABD ve Japonya ise en son teknolojiler ve yüksek değerli ihracatlarla katkıda bulunarak küresel yüksek teknoloji pazarındaki konumlarını daha da sağlamlaştırmaktadır 2022 yılında teknolojik ürün ihracatının düşük olmasının nedeni ise COVID-19 pandemisinden neden olduğu ekonomik aksamalardan kaynaklanmaktadır (Tebaldi, 2011; Khan vd., 2024).

Bu çalışmanın temel amacı, 2007-2022 dönemi için yüksek teknoloji ürün ihracatı ile ekonomik büyüme arasındaki ilişkiyi 18 APEC ülkesi bağlamında Yilanci ve Kilci (2021) tarafından geliştirilen Panel fourier granger nedensellik analizi ile araştırmaktır. Veri kısıtı nedeniyle bu dönem ele alınmıştır. Çalışma sırasıyla; giriş, literatür, ampirik analiz ve sonuç bölümünden oluşmaktadır.

LİTERATÜR TARAMASI

Yüksek teknolojili ürün ihracatı ve ekonomik büyüme arasındaki ilişki, özellikle hem gelişmiş hem de gelişmekte olan ekonomiler bağlamında ampirik araştırmalarda önemli bir ilgi görmüştür (Tebaldi, 2011). Wörz (2004) 1981-1997 dönemi için 45 ülkeyi kapsayan bir çalışmada dinamik panel yöntemi kullanarak, ihracat ürünleri ile GDP arasında pozitif bir ilişki olduğunu belirlemiştir. Falk (2009) 1981-2004 dönemi için 22 OECD ülkesini kapsayan bir çalışmada dinamik panel yöntemi kullanarak HTE ile GDP arasında pozitif bir ilişki olduğunu belirlemiştir.

Kılavuz ve Topçu Altay (2012) 1998-2006 yılları arasında gelişmekte olan 22 ülkeyi kapsayan panel veri analizi kullanarak, yüksek teknolojili imalat sanayi ihracatı ile GDP arasında pozitif bir ilişki tespit etmişlerdir. Türedi (2013) 1995-2008 yılları arasında 53 ülkeyi kapsayan bir çalışmada, bilgi ve iletişim teknolojileri ile GDP arasındaki pozitif ilişkiyi regresyon analizi yöntemiyle ortaya koymuştur.

Telatar vd. (2016) 1996-2015 yılları arasında Türkiye'yi kapsayan çalışmalarında, eşbütünleşme ve nedensellik analizleri kullanarak HTE ile GDP arasında nedensel bir ilişki olduğunu tespit etmişlerdir. Ustabaş ve Ersin (2016) 1989-2014 yılldarı arasında Türkiye ve Güney Kore'yi kapsayan çalışmalarında zaman serisi analizi kullanarak Ar-Ge, HTE ve GDP arasındakı ilişkiyi incelemektedir. Bulgular, Türkiye'de HTE ile GDP arasında kısa dönemli ilişki bulunurken, Güney Kore'de ise HTE ile GDP arasında hem kısa hem de uzun dönemde ilişki bulunmaktadır. Işık ve Kılınç (2016) 1990-2011 yılları arasında seçilmiş ülkeleri kapsayan çalışmalarında, dinamik panel veri analizi kullanarak inovasyon ile GDP arasında pozitif bir ilişki tespit etmişlerdir. Kızılkaya (2016) 2001-2011 yılları arasında BRIC ülkelerini kapsayan çalışmasında, panel veri analizi kullanarak, Ar-Ge ve ticari açıklık ile HTE arasında pozitif bir ilişki tespit etmiştir.

Yıldız (2017) 2005-2014 yılları arasında Türkiye ve BRICS ülkelerini kapsayan çalışmasında, panel veri analiz yöntemi kullanarak HTE'nin GDP'yi artırdığını tespit etmiştir. Alper (2017) 1990-2015 yılları arasında Türkiye'yi kapsayan çalışmasında, GDP'den Ar-Ge ve HTE'ye doğru nedensellik ilişkisi olduğunu tespit etmiştir. Usman (2017) 1995-2014 yılları arasında Pakistan'ı kapsayan çalışmasında, en küçük kareler yöntemi kullanarak HTE ile GDP arasında bir ilişki olduğunu tespit etmiştir.

Durgun ve Çapik (2018) 1993-2016 yılları arasında Türkiye için eşbütünleşme ve hata düzeltme modellerini (VECM) kullanarak, HTE ve Ar-Ge harcamalarının GDP'ye uzun vadede olumlu katkı sağladığını ortaya koymaktadır. Konak (2018) 1992-2016 yılları arasında OECD ülkelerini kapsayan panel veri analizi çalışmasında, Türkiye'nin HTE'de diğer ülkelere kıyasla geride kaldığını tespit etmiştir. Kabaklarlı vd. (2018) 1989-2015 yılları arasında OECD ülkelerini kapsayan panel veri analizi çalışmasında, HTE ile GDP arasında bir ilişki olduğunu tespit etmişlerdir. Satrovic (2018) 1995-2015 yılları arasında 70 ülkeyi kapsayan panel veri analizinde, HTE ile GDP arasında pozitif bir ilişki olduğu bulunmuştur.

Erdil ve Şahin (2019) 1989-2017 yılları arasında Türkiye'yi kapsayan çalışmalarında, HTE ile GDP arasında pozitif bir nedensellik ilişkisi olduğunu tespit etmişlerdir. Şeker ve Özcan (2019) 1986-2016 yılları arasında Türkiye'yi kapsayan zaman serisi analizinde, HTE ile GDP arasında nedensellik ilişkisi olduğunu tespit etmişlerdir. Buchinskaya ve Dyatel (2019) 1992-2016 yılları arasında 38 Avrupa ülkesini kapsayan panel veri analizi çalışmasında, HTE ile GDP arasında bir ilişki olduğunu tespit etmişlerdir. Erkişi ve Boğa (2019) 1998-2017 yılları arasında AB-15 ülkelerini kapsayan panel veri analizi çalışmasında, HTE'nin GDP, istihdam ve brüt sermaye oluşumu üzerinde olumlu etkiler oluşturduğu belirlenmiştir.

Köse ve Gültekin (2020) 1996-2017 yılları arasında OECD ülkelerini kapsayan panel veri analizi çalışmasında, HTE ile GDP arasında çift yönlü bir nedensellik ilişkisi olduğunu tespit etmişlerdir. Yaman ve Sungur (2020) 1999-2007 yılları arasında 36 OECD ülkesini kapsayan panel veri analizi çalışmasında, GDP'den ileri teknoloji ihracatına doğru tek yönlü ndensellik tespit edilmiştir. Abidi (2020), 2008-2017 yılları arasında Togo için regresyon modeli ile HTE ile GDP arasında pozitif bir ilişki tespit etmiştir. Akbulut Yıldız ve Adıyaman (2021) 1996-2017 yılları arasında 29 üst-orta gelirli ülkeyi kapsayan panel veri analizi çalışmasında, HTE'nin GDP üzerinde etkisi bulunamamıştır. Doru ve Dabakoğlu (2021) 1995-2018 yılları arasında 11 geçiş ekonomisini kapsayan panel veri analizi çalışmasında, HTE ile GDP arasında pozitif bir ilişki tespit etmişlerdir. Dağlı ve Karaçadır (2021) 2000-2021 yılları arasında HTE ile GDP ilişkisine yönelik yapılan çalışmalardan hareketle meta-analizi uygulamıştır. Bulgular, HTE GDP'yi pozitif yönde etkilediğini tespit etmişlerdir.

Ersin vd. (2022) 1992-2016 yılları arasında 35 OECD ülkesini kapsayan dinamik panel eşik regresyonları ve önyükleme eşiği analizleri kullanarak, HTE'nin GDP üzerinde olumlu bir etki oluşturduğunu tespit etmişlerdir. Çeştepe vd. (2022) 1992-2019 yılları arasında E-7 ülkelerini kapsayan panel veri analizinde, HTE ve DYY'nin GDP'yi artırdığı ve değişkenler arasında çift yönlü nedensellik bulunmuştur. Dura ve Yılmaz (2022) 2007-2019 yılları arasında 28 gelişmiş ülkeyi kapsayan panel veri analizinde, HTE'nin GDP'yi olumlu bir etkisi tespit edilmiştir.

Kundak ve Aktop (2023) 2008-2020 yılları arasında 26 OECD ülkesini kapsayan panel ARDL/PMG analizinde, HTE'nin hem kısa hem de uzun vadede GDP'yi pozitif etkilediği tespit edilmiştir. Sojoodi ve Banghbanpour (2023) 2007-2022 yılları arasında 30 gelişmekte olan ve 30 gelişmiş ülkeyi kapsayan panel nedensellik analizinde, GDP'den HTE'ye doğru nedensellik ilişkisi tespit etmişlerdir.

Shadab ve Alam (2024) 1991-2020 yılları arasında Birleşik Arap Emirlikleri'ni kapsayan çalışmalarında, nedensellik analizi kullanarak HTE'den GDP'ye doğru bir nedensellik ilişkisi tespit etmişlerdir. Yağış (2024) 1996-2021 yılları arasında G-7 ülkelerini kapsayan panel veri analizinde, HTE ve AR-GE faaliyetlerinin GDP üzerinde hem kısa hem de uzun vadede pozitif etkileri olduğunu göstermektedir.

Literatür taramasına göre, 2007-2022 yılları arasında 18-APEC ülkesi için yüksek teknoloji ürün ihracatı ve ekonomik büyüme ilişkisi üzerine herhangi bir araştırmaya rastlanılmamıştır. Dolayısıyla bu çalışma aldığı ülke grubu, dönemi ve analiz yöntemi bakımından diğer çalışmalardan ayrılmaktadır. Bu anlamda çalışmanın literatüre katkı sunması beklenilmektedir.

AMPİRİK ANALİZ

Bu çalışmada, Yilanci ve Kilci (2021) tarafından geliştirilen Panel fourier granger nedensellik testi kullanılarak, 2007-2022 dönemi için 18 APEC ülkesi için yüksek teknoloji ürün ihracatı ile ekonomik büyüme arasındaki ilişki incelenmiştir. Çalışmada kullanılan verilerin logaritmaları alınmıştır. Ayrıca analizlerin gerçekleştirilebilmesi için ekonometrik programlar kullanılmıştır. Wörz (2004), Falk (2009), Kılavuz & Topçu Altay (2012), Telatar vd. (2016), Usman (2017), Yıldız (2017), Satrovic (2018), Kabaklarlı vd. (2018), Buchinskaya & Dyatel (2019), Köse & Gültekin (2020), Doru & Dabakoğlu (2021), Dura & Yılmaz (2022), Ersin vd. (2022), Kundak & Aktop (2023),

Sojoodi & Banghbanpour (2023) ve Yağış (2024) tarafından yapılan çalışmalardan hareketle oluşturulan model Denklem (1)'de belirtilmiştir;

$$GDP_{it} = \beta_0 + \beta_{i1} HTE_{it} + \varepsilon_{it} \quad \textbf{(1)}$$

Modelde yer alan verilerin açıklamaları ve kaynağı Tablo 1'de verilmiştir.

Tablo 1: Veriler

Veriler	Kısaltma	Veri Kaynağı
Ekonomik Büyüme (Kişi Başına Düşen Gayrisafi Yurt İçi Hasıla, sabit 2015 ABD Doları)	GDP	Dünya Bankası Web Sitesi
Yüksek teknoloji ihracatı (Üretilen ihracatın, %)	HTE	

Ampirik analiz dört aşamada gerçekleştirilmiştir. İlk aşamada, APEC ülkelerinin panel verisi için tanımlayıcı istatistikleri sunulmuştur. İkinci aşamada, yatay kesit boyutu (N=18) zaman boyutundan (T=16) büyük olduğu (N>T) için modelin yatay kesit bağımlılığı Pesaran (2004) tarafından geliştirilen CD testi ile, modelin homojenliği Swamy (1970) tarafından geliştirilen homojenlik testi ile ve birim kök testi ise Pesaran (2007) tarafından geliştirilen CIPS testi ile değerlendirilmiştir. Son aşamada ise, değişkenlerin birinci farkta durağan olduğu göz önünde bulundurularak Yilanci ve Kilci (2021) tarafından geliştirilen Panel fourier granger nedensellik testi uygulanmıştır.

BULGULAR

Ampirik çalışmanın başlangıcında, Tablo 2'de değişkenlerin tanımlayıcı istatistikleri sunulmuştur. Bu çalışmada kullanılan değişkenlerden GDP, ortalama, standart sapma, minimum ve maksimum değerler açısından diğer değişken olan HTE'den yüksek değerlere sahiptir. Korelasyon ilişkisine bakıldığında ise GDP ile HTE arasında küçük ama pozitif bir ilişki bulunmaktadır. Bu sonuç, iki değişken arasında çoklu doğrusal bağlantı (multicollinearity) sorunu olmadığını göstermektedir.

Tablo 2: Tanımlayıcı İstatistikler

Değişkenler	Ortalama	Std. Sapma	Minumum	Maxsimum	Gözlem Sayısı
GDP	9.576	1.078	7.475	11.126	288
HTE	2.965	0.729	0.919	4.256	288
Korelasyon Matrisi					
GDP		1.000			
HTE		0.064		1.000	

Yatay kesit bağımlılık testinin bulguları Tablo 3'te verilmiştir. Yatay kesit bağımlılık testinin temel hipotezi, $H0$: Yatay kesit bağımlılığının olmadığını ve alternatif hipotezi ise $H1$: Yatay kesit bağımlılığının olduğunu ifade etmektedir. Elde edilen bulgular, her iki değişken içinde %1 (p=0.00<0.01) anlamlılık düzeyinde temel hipotez ($H0$) reddedilmiştir. Bu sonuç, modelde yatay kesit bağımlılığının mevcut olduğunu ortaya koymaktadır.

Tablo 3: Yatay Kesit Bağımlılık Testi Bulguları

CD Test	GDP	HTE	Model
Pesaran CD	43.335 (0.000)***	4.120 (0.000)***	28.080 (0.000)***

Not: "***", %1 anlamlılık düzeyini göstermektedir.

Homojenlik testinin bulguları Tablo 4'te verilmiştir. Homojenite testinin temel hipotezi, $H0$: Eğim katsayılarının homojen olduğunu ve alternatif hipotezi ise $H1$: Eğim katsayılarının heterojen olduğunu ifade etmektedir. Elde edilen bulgular, hem değişkenlerin hem de modelin %1 (p=0.00<0.01) anlamlılık düzeyinde temel hipotezi ($H0$) reddedilmiştir. Bu sonuç, modelin eğim katsayılarının heterojen olduğunu ortaya koymaktadır.

Tablo 4: Homojenite Testi Bulguları

Swamy Testi	GDP	HTE	Model
Test İstatistiği	141.97 (0.000)***	146.44 (0.000)***	277.47 (0.000)***

Not: "***", %1 anlamlılık düzeyini göstermektedir.

CIPS birim kök testi bulguları Tablo 5'de verilmiştir. CIPS birim kök testinin temel hipotezi, $H0$: Birim kökün var olduğunu ve alternatif hipotezi ise $H1$: Birim kökün var olmadığını ifade etmektedir. Elde edilen bulgular, GDP ve HTE değişkeninin seviyede durağan olmadığı farkı alınca durağan hale gelmektedir. Bu sonuç, değişkenlerin I(1) olduğunu göstermektedir.

Tablo 5: Birim Kök Testi Bulguları

Değişkenler	Düzey	1.Fark	Sonuç
GDP	-1.683	-2.649***	I(1)
HTE	-1.955	-3.021***	I(1)
Kritik Değerler	**%1**	**%5**	**%10**
	-2.45	-2.22	-2.11

Not: "***", %1 anlamlılık düzeyini göstermektedir.

CIPS birim kök testi sonucunda değişkenlerin I(1)'de durağan olmasının ardından Yilanci ve Kilci (2021) tarafından geliştirilen Panel Fourier Granger Nedensellik analizi uygulanmıştır. Tablo 6'da, Panel fourier granger nedensellik bulguları yer almaktadır. Panel fourier granger nedensellik bulgularına göre; yüksek teknoloji ürün ihracatı ile ekonomik büyüme arasında %1 anlamlılık düzeyinde çift yönlü (HTE⇔GDP) nedensellik sonucu elde edilmiştir. Ülke bulgularına göre ise; HTE ile GDP arasında çift yönlü (HTE⇔GDP) nedensellik; Japonya, Güney Kore ve ABD'de tespit edilmiştir. HTE'den GDP'ye tek yönlü (HTE⇒GDP) nedensellik; Avustralya ve Rusya'da bulunmuştur. GDP'den HTE'ye tek yönlü (GDP⇒HTE) nedensellik; Şili, Çin, Endonezya, Yeni Zelanda, Filipinler ve Singapur'da tespit edilmiştir. Çalışmada yer alan diğer ülkeler için herhangi bir nedensellik ilişkisi tespit edilmemiştir.

Tablo 6: Panel Fourier Granger Nedensellik Bulguları

Ülkeler	H0: HTE ⇏ GDP				H0: GDP ⇏ HTE			
	Lag	Frequency	Wald Stat	Prob	Lag	Frequency	Wald Stat	Prob
Avustralya	2	1	9.126	0.010**	2	1	2.411	0.299
Kanada	1	3	0.865	0.452	1	3	0.185	0.668
Şili	2	1	2.432	0.296	2	1	4.658	0.097*
Çin	2	1	3.505	0.174	2	1	10.553	0.005***
Hong Kong	1	1	0.127	0.720	1	1	0.454	0.500
Endonezya	2	1	0.381	0.827	2	1	13.197	0.001***
Japonya	2	1	26.948	0.000***	2	1	8.384	0.015**
Güney Kore	2	1	5.381	0.067*	2	1	5.368	0.068*
Malezya	2	1	3.803	0.149	2	1	0.752	0.687
Meksika	2	2	3.581	0.167	2	2	0.691	0.707
Yeni Zelanda	2	3	0.687	0.710	2	3	5.182	0.074*
Peru	2	5	0.964	0.618	2	5	0.466	0.792
Filipinler	1	4	0.889	0.346	1	4	8.102	0.004***
Rusya	2	1	4.709	0.094*	2	1	0.511	0.775
Singapur	2	1	2.147	0.342	2	1	8.051	0.017**
Tayland	2	1	0.116	0.943	2	1	0.351	0.838
ABD	2	2	4.643	0.098*	2	2	4.901	0.086*
Vietnam	1	1	1.009	0.316	1	1	0.938	0.332
Panel ZNT			4.803	0.000***			5.395	0.000***

Not: "***", "**", "*" sırasıyla %1, %5 ve %10 anlamlılık düzeylerini göstermektedir.

SONUÇ

Yüksek teknoloji ürünlerinin ihracatı, tarihsel süreçte ekonomik büyümenin kritik bir itici gücü olarak öne çıkmaktadır. Bu ihracat, bir ülkenin küresel pazardaki rekabetçi konumunu güçlendirmekte, yüksek vasıflı iş gücü yaratmakta, yabancı yatırımları çekmekte ve yeniden yatırım ile teknolojik yayılma yoluyla daha geniş ekonomik kalkınmayı teşvik etmektedir. Küresel ekonominin giderek daha fazla birbirine bağlı ve teknoloji odaklı hale gelmesiyle birlikte, yüksek teknoloji ihracatının ekonomik büyümeyi teşvik etmedeki önemi artmaya devam etmektedir. Buradan hareketle bu çalışmada, Yilanci ve Kilci (2021) tarafından geliştirilen Panel fourier granger

nedensellik testi kullanılarak, 2007-2022 dönemi için 18 APEC ülkesi için yüksek teknoloji ürün ihracatı ile ekonomik büyüme arasındaki ilişki incelenmiştir. İlk olarak, panelde seriler arasında yatay kesit bağımlılığı, homojenite testi ve birim kök testi yapılmıştır. Serilerde yatay kesit bağımlılığı tespit edilmesi, modelin heterojen olması ve birim kök testi sonucunda birinci farkta durağan olması nedeniyle hem panelin geneli hem de panelde yer alan ülkeler için panel fourier granger nedensellik testi ile analiz gerçekleştirilmiştir.

Panel fourier granger nedensellik testi bulgularına göre, APEC ülkelerinde panelin geneli için yüksek teknoloji ürün ihracatı ile ekonomik büyüme arasında çift yönlü nedensellik ilişkisi tespit edilmiştir. Ülkelerin nedensellik analizinden elde edilen bulgular ise Japonya, Güney Kore ve ABD'de yüksek teknoloji ürün ihracatı ve ekonomik büyüme arasında çift yönlü nedensellik ilişkisi bulunmuştur. Ayrıca, Avustralya ve Rusya'da yüksek teknoloji ürün ihracatından ekonomik büyümeye doğru tek yönlü nedensellik, Şili, Çin, Endonezya, Yeni Zelanda, Filipinler ve Singapur'da ise ekonomik büyümeden yüksek teknoloji ürün ihracatına doğru tek yönlü nedensellik ilişkisi bulunmuştur. APEC ülkelerinden elde edilen bulgular, yüksek teknoloji ihracatı ile ekonomik büyüme birbiriyle yakından ilişkilidir. Bu sonuçlar literatürdeki, çoğu çalışma ile benzerlik göstermektedir.

Bu bulgular doğrultusunda APEC ülkelerindeki hükümetlerin, araştırma ve geliştirmeyi (Ar-Ge) destekleyen, eğitim sistemlerini iyileştiren ve hem teknoloji girişimleri hem de yerleşik firmalar için elverişli iş ortamları oluşturan politikalara öncelik vermelidir. Nitelikli işgücünün geliştirilmesi, yüksek teknoloji endüstrilerinin sürdürülebilmesi için elzemdir. Eğitime ve sürekli mesleki gelişime yapılan yatırım rekabet avantajının korunmasına yardımcı olabilir. Uluslararası işbirliklerinin ve ticaret anlaşmalarının güçlendirilmesi teknoloji ve uzmanlık alışverişini kolaylaştırarak yüksek teknoloji ihracatını ve ekonomik büyümeyi daha da artırabilir. Gelecekteki araştırmalar, farklı ülke gruplarının incelenmesi, alternatif değişkenlerin kullanılması ve çeşitli metodolojik yaklaşımların uygulanmasıyla mevcut literatür daha da zenginleştirilebilir.

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KİLİT DENETİM KONULARININ BAĞIMSIZ DENETİM RAPORLARINA ETKİSİ: BORSA İSTANBUL ANALİZİ

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Özet

Dünyada küresel boyutlara ulaşan ticaret ağı şirketler açısından rekabet ortamı oluşturmaktadır. Büyüyen bu rekabet ortamında şirketler pazar payını arttırmak ve uluslararası boyutta ticari faaliyetlerini sürdürerek güçlü konumda olmak isterler. Güçlü olmayı hedefleyen şirketler ise ürün ve hizmetlerin haricinde şirket içi ve dışında faaliyette olduğu alanları kontrol ve denetim organlarıyla incelemeleri şirketlerin güçlü konuma gelmelerine katkı sağlayacaktır. Denetim aracılığıyla şirketin finansal hesaplarının objektif olarak açıklanması ve yasalara uygunluğu sağlanarak şirketin ticari faaliyetlerinde sağlıklı kararlar almalarında önemli bir etki sağlayacaktır. Şirketlerin ise bağımsız kişiler tarafından denetlenerek finansal raporların doğruluğu ve güvenilirliği açısından hem şirket içi hem de şirket dışı kişi veya kurumlara tarafsız ve şeffaf bilgilerin sunulmasına katkı sağlayacaktır. Bağımsız kişiler tarafından yapılan denetim raporunda şirket açısından önemli ve riskli olan konuların belirlenerek raporda açıkça bildirilmesi ise kilit denetim konusu kavramını ön plana çıkarmaktadır. Kilit denetim konuları 09.03.2017 tarihinde yayınlanan BDS 701 standardı gereğince bağımsız denetim raporunda bildirilmesi zorunluluğu ile bağımsız denetim raporları daha da önem kazanmaktadır.

Çalışma kilit denetim konularının bağımsız denetim raporunun kalitesine nasıl etki edeceği ve hangi kilit denetim konularının ilgili sektörde ön plana çıktığını tespit etmeyi amaçlamaktadır. Bu doğrultuda Borsa İstanbul'da işlem gören tekstil sektöründe faaliyet gösteren şirketlerin denetim raporları incelenecektir. Raporlardan elde edilen veriler içerik analizi yöntemi ile analiz edilecektir. Analiz sonucunda şirketlerin en çok hasılat, maddi duran varlıklar ve stoklar kilit denetim konusu olarak ön plana çıkması beklenmektedir. Dolayısıyla şirketler kilit denetim konularının kontrollerini arttırarak finansal yapılarını güçlendirebilmekte ve bu denetim raporlarının kalitesini arttırarak uluslararası rekabette güç kazanmalarını sağlayacaktır. Bir diğer ifadeyle kilit denetim konularına verilen önem bağımsız denetim raporunun kalitesini arttırmasına katkı sağlayacaktır.

Anahtar Kelimeler: Kilit Denetim Konuları, Bağımsız Denetim, Denetim, Borsa İstanbul

Abstract

The global trade network in the world creates a competitive environment for companies. In this growing competitive environment, companies want to increase their market share and continue their commercial activities internationally and be in a strong position. Companies that aim to be strong will contribute to the companies becoming strong by examining the areas in which they operate inside and outside the company, in addition to products and services, with control and auditing bodies. The objective disclosure of the company's financial accounts through auditing and ensuring their compliance with the law will have a significant impact on the company's making sound decisions in its commercial activities. On the other hand, companies will be audited by independent persons and will contribute to the provision of impartial and transparent information to both internal and external persons or institutions in terms of accuracy and reliability of financial reports. The fact that the issues that are important and risky for the company are determined in the audit report conducted by independent persons and clearly reported in the report brings the concept of key audit matter to the forefront. Independent audit reports gain even more importance with the obligation to report key audit matters in the independent audit report in accordance with the IAS 701 standard published on 09.03.2017.

The study aims to determine how key audit matters will affect the quality of the independent audit report and which key audit matters are prominent in the relevant sector. In this context, the audit reports of companies operating in the textile sector traded on the Istanbul Stock Exchange will be examined. The data obtained from the reports will be analysed using the content analysis method. As a result of the analysis, it is expected that the

companies will mostly focus on revenue, tangible fixed assets and stocks as key audit matters. Therefore, companies can strengthen their financial structures by increasing the control of key audit matters and will increase the quality of these audit reports, thus enabling them to gain strength in international competition. In other words, the importance given to key audit matters will contribute to increasing the quality of the independent audit report.

Keywords: Key Audit Matters, Independent Audit, Audit, Borsa Istanbul

GİRİŞ

Şirketler gün geçtikçe büyümeye çalışmakta ve uluslararası pazarda boy göstermek için kendilerini geliştirme çabalarında olurlar. Şirketlerin bu faaliyetleri tertip ve düzen içerisinde yürütebilmesi için birtakım faaliyetlere ihtiyacı bulunmaktadır. Küreselleşen ekonominin içerisinde denetim kavramı vazgeçilmez bir parça haline gelmektedir. İlerleyen süreçte denetim raporlarında birtakım eksikliklerden kaynaklı olarak büyük tehditler oluşturabilmekte ve şirketlere yatırımlarda bulunmak isteyen dış paydaşlar açısından güven problemi oluşmaktadır (Özcan, 2021). Gelişen piyasalarda şirketler daha rahat yer edinebilmek ve rekabette güçlü kalabilmek için muhasebe sistemlerini aktif karşılaştırılabilir finansal tablolar şeklinde bağımsız denetime bağlı yürüterek güven düzeyini arttırabilmektedir (Mızrak, 2016). Büyümeye devam eden şirketler açısından bağımsız denetime verilen önem de şirket ile aynı oranda büyümeye devam etmektedir ancak bağımsız denetim raporlarında birtakım bilgi eksikliklerinin bulunması raporlara olan güvenin sorgulanması ortaya bir tartışma çıkarmaktadır (Arzova ve Şahin, 2020). Bu bağlamda Uluslararası Denetim ve Güvence Standartları Kurulu (IAASB - International Auditing and Assurance Standards Board) bir takım yeni düzenlemeleri faaliyete geçirmiştir (Çeltikçi ve Atay, 2021). Bu düzenlemelerden öne çıkan kavram ise Kilit Denetim Konuları adında bir düzenleme ortaya çıkmaktadır. ISA 701 Kilit Denetim Konularının Bağımsız Denetçi Raporunda Bildirilmesi kavramını yayımlamasıyla ülkemizde de Bağımsız Denetim Standardının Kilit Denetim Konularının Bağımsız Denetim Raporunda Bildirilmesi Standardı da 01.01.2018 tarihi ve sonrasındaki hesap dönemlerinde uygulanması kararı 09.03.2017 tarihli Resmi Gazete ile yürürlüğe girmiştir (Aktaş ve Acar, 2020).

Çalışma kapsamında Bağımsız Denetim kavramı hakkında birtakım bilgilendirmelerde bulunulmuş ardından bağımsız denetim raporlarında sıkça gördüğümüz Kilit Denetim Konuları hakkında bilgiler verilerek Borsa İstanbul'da bulunan Tekstil şirketleri üzerinden yapılan incelemeler ile 2019, 2020, 2021, 2022 ve 2023 yıllarına ait kilit denetim konularının nasıl bildirildiği ve hangi kalemlerin kilit denetim konusu olarak ortaya çıktığı açıklanmaktadır.

BAĞIMSIZ DENETİM VE KAVRAMSAL ÇERÇEVE

Bağımsız denetim, şirketlerden bağımsız kişi ve kurumların şirketler hakkında finansal tablolarında bulunan hesaplarının birtakım kurallar doğrultusunda fikirler belirtmesi aynı zamanda şirketin faaliyetlerini etik kurallara uygun denetlemesi ile şirketlerin belgelerindeki incelemeleri sonucunda şirket hakkında görüşlerini rapor aracılığıyla sunma biçimidir (Bağatır, 2019, s:122). Bağımsız denetimi ise 01.06.1989 tarihi ve 3568 sayılı Serbest Muhasebeci Mali Müşavirlik ve Yeminli Mali Müşavirlik Kanunun da belirtilen şartları sağlayan ve mali müşavirlik ruhsatı olan ayrıca kurumun bu alanda yetki vermiş olduğu kişiler yapabilirler (Bağımsız Denetim Yönetmeliği, 2012, m:4a).

Bağımsız denetim gerekliliğin haricinde mecburi bir hal alması büyüyen rekabet ortamında şirketlerin de büyümesiyle bağlantılıdır. Küresel rekabet ortamında büyümeye devam eden şirketlerin haliyle denetimin de yapılmasında zorluklar olacaktır. Şirket üst yöneticilerinin faaliyetleri kontrol edebilmesi denetim faaliyetlerine büyük önem vermesiyle sağlanmaktadır. Görüldüğü üzere küresel boyutlara ulaşan şirketler için denetim büyük bir yer edinmektedir. Küresel boyutlarda olan şirketlerin faaliyetleri sadece şirketi değil aynı zamanda dış paydaşları da ilgilendirmektedir. Şirkete yatırımlar yapmak isteyen dış paydaşlar şirketin yapısı hakkında bilgi alarak yapacağı yatırımlar hakkında karar vermektedir. Alınacak bu kararların doğru verilebilmesi için şirketler mali tablolarını raporlar halinde açıklamalı ve bu raporlar şeffaf ve güvenilir bilgiler olmalıdır (Tezcan, 2019: s.8).

BAĞIMSIZ DENETÇİDE BULUNMASI GEREKEN ETİK KURALLAR

Bağımsız denetimi yapacak kişinin ilgili alan ve bölümlerde bilgi sahibi olması ve meslekte yeterli düzeyde bir deneyim sahibi olması, bunların haricinde olmazsa olmazı hem insan olarak hem mesleki açıdan birtakım toplumsal etik kurallara uyması gerekmektedir (Gönül, 2020, s:14). Denetçinin uyması gereken temel ilkeler şu şekildedir (Bağımsız Denetçiler İçin Etik Kurallar Standardı, 2017, s:4):

- **Dürüstlük:** Mesleki faaliyeti bulunan kişinin meslekte doğru, net, şeffaf olmalıdır.
- **Tarafsızlık:** Meslek erbabı kişinin denetim faaliyetini yaparken hem denetimini yapmış olduğu firma hem de dış kaynakların hiçbirinden etkilenmeden ve herhangi birinin isteğine göre bir rapor hazırlamamalı tamamıyla kendi fikir ve kararları doğrultusunda raporları hazırlamalıdır.
- **Mesleki yeterlilik ve özen:** Bağımsız denetçi kendini sürekli güncel tutmalı mesleğiyle ilgili olan tüm gelişmeleri takip ederek kendini yapacağı iş kapsamında her bilgiyi verebilecek şekilde yeterliliği bulunmalıdır.
- **Sır saklama ve gizlilik:** En önemli kavramlardan biri de denetimini yapmış olduğu firma hakkında edinmiş olduğu bilgileri üçüncü kişilere herhangi bir sebeple paylaşmamalı, kendisi ve üçüncü kişilere bu bilgiler üzerinden bir fayda sağlamamalıdır.
- **Mesleğe uygun davranış:** Meslek etik kuralları ve saygınlığına ters düşecek herhangi bir davranıştan uzak durmalıdır.

KİLİT DENETİM KONULARI VE KAVRAMSAL ÇERÇEVE

Kilit Denetim Konuları; denetimi yapacak kişinin meslek bilgileri aracılığıyla dönem içerisinde finansal tablolarında denetim esnasında en çok dikkat edilmesi gereken ve riskli görülen konulardır. Bu konular şirketin üst yönetiminde bulunan kişilere sunulan konulardan seçim yapılmaktadır (BDS 701, 2017, m:8). Kilit denetim konuları, 6102 sayılı Türk Ticaret Kanunu'nda belirtilen denetime tabi şirketlerin 01.01.2018 hesap dönemi itibariyle Bağımsız Denetim Raporlarında Kilit Denetim Konularının Yayınlanması 09.03.2017 tarihinde ve 30002 numaralı Resmi Gazete ile yürürlüğe girmiştir (BDS 701, 2017: m:6).

Bağımsız denetçilerin denetimde şeffaflık ve iletişim kalitesinin arttırması raporda Kilit Denetim Konularının bildirilmesiyle önemli bir anlamı bulunmakta ve aynı zamanda denetçi raporunda kilit denetim konularını bildirerek finansal tabloların ilgili kullanıcılarına birtakım ek bilgileri de sağlamaktadır (BDS 701, 2017, m:2). Kilit Denetim Konularının (KDK) bildirilmesinin zorunlu olması ise denetimi yapan denetçi ile şirket yönetimindeki kişilerin iletişimlerinin geliştirilmesi açısından önemlidir ve şirket yönetimindeki kişilerin denetim raporundaki tablolara daha fazla dikkatini vermesi gerekmektedir (BDS 701, 2017, m:A3). Anlaşılacağı üzere denetim raporunda KDK bildirilmesi ile denetimde şeffaflığı arttırmakta ve aynı zamanda şirket yöneticileri ve denetçi arasında sıkı bir ilişkinin oluşmasını sağlamaktadır.

KİLİT DENETİM KONULARI BELİRLENMESİ

Kilit denetim konuları denetimi yapan kişinin şirket üst yönetiminde bulunan kişilere bildirmiş olduğu konulardan, ilgili hesap döneminde en çok dikkat gerektiren konuların belirlenmesidir (BDS 701, m:A9). Denetçinin KDK'ları belirlerken bir önceki dönemle bağlantılı şekilde ilerlemektedir ancak KDK'ları güncelleme ve değiştirme zorunluluğu bulunmamaktadır (BDS 701, m:A11). Denetçi azami bir şekilde dikkati gerektiren, riski bulunan ve finansal tablolarında "önemli yanlışlık" içeren konuları belirlenmesine ve değerlendirilmesine odaklanmaktadır. Belli bir hesap kaleminde önemli yanlışlık riski ne kadar yüksekse denetim yöntemlerini planlama ve uygulama aşamasında bir o kadar fazla hesaplama yapması gerekmektedir. Dolayısıyla denetçi bu denetimi planlamasında risk düzeyi yüksek bulduğu değerlemeler için ikna edecek denetim delilleri bulmaya çalışmalıdır. Bulacağı deliller risk derecesi için yeterli değilse ya daha fazla ikna edici delil bulmalı ya da kabul edilebilirliği yüksek kaynaklardan delillerle güvenilirliği oluşturabilir (BDS 701, 2017, m:A12). Denetçi KDK belirlerken şu hususlara dikkat etmelidir (BDS 701, m:9):

- BDS 315 de belirtilen "önemli yanlışlık" risk düzeyi daha yüksek kabul edilen alanlar
- Tablolarda tahmin edilebilirliği zor olan yönetimin bazı öngörülerini içeren belirsizlik durumları
- Faaliyet döneminde bulunan olayların denetime yapacağı etkiler şeklinde bulunmuştur.

Denetçinin şirket yönetimine bildirdiği konunun önemi hakkında ve kilit denetim konusu olabileceğini belirlenmesinde dikkat etmesi gereken bir diğer şartlarda şunlardır (BDS 701, 2017, m:A29):

- Finansal tablo kullanıcılarının konuların önemi ve finansal tablo bakımından önem derecesi,

- Belirlenen konunun sektördeki şirketlerle karşılaştırılması ve muhasebe standartlarındaki özelliklerine bakarak seçilen politikanın öznel yönü ve karmaşa durumunu incelenmesi,
- Hata ve hile bulunan konularda düzenlenme veya yapılamayan yanlışlıkların nitel ve nicel açıdan öneminin incelenmesi,
- Konuların seçilmesinde dikkat edilecek denetim prosedürlerinin değerlendirebilecek uzmanlık becerilerinin incelenmesi,
- Belirlenen konular için denetçinin kendi ekibi dışındaki denetçilerle görüşmelerinin incelenmesi,
- Denetçi prosedürleri uygularken görüşlerinin doğrultusunda güvenebileceği delilleri temin etmesi sırasında yaşayacağı zorlukların incelenmesi,
- Belirlenecek konu hakkında yaşanabilecek kontrol eksikliğinin incelenmesi,
- Denetçi konuları belirlerken konulardan ayrı ancak bağlantılı yönlerinin incelenmesi,

Denetçi kilit denetim konusunu belirlerken karşılaştırılmış tabloların bulunulması halinde denetçinin görüşünü etkilememelidir denetçi belirleyeceği konuları ilgili dönemle sınırlamalıdır (BDS 701, 2017, m:10). BDS 540 kapsamında belirtilen tahmin belirsizliği yüksek muhasebe tahminleri hakkında finansal tabloların kullanıcıları bilgi almak istemekte ve bu tahminleri yönetimin kararına bağlı olmasıyla birlikte finansal tabloların karışık alanlarını oluşturmaktadır. Bu sebeple hem yönetimin hem de denetçinin uzman kişilerden bilgi alması gerekebilir. Ayrıca finansal tablo kullanıcıları tablolardan bilgi sahibi olabilmeleri için muhasebe prosedürleri hakkında bilgi sahibi olmaları gerekmektedir. Özellikle şirketin faaliyetlerinin piyasadaki rakiplerine göre bir tutarsızlık bulunması durumunda finansal tablo kullanıcısının da bilgi sahibi olması daha da çok önem kazanmaktadır (BDS 701, 2017, m:A24).

KİLİT DENETİM KONULARININ BİLDİRİLMESİ

Denetçi mesleki yeterliliğiyle finansal tablolar için ilgili dönem içerisinde önemli gördüğü konuları "Kilit Denetim Konuları" şeklinde bir başlık açarak bildirir ve denetçi görüşünü kapsamında ele alındığını ayrıca bir fikir bulunmadan belirtildiğini bildirmektedir (BDS701, 2017, m:11). Ancak denetçi olumlu görüş haricinde bir görüş belirtecek olursa bunu Kilit Denetim Konuları kısmında belirtmez (BDS701, 2017, m:12). Denetleyicinin kilit denetim konularını başka bir bölümde ve denetçi görüşüne mümkün mertebe yakın bir konumda bildirilmesi bu bilgileri göz önünde bulunduracaktır ve aynı zamanda finansal tablo kullanıcılarının da ne ölçüde önem verdiği anlaşılacaktır (BDS701, 2017, m:A31). Önemli görülen kilit denetim konularının raporlarda bildirilme sıralaması ise denetçinin görüşüne bağlıdır ve denetçi bu sıralamayı yaparken finansal tablolarda belirtilen şekillerde raporda bildirebilir (BDS701, 2017, m:A32).

Kilit denetim konusunu bildirecek denetçinin şirket yönetimi ile doğru zamanda iletişime geçmelidir ancak bu iletişim denetimin kriterlerine göre farklı durumlar gösterebilmektedir. Denetçi bildirilecek konunun kapsamı ve süreci hakkında şirket yönetimine ilk bulgularını iletebilir (BDS701, 2017, m:A60). Denetçi kilit denetim konusu bildirmemesi doğrultusunda karar alabilir ancak bu kararın sonucunda şirket yönetimi ve bu alanda iyi olan bir denetçi ile daha fazla görüşmesine yol açacaktır. Bu görüşmeler sonucunda denetçi kilit denetim konusu bildirilmeyeceğine dair kararını güncelleyebilmektedir (BDS701, 2017, m:A63).

❖ **Bağımsız Denetim Raporlarındaki Öne Çıkan Kilit Denetim Konuları**

- Hasılat
- Ticari Alacaklar
- Stoklar
- Maddi Duran Varlıklar
- Yatırım Amaçlı Gayrimenkuller
- TMS 12 Gelir Vergileri
- Finansal Borçlar
- İşletme Birleşmeleri
- Şerefiye Değer Düşüklüğü
- Maliyet Hesaplarının Muhasebeleştirilmesi

- TFRS 16 Kiralamalar
- Maddi ve Maddi Olmayan Duran Varlıklar
- Yasal Riskler
- İlişkili Taraflara Diğer Borçlar
- TMS 29 Yüksek Enflasyonlu Ekonomilerde Finansal Raporlama Uygulaması
- Enflasyon Muhasebesinin Uygulanması
- Maddi Olmayan Duran Varlıklar

Bağımsız denetim raporlarında öne çıkan konular, genellikle şirketlerin finansal durumlarını etkileyen önemli alanlardır. Bu konular arasında en sık karşılaşılanlar; hasılat, ticari alacaklar, stoklar ve maddi duran varlıklardır. Şirketler, bu hesapları daha dikkatli bir şekilde incelemeyi tercih etmektedirler, çünkü söz konusu hesapların düzenli bir şekilde tutulması, finansal şeffaflık açısından büyük önem taşımaktadır.

Hasılat konusu, şirket hesaplarının düzenli bir şekilde tutulmasını sağlamanın yanı sıra, kayıt dışı gelirlerin önlenmesine yardımcı olmaktadır. Bu durum, şirketlerin mali şeffaflıklarını artırarak, finansal raporlamada daha doğru bilgiler sunmalarını sağlar. Ticari alacaklar ise, şirketin alacaklarını izleme açısından kritik bir öneme sahiptir. Alınamayan alacaklar, şirketin finansal yapısında önemli bir eksiklik yaratmakta ve bu kaybın önüne geçebilmek için ticari alacakların dikkatlice izlenmesi gerekmektedir.

Maddi duran varlıklar, şirketlerin uzun vadeli yatırımları ve işletme faaliyetlerinin sürdürülebilirliği açısından önemli bir unsur olarak karşımıza çıkmaktadır. Bu varlıkların amortisman ve kullanım bedelleri gibi unsurlarının dikkatle incelenmesi, şirketlerin bu varlıklardan minimum kayıp ile faydalanmalarını sağlayacaktır. Stoklar ise, şirketin elinde bulunan malların yönetimiyle ilgili bir diğer kritik alandır. Uzun süre elde tutulan ya da elden çıkarılamayan mallar, şirketin parasını bağlamasına ve nakde dönüşümün gecikmesine neden olabilmektedir. Bu durum, ticari açıdan önemli sıkıntılara yol açabilir ve şirketin likidite durumunu olumsuz etkileyebilir.

Bağımsız denetim raporlarında bu tür riskli konuların daha ayrıntılı bir şekilde ele alınması, şirketlerin finansal raporlamasında olası hataların ve eksikliklerin önüne geçilmesine yardımcı olur. Bu sayede, riskli görülen alanlarda maksimum fayda sağlanarak, şirketlerin finansal yapıları güçlendirilebilir.

Konunun Kilit Denetim Konusu Şeklinde Seçilmesi Fakat Raporda Bildirilmeyecek Durumlar

Denetçi önemli gördüğü bir konuyu kilit denetim konusu olarak bildirebilir ancak bu bildireceği konu kanunlara ve yönetmeliklere aykırı bir durum teşkil etmemelidir veya belirlenen kilit denetim konusu yürütülmekte olan bir incelemeyi etkilemesi durumunda da bildirim yapılamamaktadır (BDS701, 2017, m:A52). Bildirilecek kilit denetim konusunun kamuya vereceği yararından ziyade zararı bulunacaksa denetçinin raporda konuyu bildirmemesi beklenmektedir ancak şirketin bu konuyu kamuya paylaşması durumunda bu madde geçerli olmaz (BDS701, 2017, m:14b).

ARAŞTIRMANIN AMACI VE ÖNEMİ

Bu çalışmanın amacı, bağımsız denetim standardı tarafından yayımlanan kilit denetim konularının bağımsız denetim raporlarına olan etkilerinin incelenmesi ve tekstil sektöründe faaliyet gösteren şirketler üzerinden gerçekleştirilen veri analizi ile şirketlerin riskli gördükleri konuların nasıl kilit denetim konusu olarak belirlendiğinin ortaya konulmasıdır. Ayrıca, bu analiz ile denetim raporlarında söz konusu kilit denetim konularının nasıl yansıdığı ve bu yansımanın denetim sonuçlarına olan etkilerinin belirlenmesi hedeflenmektedir.

Araştırmanın yönteminde, öncelikle bağımsız denetim kavramı ve bu kavramın gereklilikleri açıklanmış, ardından bağımsız denetim standardı tarafından belirlenen kilit denetim konularının tanımları ve denetim sürecindeki önemi üzerinde durulmuştur. Çalışmanın son aşamasında ise Kamu Aydınlatma Platformu (KAP) verilerinden faydalanarak, tekstil sektöründe faaliyet gösteren 27 şirketin bağımsız denetim raporları incelenmiş ve bu raporlarda yer alan kilit denetim konuları tespit edilmiştir. Elde edilen veriler doğrultusunda, şirketlerin riskli olarak değerlendirdiği konuların nasıl kilit denetim konusu haline geldiği ve bu konuların denetim raporlarında nasıl ifade edildiği analiz edilmiştir.

VERİ VE YÖNTEM

Bu çalışma, Borsa İstanbul'da işlem gören tekstil sektöründeki 27 şirketin, 2019, 2020, 2021, 2022 ve 2023 yıllarına ait bağımsız denetim raporlarını kapsamlı bir şekilde analiz etmeyi amaçlamaktadır. Çalışma kapsamında,

bu raporlarda yer alan kilit denetim konuları (KDK) ayrıntılı bir biçimde ele alınmıştır. Bağımsız denetim raporlarındaki kilit denetim konuları, içerik analizi yöntemi ile sistematik bir şekilde incelenmiştir. Bu yöntem aracılığıyla, her bir rapordaki kilit denetim konuları belirlenmiş ve şirketlerin her yıl bildirdiği önemli denetim konuları ile yıllar arasındaki değişim ve benzerlikler ortaya konulmuştur. Çalışmanın yöntemi, Borsa İstanbul'daki tekstil sektöründeki şirketlerin bağımsız denetim raporları üzerinde yapılan analizle, sektördeki en kritik denetim alanlarını ve bu alanlardaki değişimleri izlemektir. Bu analiz, tekstil sektöründeki şirketlerin mali ve finansal süreçlerini daha iyi anlamaya yönelik değerli bilgiler sunarak, sektördeki diğer paydaşlar, yatırımcılar ve denetçiler için rehber niteliği taşıyabilir.

BULGULAR

Borsa İstanbul'da işlem gören Tekstil Sektöründeki şirketler aşağıda listelenmektedir.

BORSA İSTANBUL'DA İNCELENEN TEKSTİL ŞİRKETLERİ	
1.	AKIN TEKSTİL A.Ş.
2.	ARSAN TEKSTİL A.Ş.
3.	ARTEMİS HALI A.Ş.
4.	BİLİCİ YATIRIM A.Ş.
5.	BİRKO BİRLEŞİK KOYUNLULULAR MENSUCAT A.Ş.
6.	BİRLİK MENSUCAT A.Ş.
7.	BOSSA TİCARET VE SANAYİ A.Ş.
8.	DAGİ GİYİM A.Ş.
9.	DERİMOD KONFEKSİYON AYAKKABI A.Ş.
10.	DESA DERİ A.Ş.
11.	DİRİTEKS TEKSTİL A.Ş.
12.	ENSARİ DERİ A.Ş.
13.	HATEKS HATAY TEKSTİL A.Ş.
14.	İŞBİR SENTETİK A.Ş.
15.	KARSU TEKSTİL A.Ş.
16.	KORDSA TEKSTİL A.Ş.
17.	LÜKS KADİFE A.Ş.
18.	MEGA POLİETİLEN KÖPÜK A.Ş.
19.	MENDERES TEKSTİL A.Ş.
20.	RODRİGO TEKSTİL A.Ş.
21.	ROYAL HALI İPLİK TEKSTİL A.Ş.
22.	RUBENİS TEKSTİL A.Ş.
23.	SÖKTAŞ TEKSTİL A.Ş.
24.	SÖNMEZ PAMUKLU A.Ş.
25.	SUN TEKSTİL A.Ş.
26.	YATAŞ YATAK A.Ş.
27.	YÜNSA A.Ş.

Borsa İstanbul'da faaliyet gösteren 27 şirketin yayınlamış oldukları kilit denetim konuları tablolar halinde yıl bazında bulunmuştur. Sırasıyla 2019, 2020, 2021, 2022 ve 2023 yıllarında 27 şirketin hangi konuları bildirdikleri aşağıdaki tablolarda verilmiştir.

Tablo 1: 2019-2023 yılları arasındaki Borsa İstanbul Tekstil Sektörü Bağımsız Denetim Raporunda Bildirilen Kilit Denetim Konuları ve Bildirilen Görüş

ŞİRKETLER	2019 BİLDİRİLEN KDK	GÖRÜŞ	2020 BİLDİRİLEN KDK	GÖRÜŞ	2021 BİLDİRİLEN KDK	GÖRÜŞ	2022 BİLDİRİLEN KDK	GÖRÜŞ	2023 BİLDİRİLEN KDK	GÖRÜŞ
AKIN TEKSTİL AŞ	KDK Bildirmedi	GÖRÜŞ YOK	KDK Bildirmedi	GÖRÜŞ YOK	KDK Bildirmedi	GÖRÜŞ YOK	KDK Bildirmedi	GÖRÜŞ YOK	1 Maddi Duran Varlıklar 2 Yatırım Amaçlı Gayrimenkuller 3 Enflasyon Muhasebesinin Uygulanması	OLUMLU GÖRÜŞ
ARSAN TEKSTİL TİCARET VE SANAYİ AŞ	1Yatırm Amaçlı Gayrimenkul 2 Hasılat 3 Maddi Duran Varlıklar	OLUMLU GÖRÜŞ	1 Yatırım Amaçlı Gayrimenkul 2 Hasılat 3 Maddi Duran Varlıklar	OLUMLU GÖRÜŞ	1 Yatırım Amaçlı Gayrimenkuller 2 Hasılat 3 Maddi Duran Varlıklar	OLUMLU GÖRÜŞ	1 Yatırım Amaçlı Gayrimenkul 2 Finansal Borçlar	OLUMLU GÖRÜŞ	1 Yatırım amaçlı gayrimenkuller 2 Finansal Borçlar	OLUMLU GÖRÜŞ
ARTEMİS HALI AŞ	Bağımsız Denetim Raporu Yok	GÖRÜŞ YOK	Bağımsız Denetim Raporu Yok	GÖRÜŞ YOK	Bağımsız Denetim Raporu Yok	GÖRÜŞ YOK	Bağımsız Denetim Raporu Yok	GÖRÜŞ YOK	1 Ticari Alacaklar 2 Maddi Duran Varlıklar 3 Yatırım Amaçlı Gayrimenkuller 4 TMS 29 "Yüksek Enflasyonlu Ekonomilerde Finansal Raporlama" Uygulaması	OLUMLU GÖRÜŞ
BİLİCİ YATIRIM A.Ş.	1 Hasılat	OLUMLU GÖRÜŞ	1 Hasılat 2 Maddi Duran Varlıklar	SINIRLI OLUMLU GÖRÜŞ	1 Hasılat 2 Maddi Duran Varlıklar 3 Yatırım Amaçlı Gayrimenkuller	OLUMLU GÖRÜŞ	1 Hasılat 2 Maddi Duran Varlıklar 3 Yatırım Amaçlı Gayrimenkul	OLUMLU GÖRÜŞ	1 Hasılat 2 Maddi Duran Varlıklar 3 Yatırım Amaçlı Gayrimenkuller 4 TMS 29 Yüksek Enflasyonlu Ekonomilerde Finansal Raporlama Uygulaması	OLUMLU GÖRÜŞ
BİRKO BİRLEŞİK KOYUNLULAR A.Ş.	1 TMS 12 Gelir Vergisi 2Finansal Borçlar	SINIRLI OLUMLU GÖRÜŞ	1 Stoklar	SINIRLI OLUMLU GÖRÜŞ	KDK Bildirmedi	GÖRÜŞ YOK	KDK Bildirmedi	GÖRÜŞ YOK	1 Ticari Alacaklar 2 TMS 29 "Yüksek Enflasyonlu 3 Ekonomilerde Finansal Raporlama" uygulaması	SINIRLI OLUMLU GÖRÜŞ
BİRLİK MENSUCATA.Ş.	KDK Bildirmedi	GÖRÜŞ YOK	1 Yatırım Amaçlı Gayrimenkul	SINIRLI OLUMLU GÖRÜŞ	1 Hasılat 2 İlişkili Taraflara	OLUMLU GÖRÜŞ	1 Hasılat 2 İlişkili	OLUMLU GÖRÜŞ	1 TMS 29 "Yüksek Enflasyonlu Ekonomilerde Finansal Raporlama" Uygulaması	OLUMLU GÖRÜŞ

					Diğer Borçlar		Taraflara Diğer Borçlar		2 Hasılat 3 İlişkili Taraflara Diğer Borçlar	
BOSSA TİCARET VE SANAYİ A.Ş.	KDK Bildirmedi	GÖRÜŞ YOK	1Yatırım Amaçlı Gayrimenkul 2Maddi Duran Varlıklar	OLUMLU GÖRÜŞ	1 Hasılat	OLUMLU GÖRÜŞ	1 Hasılat	OLUMLU GÖRÜŞ	1 TMS 29 - Yüksek Enflasyonlu Ekonomilerde Finansal Raporlama uygulaması 2 Hasılat	OLUMLU GÖRÜŞ
DAGİ GİYİM A.Ş.	KDK Bildirmedi	GÖRÜŞ YOK	KDK Bildirmedi	GÖRÜŞ YOK	1 Hasılat	OLUMLU GÖRÜŞ	1 Hasılat	OLUMLU GÖRÜŞ	1 Hasılat	OLUMLU GÖRÜŞ
DERİMOD A.Ş.	KDK Bildirmedi	GÖRÜŞ YOK	KDK Bildirmedi	GÖRÜŞ YOK	1 Ticari alacaklar	OLUMLU GÖRÜŞ	1 Ticari alacaklar	OLUMLU GÖRÜŞ	1 TMS 29 - Yüksek Enflasyonlu Ekonomilerde Finansal Raporlama Uygulaması 2 Ticari Alacaklar	OLUMLU GÖRÜŞ
DESA DERİ SANAYİ AŞ	1 Hasılat 2 Maddi Duran Varlık 3 Stoklar	SINIRLI OLUMLU GÖRÜŞ	1 Hasılat 2 Maddi Duran Varlıklar 3 Stoklar	SINIRLI OLUMLU GÖRÜŞ	1 Hasılat 2 Maddi Duran Varlıklar 3 Stoklar	SINIRLI OLUMLU GÖRÜŞ	1 Hasılat 2 Maddi Duran Varlıklar 3 Stoklar	SINIRLI OLUMLU GÖRÜŞ	1 TMS 29 ``Yüksek Enflasyonlu Ekonomilerde Finansal Raporlama" Uygulanması 2 Hasılat 3 Stoklar 4 Yatırım Amaçlı Gayrimenkuller	OLUMLU GÖRÜŞ
DİRİTEKS DİRİLİŞ TEKSTİL SANAYİ A.Ş.	KDK Bildirmedi	GÖRÜŞ YOK	1 Maddi Duran Varlıklar	SINIRLI OLUMLU GÖRÜŞ	KDK Bildirmedi	GÖRÜŞ YOK	KDK Bildirmedi	GÖRÜŞ YOK	1 Ticari Alacaklar 2 TMS 29 "Yüksek Enflasyonlu Ekonomilerde Finansal Raporlama" uygulaması	SINIRLI OLUMLU GÖRÜŞ
ENSARİ DERİ GIDA SANAYİ VE TİCARET AŞ	Bağımsız Denetim Raporu Yok	GÖRÜŞ YOK	Bağımsız Denetim Raporu Yok	GÖRÜŞ YOK	Bağımsız Denetim Raporu Yok	GÖRÜŞ YOK	1 Hasılat 2 Yatırım Amaçlı Gayrimenkuller	OLUMLU GÖRÜŞ	1 Hasılat 2 Yatırım Amaçlı Gayrimenkuller	OLUMLU GÖRÜŞ
HATEKS HATAY TEKSTİL A.Ş.	1 Maddi Duran Varlıklar 2 Yatırım Amaçlı Gayrimenkul	OLUMLU GÖRÜŞ	1 Hasılat	OLUMLU GÖRÜŞ	1 Maddi Duran Varlıklar 2 Hasılat	OLUMLU GÖRÜŞ	1 Maddi Duran Varlıklar 2 Hasılat	OLUMLU GÖRÜŞ	1 TMS-29 "Yüksek Enflasyonlu Ekonomilerde Finansal Raporlama" Uygulaması	OLUMLU GÖRÜŞ
İŞBİR SENTETİK DOKUMA SANAYİ AŞ	Bağımsız Denetim Raporu Yok	GÖRÜŞ YOK	Bağımsız Denetim Raporu Yok	GÖRÜŞ YOK	1 Hasılat 2 Ticari Alacaklar	OLUMLU GÖRÜŞ	1 Hasılat 2 Ticari Alacaklar	OLUMLU GÖRÜŞ	1 Hasılat 2 Ticari Alacaklar	OLUMLU GÖRÜŞ

									Enflasyon muhasebesinin uygulanması	
KARSU TEKSTİL SANAYİ VE TİCARET AŞ	KDK Bildirmedi	GÖRÜŞ YOK	KDK Bildirmedi	GÖRÜŞ YOK	KDK bildirmedi	GÖRÜŞ YOK	KDK Bildirmedi	GÖRÜŞ YOK	1 Hasılat 2 Maddi Duran Varlıklar 3 TMS 29 "Yüksek Enflasyonlu Ekonomilerde Finansal Raporlama" Uygulaması	OLUMLU GÖRÜŞ
KORDSA TEKNİK TEKSTİL A.Ş.	1 Hasılat 2 İşletme birleşmeleri 3 Şerefiye değer düşüklüğü	OLUMLU GÖRÜŞ	1 Hasılat 2 Şerefiye Değer Düşüklüğü	OLUMLU GÖRÜŞ	1 Hasılat 2 Şerefiye Değer Düşüklüğü	OLUMLU GÖRÜŞ	KDK Bildirmedi	GÖRÜŞ YOK	1 Hasılat 2 Maddi Olmayan Duran Varlıklar	OLUMLU GÖRÜŞ
LÜKS KADİFE TİCARET VE SANAYİ A.Ş.	KDK Bildirmedi	GÖRÜŞ YOK	KDK Bildirmedi	GÖRÜŞ YOK	KDK bildirmedi	GÖRÜŞ YOK	1 Yatırım Amaçlı Gayrimenkuller	OLUMLU GÖRÜŞ	1 Yatırım Amaçlı Gayrimenkuller 2 TMS 29 "Yüksek Enflasyonlu Ekonomilerde Finansal Raporlama" Uygulanması	OLUMLU GÖRÜŞ
MEGA POLİ ETİLEN KÖPÜK SANAYİ VE TİCARET A.Ş.	1 Ticari Alacaklar 2 Hasılat	OLUMLU GÖRÜŞ	1 Ticari Alacaklar 2 Hasılat	OLUMLU GÖRÜŞ	1 Ticari Alacaklar 2 Hasılat	OLUMLU GÖRÜŞ	1 Hasılat 2 Ticari Alacaklar	OLUMLU GÖRÜŞ	1 Enflasyon Muhasebesinin Uygulanması 2 Ticari Alacaklar 3 Hasılat	OLUMLU GÖRÜŞ
MENDERES TEKSTİL SANAYİ VE TİCARET A.Ş.	1 Hasılat 2 Ticari alacaklar 3 Stoklar	SINIRLI OLUMLU GÖRÜŞ	1 Hasılat 2 Ticari alacaklar 3 Stoklar	SINIRLI OLUMLU GÖRÜŞ	1 Hasılat 2 Ticari alacaklar	SINIRLI OLUMLU GÖRÜŞ	1 Hasılat 2 Ticari Alacaklar	SINIRLI OLUMLU GÖRÜŞ	1 TMS 29 "Yüksek Enflasyonlu Ekonomilerde Finansal Raporlama" Uygulanması 2 Hasılat 3 Ticari Alacaklar	OLUMLU GÖRÜŞ
RODRİGO TEKSTİL TİCARET VE SANAYİ A.Ş.	1 Stoklar 2 Hasılat	OLUMLU GÖRÜŞ	1 Stoklar 2 Hasılat	OLUMLU GÖRÜŞ	KDK Bildirmedi	GÖRÜŞ YOK	1 Hasılat 2 Stoklar	OLUMLU GÖRÜŞ	1 Hasılat 2 Enflasyon Muhasebesini Uygulanması	OLUMLU GÖRÜŞ
ROYAL HALI İPLİK TEKSTİL MOBİLYA	1Hasılat 2 Maliyet Hesaplarının Muhasebeleştirilmesi	OLUMSUZ GÖRÜŞ	1 Maddi ve Maddi Olmayan Duran Varlıklar 2 Yasal Riskler	SINIRLI OLUMLU GÖRÜŞ	1 Maddi ve Maddi	SINIRLI OLUMLU GÖRÜŞ	1 Maddi ve Maddi Olmayan Duran	SINIRLI OLUMLU GÖRÜŞ	1 Maddi ve Maddi Olmayan Duran Varlıklar 2 Yasal Riskler	SINIRLI OLUMLU GÖRÜŞ

SANAYİ VE TİCARET A.Ş.			3 Finansal Borçlar		Olmayan Duran Varlıklar 2 Yasal Riskler		Varlıklar 2 Yasal Riskler			
RUBENİS TEKSTİL SANAYİ VE TİCARET A.Ş.	Bağımsız Denetim Raporu Yok	GÖRÜŞ YOK	Bağımsız Denetim Raporu Yok	GÖRÜŞ YOK	Bağımsız Denetim Raporu Yok	GÖRÜŞ YOK	1 Maddi Duran Varlıklar 2 Stoklar	OLUMLU GÖRÜŞ	1 TMS 29 "Yüksek Enflasyonlu Ekonomilerde Finansal Raporlama" Uygulanması 2 Hasılat	OLUMLU GÖRÜŞ
SÖKTAŞ TEKSTİL SANAYİ VE TİCARET A.Ş.	1 Maddi Duran Varlıklar 2 Finansal Borçlar	OLUMLU GÖRÜŞ	1 Maddi Duran Varlıklar 2 Finansal Borçlar	OLUMLU GÖRÜŞ	1 Maddi Duran Varlıklar 2 Finansal Borçlar	OLUMLU GÖRÜŞ	1 Maddi Duran Varlıklar 2 Finansal Borçlar	OLUMLU GÖRÜŞ	1 Maddi Duran Varlıklar 2 Finansal Borçlar 3 TMS- 29 "Yüksek Enflasyonlu Ekonomilerde Finansal Raporlama" Uygulaması	OLUMLU GÖRÜŞ
SÖNMEZ PAMUKLU SANAYİİ A.Ş.	1 Hasılat	SINIRLI OLUMLU GÖRÜŞ	KDK Bildirmedi	SINIRLI OLUMLU GÖRÜŞ	KDK Bildirmedi	SINIRLI OLUMLU GÖRÜŞ	KDK Bildirmedi	GÖRÜŞ YOK	1 TMS 29 "Yüksek Enflasyonlu Ekonomilerde Finansal Raporlama" Uygulaması	SINIRLI OLUMLU GÖRÜŞ
SUN TEKSTİL SANAYİ VE TİCARET A.Ş.	Bağımsız Denetim Raporu Yok	GÖRÜŞ YOK	Bağımsız Denetim Raporu Yok	GÖRÜŞ YOK	Bağımsız Denetim Raporu Yok	GÖRÜŞ YOK	1 Ticari Alacaklar 2 Hasılat	OLUMLU GÖRÜŞ	1 Enflasyon Muhasebesinin Uygulanması 2 Hasılat	OLUMLU GÖRÜŞ
YATAŞ YATAK VE YORGAN SANAYİ VE TİCARET A.Ş.	1 Hasılat 2 TFRS 16 kiralamalar	OLUMLU GÖRÜŞ	1Hasılat 2 Stoklar	OLUMLU GÖRÜŞ	1 Hasılat 2 Stoklar	OLUMLU GÖRÜŞ	1 Hasılat 2 Stoklar	OLUMLU GÖRÜŞ	1 Hasılat	OLUMLU GÖRÜŞ
YÜNSA YÜNLÜ SANAYİ VE TİCARET A.Ş.	1 Hasılat	OLUMLU GÖRÜŞ	1 Hasılat	OLUMLU GÖRÜŞ	1 Hasılat	OLUMLU GÖRÜŞ	1 Hasılat	OLUMLU GÖRÜŞ	1 Hasılat 2 TMS 29 - Yüksek Enflasyonlu Ekonomilerde Finansal Raporlama uygulaması	OLUMLU GÖRÜŞ

Tablo 1'de, Borsa İstanbul'da işlem gören tekstil sektöründeki 27 şirketin bağımsız denetim raporları detaylı bir şekilde incelenmiştir.

2019 yılı itibarıyla, şirketlerin büyük bir kısmının kilit denetim konularına (KDK) dair herhangi bir bildirimde bulunmadığı gözlemlenmektedir. Bu durum, kilit denetim konularının 2018 yılında uygulanmaya başlanmış olmasına rağmen, şirketlerin bu uygulamayı henüz yeterince benimsemediklerini göstermektedir. Bununla birlikte, zaman içinde kilit denetim konularına verilen önemin arttığı ve bunun raporlarda açıkça görüldüğü söylenebilir. Veri analizine dayalı olarak yapılan incelemelerde, 2020 yılında konu çeşitliliği açısından bir azalma yaşanmakla birlikte, bildirilen KDK sayısının arttığı ve bu artışın, bildirilen konuların sıklığından kaynaklandığı tespit edilmiştir. 2021 yılı verileri incelendiğinde ise, bir KDK konusundaki artışa rağmen, toplam bildirilen KDK sayısının önceki yıla kıyasla artmaya devam ettiği gözlemlenmiştir. 2022 yılına gelindiğinde ise, konu çeşitliliğinde bir azalma yaşanmış olsa da bildirilen konu sayısının 2021 yılına göre arttığı anlaşılmaktadır. Son olarak, 2023 yılına ait verilerde hem konu çeşitliliği hem de bildirilen konu sayısı açısından önemli bir artış gözlemlenmiş ve bu yıl, son yıllarda en fazla kilit denetim konusu bildirilen yıl olarak öne çıkmıştır. Bu bulgular, kilit denetim konularının zamanla daha fazla benimsenerek raporlama süreçlerinde önemli bir yer tutmaya başladığını göstermektedir.

Genel olarak son 5 yıllık dönemde en fazla bildirilen kilit denetim konuları arasında hasılat, maddi duran varlıklar, ticari alacaklar ve TMS 29 (Yüksek Enflasyonlu Ekonomilerde Finansal Raporlama) uygulaması yer almaktadır. Ancak, TMS 29'un sadece 2023 yılında ön plana çıktığı gözlemlenmiştir. TMS 29, yüksek enflasyon ortamlarında faaliyet gösteren şirketlerin finansal raporlama süreçlerinde enflasyon düzeltmesi yapmalarını gerektiren bir uygulamadır. 2023 yılında Türkiye'de uygulanan maliye politikaları çerçevesinde gerçekleştirilen enflasyon düzeltmesi, bu konunun bu yıl daha fazla şirket tarafından kilit denetim konusu olarak raporlanmasına yol açmıştır. Bu da gösteriyor ki, şirketler, ekonomik ortamda meydana gelen büyük değişikliklere hızlı bir şekilde uyum sağlamış ve finansal raporlamalarındaki risklere dair daha fazla bilgi sunmaya özen göstermiştir.

Tablo 2: 2019-2023 yılları arasındaki Bağımsız Denetim Raporlarındaki Yayınlanan Kilit Denetim Konularının Bildirilme Sayıları

BİLDİRİLEN KDK'LAR	2019	2020	2021	2022	2023
Yatırım Amaçlı Gayrimenkuller	**2**	**3**	**2**	**4**	**7**
Hasılat	**11**	**10**	**13**	**14**	**16**
Maddi Duran Varlıklar	**4**	**6**	**5**	**5**	**5**
TMS 12 Gelir Vergileri	**1**	--	--	--	--
Finansal Borçlar	**2**	**2**	**1**	**2**	**2**
Stoklar	**3**	**5**	**2**	**4**	**2**
İşletme Birleşmeleri	**1**	--	--	--	--
Şerefiye Değer Düşüklüğü	**1**	**1**	**1**	--	--
Ticari Alacaklar	**2**	**2**	**4**	**5**	**7**
Maliyet Hesaplarının Muhasebeleştirilmesi	**1**	--	--	--	--
Tfrs 16 Kiralamalar	**1**	--	--	--	--
Maddi ve Maddi Olmayan Duran Varlıklar	--	**1**	**1**	**1**	**1**
Yasal Riskler	--	**1**	**1**	**1**	**1**
İlişkili Taraflara Diğer Borçlar	--	--	**1**	**1**	**1**
TMS 29- Yüksek Enflasyonlu Ekonomilerde Finansal Raporlama uygulaması	--	--	--	--	**16**
Enflasyon Muhasebesinin Uygulanması	--	--	--	--	**5**
Maddi Olmayan Duran Varlıklar	--	--	--	--	**1**
TOPLAM YAYINLANAN KDK	**29**	**31**	**31**	**37**	**64**
ORTALAMA YAYINLANAN KDK	**1,07**	**1,14**	**1,14**	**1,37**	**2,37**

Tablo 2 verileri doğrultusunda; 2019 yılında şirketler 29 kilit denetim konusu bildirirken, 2020 yılında bu sayı 31'e çıkmış, 2021 yılında ise yine 31 olarak kalmıştır. 2022 yılında, bildirilen kilit denetim konusu sayısı 37'ye yükselmiş ve 2023 yılında ise bu sayı 64'e ulaşmıştır. Bu veriler, zaman içinde şirketlerin kilit denetim konularına daha fazla odaklandığını ve raporlarında bu konulara daha geniş yer verdiklerini göstermektedir.

LİTERATÜR İNCELEMESİ

Uzay ve Köylü (2018) çalışmasında, bağımsız denetim firmalarının denetim süreçlerinde şirketlerin dikkat ettikleri kilit denetim konuları incelenmiştir. Borsa İstanbul İmalat Sektöründe yer alan 181 işletmeden 170'inin denetim raporları analiz edilerek toplam 354 kilit denetim konusu belirlenmiştir. Araştırma sonuçlarına göre, en çok raporlanan hesap kalemleri Hasılat (%19), Maddi Duran Varlıklar (%18), Ticari Alacaklar (%17) ve Stoklar (%11) şeklindedir. Denetim firmalarının, maddi değeri yüksek hesaplarda yanlış yapma riski taşıyan konulara odaklandığı tespit edilmiştir.

Sağlar ve Kılıç (2022), araştırmasında Türkiye ve yurtdışındaki 75 kaynak incelenmiş; 26'sı Türkiye merkezli, 49'u uluslararasıdır. Türkiye'deki firmaların denetim raporları, Covid-19 öncesi ve sonrası dönemlere ayrılmıştır. Pandemi öncesinde denetçiler KDK uygulamalarını olumlu değerlendirirken, sonrasında azalma ve sektörel farklılıklar gözlemlenmiştir. Öne çıkan konular finansal araçlar, hasılat ve değer düşüklüğüdür. Yurtdışında ise KDK'ların ek yük getirebileceği KDK'ların sembolik değeri olduğu muhasebedeki netliğin KDK sayısında olumlu etkilerinin olduğu bulunmuştur.

Akdoğan ve Bülbül (2019), çalışmasında Borsa İstanbul'da 100 şirketin denetim raporlarındaki KDK'ları incelemiştir. Toplamda 251 KDK bildirilmiş, firma başına ortalama 2,51 konu kaydedilmiştir. En çok bildirilen KDK hasılat (40), maddi ve maddi olmayan duran varlıkların değerlemesi (39) ve karşılıklar/yükümlülükler (21) olarak sıralanmıştır. En az bildirilenler ise özkaynaklar, satış amaçlı duran varlıklar ve canlı varlıklardır. İmalat sanayisi en fazla (81) KDK bildirirken, mali kuruluşlar ve holdingler 75 ile ikinci sıradadır. Teknoloji, bilişim, savunma, petrol ve maden sektörleri ise her biri 10 KDK ile en az bildirim yapanlardır.

Dölen ve Karapınar (2020) çalışmasında, Borsa İstanbul (BİST) üzerinde işlem gören şirketlerin 31.12.2018 tarihli denetim raporlarında açıklanan Kilit Denetim Konuları (KDK), sektörler, denetim firmaları ve denetim görüş türü açısından incelenmiştir. Araştırma, BİST'de en fazla KDK bildiren sektörlerin imalat, finans, holding ve toptancılık olduğunu, bu sektörlerde toplam 315 şirketin 582 KDK bildirdiğini göstermektedir. KDK sayıları sektörler ve denetçi görüşlerine göre değişiklik göstermektedir. En fazla bildirilen KDK'lar ise hasılatın muhasebeleştirilmesi, ticari alacakların geri kazanılabilirliği ve yatırım amaçlı gayrimenkullerin gerçeğe uygun değer tespitidir.

Çakalı (2021) çalışmasında, BIST 100 endeksindeki 2020 yılına ait bağımsız denetim raporlarını incelemiş ve işletmelerin %14'nün holdingler ve yatırım şirketlerinden oluştuğunu bu sektörde ise ortalama KDK'nın 2,8 olduğunu bulmuştur. Elektrik, gaz ve haberleşme gibi alt sektörlerde ise daha az işletme olmasına rağmen, KDK sayıları sırasıyla 3,6 ve 3,5 olarak daha yüksek olduğu bulunmuştur. KDK'ların dağılımı ise %21,9 finansal araçlar, %17,1 hasılat, %12,4 maddi duran varlıklar ve yatırım amaçlı gayrimenkuller, %11,9 varlıklarda değer düşüklüğü ve %6,7 karşılıklar ile koşullu yükümlülükler olarak bulunmuştur. BIST 100 şirketlerinin KDK'larının, diğer ülkelerdeki uygulamalar ile farklılıkların olduğu sonucuna varılmıştır.

Hacıhasanoğlu ve Korkmaz (2023) çalışmasında, BİST 100'deki 100 şirketin 2019, 2020 ve 2021 yıllarına ait incelemelerine baktığımızda 2019'da 214, 2020'de 209 ve 2021'de 200 kilit denetim konusu belirlenmiştir. Denetim raporlarında genellikle olumlu veya sınırlı olumlu görüşler verilmiş, bu görüşler kilit denetim konularının sayısını etkilememiştir. En fazla kilit denetim konusu imalat ve mali kuruluşlar sektörlerinde tespit edilmiştir. Sık raporlanan KDK'lar ise hasılat, ticari ve finansal alacaklar, stoklar, duran varlıklar, yatırım amaçlı gayrimenkuller ve şerefiyeler olarak bulunmuştur.

Aktaş ve Acar (2020) çalışmalarında, BIST 100'deki işletmelerin 2017 ve 2018 yıllarına ait denetim raporlarındaki kilit denetim konuları (KDK) incelemiştir. Analizlerde, "Karşılık, Koşullu Varlık/Yükümlülük", "Finansal Araçlar" ve "Ertelenmiş Vergi Varlığı" gibi değerleme hesaplarında gözle görülür artışlar bulmuştur. Ayrıca, ortalama yöntemle hesaplanan önemlilik seviyeleri ise formül yöntemine göre daha yüksek olduğu bulunmuştur. Çalışma, özellikle farklı önemlilik seviyelerindeki KDK'ların hile denetimi sürecindeki risk seviyeleriyle olan ilişkisini sorgulamaktadır.

Abdullatif ve Al-Rahahleh (2020) çalışmalarında, 2017 ve 2018 yıllarında Ürdünlü denetim firmalarının raporladığı KDK sayısının görece düşük olduğunu ortaya koymaktadır. En yaygın KDK konuları ise sırasıyla alacakların değerlemesi, stoklar, yatırım mülkü ve gelir değerlemesi şeklindedir. KDK raporları çoğunlukla daha az yazılmakta ve benzer ifadeler kullanılmaktadır, denetim firmaları çoğunlukla sektör spesifik KDK'ları

raporlamaktadır. KDK'ların belirlenmesinde kullanılan kriterler ise net olmayıp, denetçi ve firmanın yapmış oldukları çalışmalar doğrultusunda belirlendiği bulunmuştur.

Mah'd ve Mardini (2022), çalışmasında Uluslararası Denetim Standardı (ISA) 701'e göre, 2017-2020 yılları arasında Orta Doğu'daki (Umman, BAE, Bahreyn, Ürdün) 281 şirketin incelemelerinde, kilit denetim konularının (KDK) raporlanma oranı %56 olarak bulunmuştur. İncelemelerde, yüksek kaldıraç oranı bulunan şirketlerde daha çok KDK raporladıklarını, denetim komitesinin etkin olmasıyla KDK raporlanması arasında doğrusal bir bağlantının olduğu ve finans sektörünü raporlayan denetçilerin diğer sektörlere göre daha çok sayıda KDK açıkladığı bulunmuştur.

Dusadeedumkoeng, Gandía ve Huguet (2023) çalışmasında Tayland'daki şirketlerin 2016-2020 raporlarında, şirket büyüklüğü, varlık niteliği, büyüme ve likiditenin KDK sayısını etkilediği bulunmuştur. Avrupa'da ortalama KDK 3.8 iken Tayland'da bu ortalama 1.9 ile daha düşüktür. Denetçi büyüklüğü ve denetim görüşü KDK üzerinde etkili olmazken, kadın denetçilerin varlığı KDK'ları etkilemiştir. Ayrıca, çalışmalar Güneydoğu Asya ülkeleriyle farklılıkların olmadığı bulunmuştur.

SONUÇ VE ÖNERİLER

Şirketler, bağımsız denetim raporlarında kilit denetim konularının (KDK) ilk kez uygulanmaya başlandığı 2018 hesap döneminden itibaren, bu konulara olan dikkatlerini artırmışlardır. Kilit denetim konuları, denetim sürecinde şirketlerin faaliyetlerine dair en önemli risklerin, belirsizliklerin ve hesaplama zorluklarının belirlenmesini amaçlayan ve denetçilerin dikkatini çeken özel alanlardır. 2018 yılında uygulamaya giren bu düzenleme, şirketler için finansal şeffaflık ve denetim süreçlerinin daha güvenilir hale gelmesini sağlamıştır. Yıl geçtikçe, kilit denetim konularını bildiren şirket sayısında artışlar gözlemlenirken, her bir şirketin raporunda belirtilen kilit denetim konularının sayısında da bir artış yaşanmıştır.

Bu çalışma, şirketlerin bağımsız denetim raporlarında kilit denetim konularına verdikleri önemin arttığını ve bu durumun finansal şeffaflık açısından önemli bir gelişme olduğunu göstermektedir. Çalışmamızda yapılan analizler ve elde edilen sonuçlar ışığında, şirketlere bazı önemli önerilerde bulunulmuştur. İlk olarak, şirketlerin bağımsız denetim raporlarında mümkün olduğunca çok kilit denetim konusu bildirmeleri ve bu konuları açık bir şekilde belirtmeleri büyük önem taşımaktadır. Bu, şirketlerin mali durumlarına dair daha fazla bilgi sağlayacak ve yatırımcılar, paydaşlar ve diğer ilgililer için daha güvenilir bir veri tabanı oluşturacaktır. Bunun yanı sıra, bağımsız denetim firmalarına da önemli bir görev düşmektedir. Denetim firmalarının, şirketlerle yakın işbirliği içinde olarak, her şirketin kendi faaliyet alanındaki özgün riskleri ve öncelikleri dikkate alarak kilit denetim konularını belirlemeleri gerekmektedir. Bu, sadece denetim sürecinin etkinliğini artırmakla kalmayacak, aynı zamanda şirketlerin finansal raporlamalarında daha net, doğru ve güvenilir sonuçlar elde edilmesine olanak sağlayacaktır. Denetim firmaları, şirketlerin faaliyet gösterdiği sektörün dinamiklerini, ekonomik koşulları ve şirketin mali yapısını göz önünde bulundurarak, daha anlamlı ve etkili kilit denetim konuları belirleyebilirler.

Sonuç olarak, kilit denetim konularına gereken özenin gösterilmesi, şirketlerin finansal tablolarının kalitesini doğrudan etkileyebilecek bir faktördür. Bu süreçte şirketlerin şeffaflık sağlaması ve bağımsız denetçilerin uygun denetim konuları belirlemesi, şirketlerin uzun vadeli finansal performanslarına katkıda bulunacaktır. Ayrıca, kilit denetim konularının belirlenmesi ve raporlanmasındaki titizlik, şirketlerin güvenilirliğini artırarak yatırımcılar, paydaşlar ve diğer finansal analizciler tarafından daha sağlıklı değerlendirmelerin yapılmasına olanak tanıyacaktır. Bu tür uygulamaların daha yaygın hale gelmesi, sektördeki genel denetim standartlarının gelişmesine de katkıda bulunacaktır.

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BAĞIMSIZ DENETİM VE SÜRDÜRÜLEBİLİRLİK İLİŞKİSİ: BAĞIMSIZ DENETIMIN ÖNEMİ

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ÖZET

Bağımsız denetim ve sürdürülebilirlik ilişkisi günümüz iş dünyasında giderek daha fazla önem kazanan bir konu haline gelmiştir. Şirketler hızla değişen ekonomik, sosyal ve çevresel değişkenlere bağlı olarak kazanç sağlama amacının yanı sıra faaliyetlerini topluma ve çevreye karşı sorumluluklarını artırma yoluna gitmiştir. Bu bağlamda bağımsız denetim ve sürdürülebilirlik firmaların stratejik planlamasında ve operasyonel süreçlerinde giderek daha fazla önem arz etmektedir. Bağımsız denetim, şirketlerin finansal ve operasyonel performanslarını tarafsız bir bakış açısıyla değerlendirirken, aynı zamanda şirketlerin mali raporlamalarının güvenilirliğini de artırmaktadır. Denetim süreçleri, sürdürülebilirlik hedeflerine ulaşmada yol gösterici bir rol oynarken, sürdürülebilir uygulamalar da denetim süreçlerinin kapsamını genişleterek daha iyi sonuçlar elde edilmesine yardımcı olmaktadır. Sürdürülebilirlik ise, çevresel, sosyal ve yönetişim kriterlerini kapsayan bir yaklaşım olarak, şirketlerin uzun vadeli başarılarını güvence altına almaktadır. Şirketler, sürdürülebilirlik hedeflerini belirlerken, çevresel etkiyi azaltarak sosyal sorumluluklarını yerine getirmeyi hedef edinirler. Aynı zamanda yatırımcıların bilinçli kararlar almalarına katkı sağlarlar. Dolayısıyla bağımsız denetim, şirketlerin mali şeffaflık ve güvenilirlik sağlama çabalarını desteklerken, sürdürülebilirlik çevresel ve sosyal sorumlulukları öne çıkararak uzun vadeli başarı için temel bir zemin oluşturmaktadır. Şirketlerin sürdürülebilirlik alanında yapmış oldukları çalışmaların paydaşlar üzerinde olumlu etkileri olduğunu göstermektedir. Gelecekte, sürdürülebilirlik ve bağımsız denetim arasındaki ilişki zamanla daha da güçlenecek ve şirketler bu iki yaklaşımı birbirleriyle entegre ederek hem ekonomik büyümelerini sürdürebilecek hem de toplum ve çevre üzerinde olumlu sonuçlanacak stratejileri süreçlerine entegre edeceklerdir.

Bu çalışma kapsamında sürdürülebilirlik ile bağımsız denetim kavramaları arasındaki ilişki araştırılmış ve şirketler için öneminin incelenmesi amaçlanmıştır. Bu amaçtan hareketle kavramsal bir inceleme yapılmıştır. Literatür çalışmaları dikkate alınarak bağımsız denetimin işletmenin sürdürülebilirliğini olumlu yönde etkilediği sonucuna ulaşılmaktadır. Ayrıca işletmelerin etkili ve sorumlu bir şekilde yönetilmesinin, paydaş güveninin artırılması ve sürdürülebilir kalkınmaya katkıda bulunulması açısından hayati bir öneme sahip olduğu görülmüştür. Çalışma günümüz işletmelerini yakından ilgilendiren iki konuyu inceleyerek bu bağlamda süreç iyileştirmelerinin organizasyonların gelişimleri üzerindeki olumlu sonuçlarını ortaya koyması yönüyle literature katkı sağlayacaktır.

Anahtar kelimeler: Sürdürülebilirlik, Bağımsız Denetim, Çevre, Sosyal, Yönetişim

ABSTRACT

The relationship between independent audit and sustainability has become an increasingly important issue in today's business world. In line with the rapidly changing economic, social and environmental variables, companies have started to increase their responsibilities towards the society and the environment in addition to earning profit. In this context, independent audit and sustainability have become increasingly important in the strategic planning and operational processes of companies. Independent audit evaluates the financial and operational performance of companies from an objective perspective, while at the same time increasing the reliability of their financial

reporting. While audit processes play a guiding role in achieving sustainability goals, sustainable practices help achieve better results by expanding the scope of audit processes. Sustainability, as an approach that encompasses environmental, social and governance criteria, secures the long-term success of companies. When setting sustainability goals, companies aim to fulfill their social responsibilities by reducing environmental impact. At the same time, they contribute to investors making informed decisions. Thus, while independent auditing supports companies' efforts to ensure financial transparency and reliability, sustainability emphasizes environmental and social responsibilities and provides a fundamental basis for long-term success. It shows that companies' sustainability efforts have a positive impact on stakeholders. In the future, the relationship between sustainability and independent auditing will become stronger over time, and companies will integrate these two approaches with each other to sustain their economic growth and integrate strategies that will have positive results on society and the environment.

This study aims to investigate the relationship between sustainability and independent auditing concepts and to examine their importance for companies. Based on this purpose, a conceptual analysis has been made. Considering the literature studies, it is concluded that independent auditing positively affects the sustainability of the business. In addition, it has been observed that effective and responsible management of enterprises is of vital importance in terms of increasing stakeholder confidence and contributing to sustainable development. The study will contribute to the literature by examining two issues that are closely related to today's businesses and revealing the positive results of process improvements on the development of organizations in this context.

Keywords: Sustainability, Independent Auditing, Environment, Social, Governance

GİRİŞ

Bağımsız denetim ve sürdürülebilirlik günümüz iş dünyasında önemi giderek artan iki önemli kavramdır. Bağımsız denetim, finansal raporların doğruluğunu ve güvenilirliğini sağlamak amacıyla uygulanan bir süreçtir. Bu süreç yatırımcıların, paydaşların ve kamuoyunun güvenini kazanmak için gereklidir. Sürdürülebilirlik, ekolojik, sosyal ve ekonomik faktörlerin dengelenmesini ifade eder ve bir şirketin uzun vadeli başarısında rol oynayan temel bir yaklaşımdır. Bağımsız denetimler de sürdürülebilirlik raporlamasında önemli bir rol oynamaktadır. Şirketlerin sürdürülebilirlik hedeflerine ulaşmasını sağlamak için bağımsız denetçiler bu hedeflerin nasıl belirlendiğini, uygulandığını ve raporlandığını değerlendirir. Bu süreç, paydaşların güvenini artırırken şirketlerin sürdürülebilirlik performanslarını geliştirmelerine yardımcı olur. Bir şirketin sürdürülebilirlik hedeflerine ulaşma çabaları, yalnızca çevresel etkiyi azaltan değil, aynı zamanda sosyal ve ekonomik boyutları da dikkate alan kapsamlı bir yaklaşımı gerektirir. Bu bağlamda bağımsız denetimler, kurumsal sürdürülebilirlik performansının değerlendirilmesi ve raporlanması açısından önemli bir araç haline gelmiştir. Bağımsız denetimler, çevresel, sosyal ve yönetişim (ESG) faktörleri de dahil olmak üzere finansal raporlamanın ötesinde çeşitli alanlarda güvenilirliği sağlar. Sürdürülebilirlik sadece bugünün değil geleceğin de en önemli temalarından biri olduğunu kanıtlamıştır. İklim değişikliği, doğal kaynakların tükenmesi ve toplumsal eşitsizlik gibi sorunlar şirketleri stratejilerini yeniden düşünmeye zorlamaktadır. Bu bağlamda bağımsız denetim süreçleri, kurumsal sürdürülebilirlik hedeflerine yönelik ilerlemenin izlenmesi ve bu süreçlerin şeffaf bir şekilde kamuya açıklanmasının sağlanmasında önemli bir rol oynamaktadır. Ayrıca bağımsız denetimler, yatırımcılar ve diğer paydaşlar için önemli bir güven kaynağı oluşturarak sürdürülebilirlik uygulamalarının etkinliğini artırmaktadır. Denetim süreci, şirketlerin sürdürülebilirlik raporlamasında karşılaştıkları zorlukları ve fırsatları belirlemelerine yardımcı olurken, sürdürülebilirlik hedeflerine ulaşmada daha fazla hesap verebilirlik ve şeffaflık sağlar. Bu çalışmada bağımsız denetimin sürdürülebilirlik üzerindeki etkisi, denetim süreçlerinin yapısı ve bu süreçlerin kurumsal sürdürülebilirlik hedeflerine ulaşmadaki rolü tartışılmaktadır.

BAĞIMSIZ DENETIM VE SÜRDÜRÜLEBILIRLIK İLİŞKİSİ

Bağımsız denetim ile sürdürülebilirlik arasında yakın bir ilişki vardır. Bağımsız denetimler, bir şirketin sürdürülebilirlik performansının değerlendirilmesinde ve bu alandaki raporlamanın güvenilirliğinin arttırılmasında önemli bir rol oynamaktadır. Bağımsız denetim süreçlerinin desteklenmesi, sürdürülebilirlik raporlamasının ve uygulamalarının şeffaflığını ve güvenilirliğini artırmaktadır.

Bağımsız denetim, bir şirketin mali raporlamasının, işlemlerinin ve faaliyetlerinin belirli standartlara ve yasal gerekliliklere uygun olup olmadığını değerlendirmek amacıyla bağımsız bir denetçi tarafından yürütülen

sistematik bir incelemedir. Bağımsız denetimin temel amacı, şirketin mali durumu ve performansı hakkında objektif bir rapor sunmaktır. Böylelikle yatırımcılara, kredi verenlere ve diğer paydaşlara güvenilir bilgi sağlar. Bağımsız denetimler genellikle Uluslararası Denetim Standartlarına (ISA) veya ülkeye özgü denetim standartlarına uygun olarak gerçekleştirilir. Bağımsız denetimler genellikle muhasebe firmaları için çalışan profesyonel denetçiler tarafından gerçekleştirilir. Bu denetçiler bulgularını bağımsız raporlarla ilgili kurum, kuruluş ve çıkar gruplarına rapor etmektedir.

Sürdürülebilirlik, çok kapsamlı bir içeriğe sahip olmakla birlikte özünde kaynakların bugünün ihtiyaçlarını karşılamakla beraber gelecek nesillerin ihtiyaçlarını dikkate alacak şekilde yönetilmesini ifade etmektedir. Bu yönetimsel süreç çevresel, sosyal ve ekonomik olmak üzere üç boyutu içermektedir. Şirketler sıklıkla sürdürülebilirlik performanslarını göstermek için sürdürülebilirlik raporları hazırlıyor. Bu raporlarda çevresel etki, sosyal sorumluluk projeleri, ekonomik performans gibi konular yer alıyor.

Bağımsız denetimlerin sürdürülebilirlik performansını iyileştirmeye etkisi, şirketlerin sürdürülebilir kalkınma hedeflerine daha etkili bir şekilde ulaşmasını sağlamaktadır. Şirketler sürdürülebilirlik raporlarında sosyal ve çevresel etkilerini ve yönetim sürelerini açıklarlar. Bağımsız denetim sürecinde ise şirketlerin bu beyanları incelenir ve gerçeğe uygunluğu araştırılır. Bu araştırma sürecinde şirketin doğaya verdiği zarar ve karbon ayak izi gibi çevresel risk unsurları içerisinde sayılabilecek riskler; çalışanların hakları ve toplumsal katkıları gibi sosyal riskler ve şirketin hesap verebilirlik ve etik ilkelere uygun çalışmasının değerlendirildiği yönetimsel riskler incelenir. Bu bağlamda bu denetim süreci şirketlerin sürdürülebilirlik performanslarının yönetilmesinde etkili bir faktör olarak yer alır. Sürecin bu şekildeki denetimi şirketleri süreçlerini sürekli değerlendirmeye ve iyileştirmeye zorlamakta ve sürdürülebilir kalkınma hedeflerine konumlarını belirleyecektir.

LİTERATÜR İNCELEMESİ

İşletmelerin temel amaçları olan piyasa değeri maksimizasyonu tüm süreçlerin iyi yönetilmesi ile mümkün olmaktadır. İşletmeyi, paydaşları ve ekonomiyi ilgilendiren tüm güncel konuların tedarik, üretim, satış ve sonrası süreçlerine uyarlanması ve başarılı bir şekilde yönetilmesi, rekabet gücü üzerinde önemli bir yer tutmaktadır. Bu bağlamda sürdürülebilirliğin işletmeler tarafından doğru bir şekilde anlaşılıp kapsamlı bir bakış açısıyla faaliyetlerini sürdürmeleri gerekmektedir. Bu süreçlerin nasıl yönetildiğinin raporları inceleyerek ve beyanların doğruluğunu şaffaf bir şekilde değerlendirerek katkı sağlayan bağımsız denetim sürecinin sürdürülebilirlik faaliyetleri ile doğrudan bir ilişkisi olması beklenmektedir. Ayrıca muhasebecilerin ve denetçilerin sürdürülebilir kalkınmaya katılımı, literatürde giderek daha fazla tartışılmaktadır. Muhasebeciler ve denetçiler tüm ülkelerde tek tip prosedürlerin standartlaştırılmasına yardımcı olurlar. Bu yönüyle literatürde çalışmalarında bulunduğu yerli ve yabancı çalışmalar bu bölümde özetlenmiştir.

Gümüş (2023) çalışmasında sürdürülebilirlik raporlaması ile kurumsal değer arasındaki ilişkiyi araştırmıştır. Bu çalışmada, şirketlerin 2018-2022 yılları arasındaki dönem sonu faaliyet raporları çerçevesinde çeşitli finansal veriler kullanılarak yeni bir logit model oluşturulmuştur. İmalat sektöründe bulunan sürdürülebilirlik endeksindeki şirketler ile sürdürülebilirlik endeksindekinde bulunmayıp o şirketlere alternatif olabilecek mevcut dönemdeki düşük piyasa diğerine sahip olan şirketler karşılaştırılmıştır. Yapılan regresyon analizi sonucunda bağımsız denetimin sürdürülebilirlik ve firma performansına pozitif etki ettiği sonucuna ulaşılmıştır.

Auliani ve Yunita (2023) çalışmalarında nitel bir yöntem kullanmışlardır. Şirket tarafından sunulan sürdürülebilirlik raporunun kılavuza uygun olduğundan emin olmak için, güvenceyi gerçekleştirecek bir denetçinin rolüne ihtiyaç duyulmaktadır. Bu çalışmada, sürdürülebilirlik raporlarının denetiminin, öncelikle paydaşlar için karar vermeyi desteklemek üzere bilginin güvenilirliğini ve doğruluğunu artırabileceği; denetçilerin sürdürülebilirlik raporlarındaki rolü açıklanmaya çalışılmıştır.

Friske vd. (2023) çalışmalarında munasebe mesleğini icra edenlerin önemini vurgulamışlardır. Sürdürülebilirlik konularını raporlamak için karşılaştırılamayacak kadar çok kılavuz, çerçeve ve standart mevcut. Bu bir sorun olarak işaretlendikten sonra, IFRS kapsamında kurulan ISSB, bu konuyu ele almak için sürdürülebilirlikle ilgili mali açıklamalar ve iklimle ilgili açıklamalara ilişkin standart metin yayınlamıştır. Bu belgelerin yayınlanması, muhasebe meslek mensuplarının sürdürülebilirlik konularına ilişkin raporlamada önemli bir rol oynadığını göstermektedir.

Stolowy ve Paugam (2023) bu çalışmada kurumsal sürdürülebilirlik raporlamasında yakınsama olasılığını etkileyen faktörleri araştırmıştır. Kısa vadede yakınsama olasılığını olumsuz etkileyen birkaç faktör tespit etmişlerdir. İlk faktör, sürdürülebilirliği (örneğin ÇSY, KSS) çevreleyen kavram ve tanımların heterojenliğidir. Tanımların bu heterojenliği üç düzeyde yaygındır: (1) sürdürülebilirlik raporlama standardı belirlemede meşruiyet iddia eden kuruluşlar arasında, (2) zaman içinde standart belirleyen kuruluşlar içinde ve (3) faaliyetleri hakkında raporlama yapan firmalar arasında. İkinci bir faktör, sürdürülebilirlik raporlamasında meşruiyet iddiasında bulunan çok sayıda kuruluş olmasıdır. Üçüncü bir faktör, üç etkili uluslararası standart belirleyici (yani EFRAG, ISSB, SEC) arasındaki raporlama gerekliliklerinin çeşitliliği ile ilgilidir ve bu da çeşitli kurumsal raporlama seçeneklerine yol açmaktadır. Dördüncü bir faktör ise standart belirleyici kuruluşların hedeflerindeki çeşitliliktir. Genel olarak, bu çeşitlilik kaynakları nedeniyle, karbon emisyonu raporlamasında ilerleme tespit etmemize rağmen, sürdürülebilirlik raporlamasında yakınsama olasılığının en azından kısa vadede sınırlı görünmüştür.

Kordecki ve Grant (2023) ABD sermaye piyasalarının entegre rapor üretmesini engelleyen konularını ele almaktadır. Ayrıca bir şirketin ekonomik performansı için önemli olan hissedar aktivizminin ve artan mali açıklamanın iklim değişikliği sürdürülebilirliği açıklaması ve güvencesi ile nasıl ilişkili olduğunu incelemiştir. Sürdürülebilirliği finansal raporlamaya dahil etmenin ve profesyonel güvence sağlamanın toplum için daha sağlıklı ilerlemeye yol açabileceğini vurgulamıştır.

Yüksel (2024) çalışmasında yapay zekâ teknolojileri, özellikle makine öğrenimi (ML) ve doğal dil işleme (NLP), veri toplama, analiz ve raporlama süreçlerinin otomatikleştirilmesinde ve iyileştirilmesindeki öneminden bahsetmiştir. Buna gore bu teknolojiler, IoT sensörleri, uydu görüntüleri ve kurumsal açıklamalar gibi birden fazla kaynaktan gelen büyük miktarlarda heterojen verilerin işlenmesine olanak tanır. Şirketler yapay zeka algoritmalarını kullanarak kalıpları tanımlayabilir, eğilimleri tahmin edebilir ve operasyonlarının çevresel etkilerini benzeri görülmemiş bir doğrulukla değerlendirebilir. Yapay zekanın sürdürülebilir muhasebedeki temel faydalarından biri, verilerin doğruluğunu ve güvenilirliğini artırabilmesidir. Geleneksel yöntemler genellikle manuel hatalara ve tutarsızlıklara neden olur. Ancak yapay zeka modelleri sürekli olarak öğrenip uyum sağlayabilir ve zamanla doğruluklarını artırabilir.

Kurki ve Järvenpää (2024) çalışmalarında psikolojik sahiplik teorisini kullanarak, yönetim muhasebecilerinin profesyonel rollerinin sürdürülebilirliği ilerletmeyi içerecek şekilde nasıl gelişebileceğini araştırmışlardır. Nitel çalışma, üç farklı teknoloji odaklı çok uluslu işletmenin yedi yerel iş biriminde gerçekleştirilen 32 görüşmeye dayanmaktadır. Elde edilen bulgulara göre, kurumsal sürdürülebilirliğin psikolojik sahipliğine giden yolların etkinleştirilmesini engelleyebilecek ve böylece kurumsal sürdürülebilirliğin geliştirilmesine katılımlarını baltalayabilecek yönetim muhasebecilerinin profesyonel rolleriyle bağlantılı özellikleri olduğu ortaya çıkmıştır. Ayrıca yönetim muhasebecileri mesleki rollerine ilişkin kendi algılarının da bu yolların harekete geçirilmesini engelleyebilmektedirler.

Pumiviset ve Suttipun (2024) çalışmalarında Stratejik Yönetim Muhasebesinin ekonomik, çevresel ve sosyal performanstan oluşan sürdürülebilir performans üzerindeki etkilerini araştırmışlardır. Çalışmada Tayland Sanayi İşleri Departmanı'ndan yeşil endüstri sertifikalarına sahip Tayland'daki 187 yeşil üretim şirketi örneklem olarak seçilmiştir. Yapısal denklem modelini uygulamak için istatistiksel yazılım uygulanmıştır. Sonuçlar, nedensel ilişki modelinin ampirik verilere uyumunun kabul edilebilir düzeyde olduğunu göstermektedir. Stratejik Yönetim Muhasebesinin ekonomik, çevresel ve sosyal performans üzerinde önemli bir pozitif doğrudan etkisi vardır. Ayrıca, çevresel ve sosyal performans, Stratejik Yönetim Muhasebesinin ile ekonomik performans arasındaki ilişkide kısmi bir aracılık rolü üstlenmektedir. Bulgular ayrıca sürdürülebilir performansın üç bileşeninin nedensel ilişkilere sahip olduğunu ortaya koymaktadır. İş ortamındaki dinamik değişikliklerle başa çıkmada, Stratejik Yönetim Muhasebesinin bilgilerine dayalı karar alma daha proaktif olabilir. Gelişmekte olan ekonomilerde Stratejik Yönetim Muhasebesinin tekniklerinin uygulanması ve benimsenmesinin sınırlı olduğu bilinmektedir ve benimseme ve entegrasyon konusunda çok az bilgi mevcuttur.

Petricica ve Buboi (2024) iç denetçilerin rolü ile kuruluşlardaki sürdürülebilirlik raporlama uygulamaları arasındaki ilişkiyi araştırmaktadırlar. Ayrıca bu çalışmada, iç denetimin rolü ile denetim komitesinin sürdürülebilirlik raporlama uygulamalarına ilişkin performansı arasındaki aracılık ilişkisini de araştırmıştır. Doğru ve başarılı sürdürülebilirlik raporları üretme sorumluluğu birden fazla muhasebe grubuna aittir. Bu raporlar, sürdürülebilir kalkınmanın desteklenmesine yardımcı olacak bilgi ve analitik desteğin sağlanması açısından kritik

öneme sahiptir. Muhasebecilerin ve denetçilerin geleneksel rolleri, sürdürülebilirlikte daha geniş bir rolü kapsayacak şekilde gelişmektedir.

Ananda vd. (2024) çalışmalarında sürdürülebilirlik denetimi kavramında var olan tehdit ve fırsatları analiz etmeyi ve bunları sürdürülebilirliği denetim sürecine entegre ederek bir bilgi sistemleri denetimini formüle etmenin bir yolu olarak kullanmayı amaçlamaktadırlar. Böylece, denetim performansının iyileştirilmesi ve denetçinin hesap verebilirliğinin ve dürüstlüğünün artırılması beklenmektedir.

Ebirim vd. (2024) yaptıkları çalışmada hızlı teknolojik gelişmeler, düzenleyici değişiklikler ve iş paradigmalarındaki değişimlerle dönüşüme uğrayan muhasebe ve denetim alanındaki son yenilikleri incelemekte ve bu yeniliklerin ABD işletmeleri üzerindeki önemli etkisini değerlendirmektedir. Çalışma aynı zamanda büyük verinin hâkim olduğu bir çağda denetçilerin değişen rolünü de araştırıyor. Son olarak, sürdürülebilirlik ve genel karşılıklı bağımlılıkla ilgili artan endişeler göz önüne alındığında, sürdürülebilirlik muhasebesi ve raporlaması için uygun bir çerçeve oluşturma ihtiyacının vurgulamıştır.

Saad (2024) önceki araştırmaların perspektifinden sürdürülebilirlik bilgilerinin çeşitli yönlerini gözden geçirme ve değerlendirmede bağımsız denetçilerin rolünü açıklığa kavuşturmayı amaçlamaktadır. Bu amaca ulaşmak için betimsel analiz tekniklerinden yararlanılmıştır. Bu konuyla ilgili daha önce yapılan birçok çalışmanın temel bulgusu, incelenen şirketlerin dış denetçilerinin sürdürülebilirliğin ekonomik, çevresel, sosyal ve yönetişim ilkeleri ışığında veri sağlama yükümlülüklerinin farkında oldukları gösterilmiştir.

SONUÇ VE ÖNERİLER

Bağımsız denetimler, şirketlerin finansal şeffaflık ve güvenilirliği sağlama çabalarını desteklerken, sürdürülebilirliğin uzun vadeli başarının temeli olduğunu söylemek yerinde olacaktır. Bu bütünleşme, şirketlerin salt ticari amacının ötesine geçerek toplum için değer yargıların güçlenmesine ve devamlılığına katkı sağlar. Bağımsız denetim süreçleri, sürdürülebilirlik hedeflerine ulaşmada öncü rol oynuyor ancak sürdürülebilir uygulamalar, denetim süreçlerinin kapsamını genişleterek daha iyi sonuçlara ulaşılmasına da yardımcı olabiliyor. Şirketler bu iki yaklaşımı entegre ederek ekonomik büyümeyi sürdürebilir ve olumlu sosyal ve çevresel etkilerini artırabilirler. Bu, daha adil, daha şeffaf ve daha sürdürülebilir bir iş ortamının yaratılmasına yardımcı olacaktır. Bağımsız denetimler şirketlerin sürdürülebilirlik hedeflerine ulaşmalarına yardımcı olmada önemli bir rol oynuyor. Bu süreç yalnızca mali raporların doğruluğunu sağlamakla kalmaz, aynı zamanda çevresel, sosyal ve yönetişim (ESG) performansının güvenilir bir şekilde değerlendirilmesine de olanak tanır. Şirketler çevresel etkilerini azaltmak, sosyal sorumluluklarını yerine getirmek ve yönetişim standartlarını iyileştirmek amacıyla toplumda ve piyasada olumlu bir imaj yaratmak suretiyle bağımsız denetimler yoluyla sürdürülebilirlik uygulamalarının etkinliğini ölçebilir ve paydaşların güvenini kazanabilirler. Bağımsız denetimler, bu çalışmaların şeffaf ve sorumlu bir şekilde yürütülmesini sağlayarak kurumsal sürdürülebilirlik stratejilerini daha etkin hale getiriyor. Bu, uzun vadede maliyetlerin azalmasına, kaynakların daha verimli kullanılmasına olanak tanır ve şirkete rekabet avantajı sağlar. Ayrıca bağımsız bir denetim süreci, şirketlerin sürdürülebilirlik raporlarında karşılaşabilecekleri olası yanlışlıkları ve eksiklikleri tespit ettiğinden düzeltmek için fırsat verir. Bu sadece şirketin iç süreçleri için değil aynı zamanda yatırımcılar ve diğer paydaşlar için de önemli bir güvenlik sağlar. Güvenilir ve şeffaf raporlama, yatırımcıların ve tüketicilerin bilinçli kararlar almasına olanak tanıyarak şirketin piyasa değerini artırır. Gelecekte teknoloji geliştikçe bağımsız denetim sürecinin daha etkin hale gelmesi olasıdır. Yapay zekâ ve veri analitiği sayesinde test sürecinin hızlanması ve daha kapsamlı analizlerin yapılması mümkün hale gelecektir. Böylelikle denetim sürecinde insan hatası azalır ve denetimlerin daha verimli yürütülmesi mümkün olur. Bağımsız denetim ile sürdürülebilirlik arasındaki ilişki bu nedenle bir şirketin başarısı açısından kritik öneme sahiptir. Bu bağlamda bağımsız denetimin sadece yasal bir zorunluluk olarak değil aynı zamanda stratejik bir tedbir olarak görülmesi gerekmektedir. Şirketler bu süreçlerden etkin bir şekilde yararlanarak finansal performanslarını artırabilir ve topluma katkılarını güçlendirebilirler.

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TÜRKİYEDE ŞİRKET TÜRLERİ VE BAĞIMSIZ DENETİM İLİŞKİSİ

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ÖZET

Bu çalışmada Türkiye'de faaliyet gösteren şirket türleri ve bu şirket sayıları hakkında birtakım açıklamalar yapılmıştır. TTK faydalanılan bilgiler doğrultusunda şirketlerin kaç farklı türde faaliyette bulunduğu ve Türkiye'de bu şirket türlerinden ne kadar bulunduğunu açıkladık. Günümüz en önemli kavramlarından olan denetim kavramını literatür araştırmaları sonucunda ne olduğunu ifade ederek şirket açısından öneminden bahsettik. Şirketler için en tehlikeli durum olan hile ve hile türleri neler olduğu yapılan literatür çalışmaları doğrultusunda ortaya çıkardık. Bu çalışma sonucunda varılan bulgularımız ise şirket türlerinin hangi kriterlere göre belirlendiğini bulduk. Şirketlere denetimin zorunluluk değil de bir fayda sağlayacağını belirtmeye çalıştık. Çalışmanın metodolojisi kısmında TTK, SPK ve literatür araştırmalarından yapılan içerik analizleri ile faydalanılan bilgiler çalışmamızda sunulmuştur.

Anahtar kelimeler: Şirket, Bağımsız denetim, Hile denetimi

ABSTRACT

In this study, some explanations were made about the types of companies operating in Turkey and the number of these companies. In line with the information used in the Turkish Commercial Code, we explained how many different types of activities companies engage in and how many of these types of companies there are in Turkey. We explained the concept of auditing, one of the most important concepts of today, as a result of literature research, and talked about its importance for the company. In line with the literature studies, we revealed the types of cheating and cheating that are the most dangerous situations for companies. Our findings as a result of this study are the criteria by which company types are determined. We tried to point out to companies that auditing will be a benefit, not an obligation. In the methodology section of the study, the information used through content analysis from TTK, SPK and literature research is presented in our study.

Key words: Company, Independent audit, Cheat check

GİRİŞ

Türkiye ve Dünya'daki globalleşen ekonomi ve rekabetten şirketler bulundukları sektör içerisinde rekabet edebilmek muhasebe departmanlarını tertip ve düzen içerisinde faaliyette bulundurmak şirket içerisinde yönetim kurulu üyelerine veya şirket dışından banka hisse almak isteyenler ve şirketle iş yapacak çevresi şirketin güvenilir ve düzenli bir çalışma prensibi içerisinde bulunmasını isterler. Bu doğrultuda bağımsız denetim kavramı şirketler için önem taşımaktadır (Yıldırım, 2008; 6).

Bağımsız denetim olarak bahsettiğimiz kavram ise şirket hesaplarında yapılan herhangi bir kaydın doğru işlenip kaydedilmesi şirket hesaplarında şirket dışına kullanılan hesapların, hırsızlık gibi olayların önüne geçilebilmesi için ve bunları daha rahat şekilde gözlemleyebilmemiz için finansal tablolar ve muhasebe kayıtlarının detaylı incelenmesi ve ve kaydedilmesi işlemi olarak adlandırabiliriz (Mızrak, 2016;7).

Şirketlere baktığımız zaman şirket açısından en iyi kararlar verebilmesi piyasadaki değerini maksimize etmek şirketten bilgi almak isteyenlere detaylı bilgileri sunabilmesi açısından finansal tablolarını ve mali tabloları muhasebe standartlarına uygun bir biçimde hazırlamaktadır. Bu tabloların güvenilirliği şeffaflığı ve standartlara

uygunluğu açısından bağımsız denetim yaptırması gerekir. Şirket açısından bağımsız denetim bir zorunluluk değil aksine şirket için faydalı bir uygulama olduğunu göz ardı edemeyiz (Cavlak ve Cebeci, 2017; 9).

TÜRKİYE'DE ŞİRKET VE ŞİRKET TÜRLERİ

Türkiye'de şirketler Türk Ticaret Kanunu uyarınca 5 farklı şekilde faaliyette bulunmaktadır. Bunlar;

- Limited Şirket
- Anonim Şirket
- Kollektif Şirket
- Kooperatif Şirket
- Komandit Şirket
    1. Sermayesi Paylara Bölünmüş Komandit Şirket
    2. Adi Komandit

Şirketler iki şekilde oluşabilmektedir. Sermaye şirketi ve şahıs şirketi olmak üzere iki çeşittir. Anonim şirket, limited şirket ve sermayesi paylara bölünmüş komandit şirket sermaye şirketidir. Adi ve komandit şirketler ise şahıs şirketidir. Ortakların sorumlulukları sermaye şirketlerinde şirkete belirtmiş olduğu sermayesi kadarıyla sorumluluğu bulunmakla beraber, şahıs şirketlerinde ise bu durum ortakların ikinci dereceden ve sınırsız sorumluluklarıyla yükümlülükleri bulunmaktadır. Aşağıdaki tabloda ise Türkiye de 2024 verilerine göre şirket türleri ve sayılarını görebiliriz.

Tablo 1. Türkiye'de bulunan şirket sayıları ve oranı

ŞİRKET TÜRÜ	ŞİRKET SAYISI	TOPLAM ŞİRKET SAYISINA ORANI
Anonim şirket	212.330	%13,521
Limited şirket	1.295.545	%82,511
Kollektif şirket	11.127	%0,708
Komandit şirket	1.993	%0,126
Kooperatif	49.154	%3,130
ŞİRKETLER TOPLAMI	1.570.149	%100

Tablodaki değerler, 2024 Nisan ayında T.C. Ticaret Bakanlığı Merkezi Sicil Kayıt Sistemi (MERSİS)'den faydalanılarak hazırlanmıştır.

Limited şirket

Limited şirket sermayesi belli olan ve paylarından ve borçlarından sadece mal varlığı kadarıyla sorumlu olunan şirket türüdür. Ortak sayıları tek ortaklı olabileceği gibi birçok ortakla da kurulabilir yalnız ortak sayısı elliyi geçmemelidir. Limited şirkete gerçek veya tüzel kişiler şirket ortağı olabilmektedir. Şirketin minimum sermayesi 50.000 TL ile başlanabilmektedir. Genel kurul ve müdürler kurulu olmak üzere 2 heyeti bulunmaktadır. Limited şirketler paylarını borsada işlem yapılamaz. (TTK.m.573-574)

Anonim Şirket

Anonim şirket sermayesi belli paylara bölünen ve borçlarından sadece malvarlığı kadarıyla sorumlu olunan şirket çeşididir. Ortak sahibi olduğu pay kadar şirkete karşı yükümlülüğü bulunmaktadır. Anonim şirket borsa da işlem gören ve paylarını halka arz edebilen tek şirket türüdür. Genel kurul ve yönetim kurulu olmak üzere 2 heyeti bulunmaktadır. Anonim şirketler nama yazılı ve hamiline olmak üzere pay senedi çıkarabilmektedir. Bunlar tahvil ve borçlanma araçlarında ihraç edebilirler. Kayıtlı sermaye sistemini kabul eden halka açık olmayan anonim şirketler açısından başlangıç sermayesi ise en az 250.000 Türk Lirası olabilir. (TTK.m.329-332)

Kollektif şirket

Kollektif şirkete ortak olabilmek için gerçek kişi olmak gereklidir. Şirketin ortakları şirketin alacaklılarına karşı ikinci dereceden ve sınırsız sorumludur. Kollektif şirketlerde sermaye şartı bulunmamaktadır. Şirket yönetimi şirket ortaklarından her birine ayrı ayrı hakları bulunmaktadır. Kollektif şirketin kurulabilmesi için en az iki ortağa ihtiyaç vardır. Şirket sözleşmesi ile bu haklar ortaklardan birkaçına veya tümüne verilebilmektedir. (TTK. m.211-218-236)

Kooperatif

Kooperatifler ortakların belirli ekonomik çıkarları meslek veya geçimlerine ait ihtiyaçları doğrultusunda emek gücü ve maddi destekleri ile karşılıklı yardım ve kefaret amacıyla gerçek veya tüzel kişiler tarafından değişken ortaklı ve değişken sermayeli ortaklık türüdür. Kooperatifler diğer şirket türleri gibi şahıs veya sermaye şirketi olmayıp diğer saydığımız şirket türleri gibi ticaret şirketidir. Kooperatiflerde özel hususlar saklı kalmak kaidesiyle en az yedi ortak bulunmalıdır. Her ortağa en az bir pay ve en fazla beş bin pay verilebilmekte ve bir ortaklık payının değeri yüz Türk lirası olmaktadır. (KOOPERATİFLER KANUNU m.1/m.2/m.19)

Komandit şirket

Komandit şirket iki şekilde oluşum göstermektedir. Sermaye şirketi sermayesi paylara bölünmüş komandit şirket olmaktadır ve şahıs şirketi olarak da adi komandit şirket olmaktadır. Komandit şirket komandite (sınırsız sorumlu) bir diğeri ise komanditer (sınırlı sorumlu) olarak en az iki kişi tarafından kurulabilmektedirler. Ortaklık komandite olursa gerçek kişi olarak kurulabilir eğer ki komanditer olarak kurulum gerçekleşirse ortaklık gerçek veya tüzel kişilik olabilmektedir. Komanditer ortak koymuş olduğu sermaye kadarıyla sorumlu olmakla beraber komanditer ortak ise şirketi yönetme hakkı bulunmamaktadır. (TTK. m.304-305-309)

BAĞIMSIZ DENETİM

Bağımsız denetim yaptırmamızdaki amacımız şirketlerin yapmış olduğu işlerin sonunda elde edeceği gelir ve giderleri detaylı bir biçimde Türkiye muhasebe standartları (TMS) kurallarına uygun bir biçimde mali ve finansal tabloların hazırlanarak güvenilirlik ve doğruluğunu kanıtlayıcı niteliklerde kayıt altına alarak belgeleri raporlamaya hazır hale getirmektir (Yılmazcan 2023; 5).

DENETİM RAPORUNDA OLMASI GEREKENLER

- Denetim anındaki raporların kontrol edilerek şirketin finansal yapısının incelenmesi
- Defter tutması ve finansal tablolarının kanunlara ne ölçüde uyduğu
- Finansal bilgilerinin yönetimdeki üyelerin incelemesi
- Şirketin devam edebilmesi ve ileriye dönük büyümesine dair analizler
- Denetçinin istediği belgelerin şirket yönetimi tarafından denetçiye teslim edip edilmemesi
- Şirketin finansal durum tablolarının ve şirket performansının TMS'ye uyması
- Olası risk durumunda denetçinin şirket yönetimine bunu raporlar halinde sunmuş olması (Acar ve Temiz, 2019; 5).

BAĞIMSIZ DENETİM YAPTIRMASI GEREKEN ŞİRKETLER

Cumhurbaşkanlığının 30 Kasım 2022 tarihinde 32029 sayılı Resmi Gazetenin 6434 numaralı kararının 3. maddesine göre 6102 sayılı Türk Ticaret Kanununca 26 Eylül 2011 tarihinde ve 660 sayılı "Kamu Gözetimi, Muhasebe ve Denetim Standartları Kurumunun Teşkilat ve Görevleri Hakkında Kanun Hükmünde Kararname'nin belirlemiş olduğu sınırlamaları sağlayan şirketlerin bağımsız denetim yaptırması gerekmektedir (*Cumhurbaşkanlığı kararı, 2022).*

A. (1) numaralı listede bulunup ve herhangi bir sınırlamaya bağlı kalmaksızın denetim yaptırması gerekenler.

B. Kanunda belirtilen şartlardan 3 sınırlamanın 2'sini sağlayan şirketler:

1. 6 Aralık 2012 tarihinde 6362 sayılı "Sermaye Piyasası Kanunu "gereğince halka açık olan şirketlerden belirlenen 3 şarttan en az ikisini 2 hesap döneminde üst üste sağlıyor; ancak Sermaye piyasasında ve diğer teşkilatlanmış olan piyasa ortamında işlem görmeyen şirketler:
    - 50 kişi ve üzerinde çalışanı olanlar
    - 30 Milyon TL'nin üzerinde aktif toplamı aşan şirketler,

- 40 Milyon TL'nin üzerinde senelik net satışı bulunan şirketler (*Cumhurbaşkanlığı kararı, 2022, m:3).*

2. Liste 2 de belirtilen şirketler için sağlaması gereken şartlar:
   - 100 kişi ve üzerinde çalışanı olanlar,
   - 60 Milyon TL'nin üzerinde aktif toplamı aşan şirketler,
   - 80 Milyon TL'nin üzerinde senelik net satışı bulunan şirketler (*Cumhurbaşkanlığı kararı, 2022, m:3).*
3. 30 Kasım 2022 tarihinde 32029 sayılı Resmî Gazetenin 6434 numaralı kararının 3. Maddesi değiştirilmiş yeni ölçütler belirlenmiştir. 1 ve 2 numaralı alt maddelerde belirtilen şirketlerin haricinde aşağıdaki 3 ölçütten 2 tanesini sağlayan şirketler (*Cumhurbaşkanlığı kararı, 2024, m:1):*
   - 150 kişi ve üzerinde çalışanı olanlar
   - 150 Milyon TL'nin üzerinde aktif toplamı aşan şirketler,
   - 300 Milyon TL'nin üzerinde senelik net satışı bulunan şirketler (*Cumhurbaşkanlığı kararı, 2024, m:1).*

ŞİRKET DENETİMİNDE HİLE DENETİMİ VE HİLE TÜRLERİ

Şirket içinde çalışmakta olan kişiler işletmelerin içerisindeki zayıflıklarını kendi lehine kullanarak fırsat yaratıp mesleki hileler yapabilmektedir. Bu hileler sonucunda ise şirketler ciddi maliyet açığı vermekte ve zarara uğramaktadır. Bu kapsamda şirketlerin çalışanları tarafından ne gibi hileler ile şirketin zarara uğratabilecekleri hile türlerini inceleyelim (Selimoğlu ve Altınel, 2020; 3).

- Şirketin hesabından nakden para çalmak
- Şirket çeklerini çalmak
- İhale ile yapılacak olan mal alış işlemlerinde satıcı kişilere yardımda bulunulması
- Şirkete ait olan pul ve benzeri nakdi evrakları çalmak
- Resmi bir geçerliliği bulunmayan bir fatura karşılığında ödemenin tahsil edilmesi
- Banka hesaplarında oynamalar yapılması
- Belge sahteciliği
- İşletmeye ait olan faturaların kendi hesabında kullanılması
- İş yapılmayan kişiler adına düzenlenen çekler
- Gerçekte var olmayan bir satıcı adına ödeme çıkartmak
- Stok hesaplarında yapılan değişiklikler
- Hurda hırsızlığı
- Rüşvet alma
- Şirkete ait olan bilgilerin şirket dışı kişi ve kurumlara sızdırılması
- Belirlenen fiyatın üstünde fiyatlar yazarak alınan teklifler
- Satışları düşük gösterme
- Mal alımı ya da hizmet alımı karşılığında faturalarda gereğinden fazla ödeme yazılması
- Çalışanların mesai saatlerini olduğundan fazla kaydedilmesi
- Şirket bünyesine ait olan malzeme ve demirbaşların çalınması
- Yazar kasa üzerinde yapılan hile ve oynamalar
- Mükerrer ödemeler yapma
- Mal alınan satıcıdan kendi adına komisyon alınması
- Çıkar ilişkilerinin bulunduğu bir satıcıdan ihtiyaç fazlası mal veya hizmet alınması
- Yetkisi dahilinde olmayan işlemlerin yapılması
- Şirkette çalışmayan kişileri çalışan olarak gösterilmesi
- İşten çıkmış bir çalışanın hala çalışıyor olarak gösterilmesi

- Şirketin hesaplarında yapılması gereken satışların kaydını yapmamak
- Var olmayan bir iş için yapılan ödemeler (Selimoğlu ve Altınel, 2020; 3).

LİTERATÜR İNCELEMELERİ

Yıldırım (2008), TTK'ya göre şirketler hazırlayacakları finansal tablolarını uluslararası standartlara göre hazırlamalıdır. Bunun sonucunda yapılan bağımsız denetleme uluslararası standartlarda olmalı ki Türkiye de faaliyette bulunan şirketlerimizin yurt dışındaki büyük çaplı şirketlerle rekabet halinde olabilmesi için aynı finansal tablolar için aynı denetlenme sistemiyle denetimin yapılması rekabet açısından yol gösterici olacağını belirtmektedir.

Karataş (2014), çalışmasında şirketlerin dışından yapılan bağımsız denetim faaliyetinin hem şirket açısından hem de şirket dışı paydaşlarına faydaları bulunduğu ve şirketlerin bu denetimi zorunluluktan ziyade büyüyüp kurumsal olma isteği açısından yararı olacağı bulunmuştur.

Cavlak ve Cebeci (2017), yapmış olduğu çalışmada şirket hisse değerlerini arttırabilmesi borsa da bir güven ortamı oluşturabilmesi açısından hazırlayacağı mali tabloların güvenilir ve şeffaflığı önem arz etmektedir bu doğrultuda bunu yapacak olan bağımsız denetim firmasının şirket hesaplarındaki denetlemeler sonucunda olumlu raporlar oluşması halinde şirket paydaşlarına yani banka müşteri ve hisse almak isteyen kişiler için bakış açılarının olumlu yönde değişmesini sağlayacağı hakkında bilgileri açıklamaktadır.

Güngörmüş (2019), çalışmalarında şirketler kendi bünyeleri doğrultusunda gerçekleştireceği iç denetiminin yapılmasıyla bağımsız denetime bakış açılarının pozitif olarak değişeceğini ve muhasebe departmanında işleyen düzenin doğru işlediğini kontrol edilebilmesi açısından bağımsız denetimin şirket açısından faydalı olacağını belirtiyor.

Yılmazcan (2023), yapmış olduğu çalışmada bağımsız denetim yaptırmak için piyasada faaliyet halinde olan bağımsız denetçilerin farklılıkların daha tekdüzene getirilmesi denetlemelerin daha tekdüzen halinde ilerleyeceği bu denetim sonucunda ücretlerin belirlemesi şirket büyüklüklülerine göre belirlenmesi gerektiğini vurgulamıştır.

METODOLOJİ

Çalışma kapsamında, Türk Ticaret Kanunu, Sermaye Piyasası Kurulu ve bu alandaki literatürlerde yapılan araştırmalar sonucunda farklı şirket türleri ve bu şirketlere dair bilgiler sunulmuştur. Kamu Gözetimi, Muhasebe ve Denetim Standartları Kurumu'ndan yararlanarak, şirketlerin denetime tabi olma şartları açıklanmıştır. Araştırmada kullanılan yöntemler, literatür taraması ile elde edilen verileri içermekte ve içerik analizi yöntemiyle çalışmanın belgeleri detaylandırılmıştır.

BULGULAR

Bu araştırma bulgularına dayanarak, öncelikle şirketlerin faaliyet şekillerini ve denetim yapılabilmesi için gerekli şartların neler olduğunu ortaya koymaktadır. İlgili şartları bağımsız denetime tabi olmanın şartları bölümünde açıklanmıştır. Denetim yaptırmayan şirketler, departmanlarındaki çalışanların gerçekleştirebileceği hile türlerini tespit etmekte zorlanabilir ve eksikliklerin nelerden kaynaklandığını bulamayabilirler. Bu durum, denetimin önemine vurgu yapmaktadır. Şirketler, denetim çalışmaları sonucunda potansiyel açık ve eksiklikleri zamanında ortaya çıkararak, oluşabilecek zararları önceden bulabilir ve böylece zararın etkilerini en aza indirebilirler. Bulgulara göre şirketlerin denetime ihtiyaç duyduğu açıkça görülmektedir.

SONUÇ

Sonuç olarak bağımsız denetim kavramı, son yıllarda daha da önemli bir ihtiyaç haline gelmiştir. Şirket türlerinin anonim, limited, kollektif, komandit ve kooperatif olarak faaliyet türleri olduğunu ve ilgili şirket türü için gerekli şartları belirlenmiştir. Bağımsız denetime tabi olmanın şartları ise cumhurbaşkanlığı kararnamesinde belirtildiği üzere 4 gruba bölünerek şirket büyüklüğüne göre hangi grupta yer alacağı belirtilmiştir. İlk olarak hiçbir sınır belirtilmeksizin bağımsız denetim yapması gerekenler ve sonrasında aktif toplamı, yıllık net satışı ve çalışan sayısı gibi endekslere göre ilgili grupta yer alacağı belirlenmiştir. Bağımsız denetimin şirketlere sağladığı faydalar ise göz ardı edilmemelidir; buna karşın, denetimi yapacak olan denetim firmasının da titizlikle seçilmesi büyük önem arz etmektedir. Yanlış raporlamalar, verilerde eksikliklerin olması şirket açısından yanlış kararlar verilmesine

sebep olabilir. Ayrıca, şirketle iletişim halinde olan dış paydaşlar, bankalar, tedarikçiler ve müşteriler gibi unsurlar, denetim raporlarına bakarak şirket hakkında güvenilir ve şeffaf bilgiler bulmak isteyeceklerdir. Şirket hakkında yapılan denetimin olumlu bilgiler vermesi şirket dışındaki, paydaşların şirketle iş yapma fırsatlarını arttırdığını görebiliriz.

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A RESEARCH ON FINANCIAL DISTRESS COSTS AND BUSINESS FAILURE PREDICTION MODELS

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Abstract

Financial distress is defined as the difficulty experienced by a company in fulfilling its obligations due, and the low cash flow situation in which losses occur before falling into insolvency. The costs that companies have to bear emerge with the financial distress process. Financial distress costs are an important determinant in the pricing of the company's borrowing preferences and capital structure. Financial distress is defined as the situation where the continuity of working capital cannot be ensured, and the company's solvency decreases or even disappears. Studies on the prediction of the possibility of financial failure and the analysis of the factors that constitute the financial distress costs have an important place in the literature. In the literature on the prediction of business failure, different methods such as multiple discriminant analysis, machine learning algorithms, decision trees, and artificial neural networks are used in addition to the failure criteria. In this study, the financial distress status of companies within Borsa Istanbul is investigated with a new method developed specifically for this study using multiple discriminant analysis and failure prediction criteria as an alternative to this, and the predictive power of the models is also compared at the end of the study. As a result of the research, evidence was obtained that the alternatively developed model gives accurate forecast results, and the findings were obtained that the changes in the leverage ratio, total debts, short-term debts and working capital have effects that increase the probability of financial distress.

Keywords: Financial Distress, Financial Failure, Financial Failure Prediction Models.

INTRODUCTION

As a result of risks or uncertainties in the markets where businesses operate, changes in macroeconomic conditions, sudden decreases in asset prices, high volatility, liquidity problems, institutional and financial management failures, situations that are economically difficult to overcome may occur. This process, which represents financial distress, is closely related to capital structure decisions and describes a situation where uncertainty and loss expectations are experienced intensely, affecting the performance of the company. The concept of financial distress, as a term describing business failure, is the difficulty experienced in fulfilling the obligations that come due as a result of the decrease in the company's ability to provide cash flow. Brealey and Myers used the concept of financial distress in contrast to the concept of financial failure. Financial distress occurs when obligations to creditors cannot be fulfilled or when there is difficulty in payment, and in some cases, it extends to bankruptcy. (Brealey, Myers, 2007: 417). Purnanandam defines financial distress as a low cash flow situation in which the company suffers losses without falling into insolvency. (Purnanandam, 2008: 707). Financial distress occurs when companies have a low cash level between being able to fulfill their maturing obligations (solvent) and being unable to fulfill them (insolvent). According to Gilson, John and Lang (1990), financial distress is when a company does not have enough cash flow to make its debt payments. (Gilson, John and Lang, 1990: 325). According to Wruck, financial distress is a situation where cash flow is insufficient to meet current liabilities. (Wruck, 1990: 421). According to Kahl (2002), financial distress is generally a long-term process that has an impact on the company's capital structure and investment policies. (Kahl, 2002: 135). This process, which starts with the company falling into payment difficulties and negatively affects every segment of society such as suppliers, customers, employees, creditors and beneficiaries economically and socially, can create different results for each company and even result in liquidation and bankruptcy. The aim is for the financial distress process not to end in bankruptcy, but to reintegrate the company into the economy with the understanding of improving it, and at this point, determining the financial distress costs is important. Financial distress costs can occur during the time period between the company's financial distress and the bankruptcy filing and the application is made. The costs incurred by companies in financial distress before the bankruptcy filing are called indirect financial distress costs, while the costs incurred during the bankruptcy process are called direct financial distress costs. As the probability of

bankruptcy increases, operating costs, company revenues, company performance and market value are negatively affected by this situation. Even if companies are not at the point of bankruptcy, the potential for bankruptcy creates insecurity in the market perception regarding the continuity of the company and causes indirect financial distress costs to increase. In the studies conducted on financial distress costs in the literature, distress costs are generally associated with the decrease in the company's sales, decrease in profitability, decrease in market value and the company's high leverage. According to Chen and Merville (1999), indirect costs are the opportunity costs that companies incur as their solvency decreases. In addition to the loss of customer trust that leads to a decrease in sales, they also include the loss of important supplier relationships and key managers, as well as previously profitable firm investment opportunities. In their study on the magnitude of indirect financial distress costs on 1041 companies for the period 1982-1992, the average annual loss was found to be 10.3% of the firm value, and the maximum loss was found to be 76%. The total indirect costs of financial distress have the potential to be large and can occur whether or not the company actually defaults (Chen and Merville, 1999: 277). Coşkun and Sayılgan (2008) examined the magnitude of indirect costs in their study on financial distress costs using the profitability rates of 50 companies in financial distress during the period 1993-2003. As a result of the study, it was concluded that the profitability of the company decreased significantly compared to the industry in the year it entered financial distress, the decline in profitability continued throughout the distress period, and the financial distress caused a decrease in the company's performance.

Studies on the prediction of the probability of financial failure and the analysis of the factors that constitute the costs of distress have an important place in the literature. Studies on failure prediction in particular are of critical importance for all market actors such as investors, creditors, managers, employees, and public authorities. The first studies in the literature on the prediction of financial failure began in the late 1960s with the use of Beaver's (1966 and 1968) univariate and Altman's multivariate prediction models. Altman (1968), in his study on corporate bankruptcy prediction using the financial ratios of 66 companies in the period 1946-1965, described the univariate analysis developed by Beaver as open to misinterpretation and confusing, and developed the multiple discriminant analysis model he called Z-score. According to Altman (1968), a company's bankruptcy potential depends on low profitability and/or solvency. However, if the company's liquidity is above average, the company may not have bankruptcy potential. In this case, there are uncertainties regarding the relative performance of the companies, and the deficiencies of the single-variable analysis also emerge here. It is important to determine which ratios are more important for determining the bankruptcy potential, what the weights of the selected ratios will be and how this weighting should be determined objectively. Altman's original Z-score model, developed in 1968, was based on the market value of the company and was designed to be applicable only to publicly traded companies. Altman revised the model as the Z'-score model in 1983 by replacing the market value with the book value of equity in the variable he called X4 in the existing model. After this model, in 1993, he designed the Z"-score model with four variables by excluding the X5 variable used as the ratio of sales to total assets from the model in order to eliminate the sectoral effect and tested its performance. In the years following Altman's studies, Springate (1978) conducted a study on financial failure prediction using the financial ratios of 40 companies operating in the manufacturing sector in Canada and introduced the S-score model to the literature. Ohlson (1980) analyzed the financial ratios taken from the financial statements of 105 bankrupt and 2,058 non-bankrupt companies in the period of 1970-1976, unlike other studies in the literature, by also taking into account the timing of the reports' public announcement. Ohlson developed the method called O-score and concluded that the four factors that are effective in determining the probability of failure within a year are company size, measures related to financial structure, performance measures and liquidity measures. Fulmer, Moon, Gavin and Erwin (1984) created a prediction model with multiple discriminant analysis using the financial ratios of 30 successful and 30 unsuccessful companies operating in the USA. 40 different financial ratios showing the liquidity, capital structure, profitability and debt payment capacity of 60 companies were included in the study and a failure prediction model consisting of 9 financial ratios and called H-score was developed as a result of the discriminant analysis. According to Zmijewski (1984), the indicator of financial distress is whether the company has filed for bankruptcy. Researchers estimate financial distress estimation models on non-random samples, and if appropriate estimation techniques are not used, biased parameter and probability estimations are caused. The estimation biases of 17 studies on financial distress prepared on non-random samples in the literature were examined using the Probit model on 81 companies that were determined to be bankrupt and whose dataset was accessible among 2,082 publicly held companies in the USA that filed for bankruptcy in the period 1972-1978. As a result of the study, it was found that the leverage ratio, return on assets and current ratio are indicators explaining financial distress. Turaboğlu, Erkol and Topaloğlu

(2017) analyzed the relationship between financial distress and capital structure decisions of 37 companies in the BIST 100 index using the Altman Z-score and Springate S-score models. As a result of the analysis, significant relationships were found between the failure score and the independent variables in the study. Yaman and Korkmaz (2021) analyzed the effects of working capital investment and financing policies of companies in the metal goods sector within BIST on financial failure. In the study, Altman (1968), Springate (1978), Ohlson (1980), Taffler (1983), Zmijewski (1984) models were used, and results were reached that working capital management has an effect on financial failure. In the results of the estimation models, the findings of the Altman (1968), Springate (1978) and Taffler (1983) models support each other, while the findings of the Zmijewski (1984) model were found to be unreliable because they were insignificant.

In recent years, with the development of technology, studies on business failure prediction models have also improved. In particular, models established with decision trees and artificial neural networks have begun to take place in the literature. Artificial neural networks are defined as a set of computable elements consisting of interconnected neurons, including input layer, hidden layer and output layer. İçerli (2005) examined 113 companies operating in Borsa Istanbul between 1990-2003 using discriminant analysis, logistic regression and artificial neural network models for the prediction of financial failure. As a result of the analysis, it was concluded that the model with the highest predictive power was artificial neural network models, followed by discriminant analysis and logistic regression models. According to Huang, Wang and Jiang (2024), the proliferation of big data from both financial and non-financial aspects improves multi-view data-based financial distress prediction. They analyzed 4,116 companies listed on the Shanghai and Shenzhen stock exchanges in China between 2017 and 2020 using a method consisting of 3 different modules called VDFDP (variational deep financial distress prediction method). As a result of the study, it was found that VDFDP significantly outperformed all comparative financial distress prediction methods. Wu, Jiang, Wang, and Ding (2024) used a new deep learning method called deep attention network (URGDAN), which combines user responses as well as current reports to predict financial distress. In this method, a deep learning architecture was created to integrate financial indicators, current report texts, and user responses. In the URGDAN method, user responses to current financial reports are utilized, and event information that has a significant correlation with the company's financial distress is also determined. In the data set of the study, financial data, textual data, and user response data for 2017, as well as financial status data in 2019, were collected for 8,038 companies. For current reports, a total of 241,388 current reports released in 2017 were added to the dataset. The results show that a current report contains information that is effective in predicting financial distress when combined with the corresponding user responses. Aydın, Şahin, Deveci, and Pamucar (2022) created a failure prediction model using 2 non-financial and 25 financial variables for 240 companies operating in the manufacturing, trade, and service sectors traded in BIST using artificial neural networks and decision tree models. When the results of the two techniques used for classification were compared, it was concluded that the artificial neural network model provided a higher rate in classifying failed businesses more accurately. In addition, it was seen that two non-financial variables (business activity and number of employees) differed by sector and contributed more to the model than some financial variables. Rahman and Zhu (2024) created financial distress prediction models using machine learning techniques with a dataset containing 1,782 company-year observations for construction companies listed on the A-list in the Shenzhen and Shanghai Stock Exchanges in China from 2012 to 2021 and compared the performance of these models with traditional Z-score models. For this purpose, from machine learning algorithms; classification and regression tree, AdaBoost and CUSBoost were used. Altman Z-score, Sorins/Voronova Z-score, Springate S-score and Ng et al. Z-score were selected for comparison. The results proved that machine learning classifiers can effectively predict financial distress for China A-list construction companies and provide more accurate results than Z-score models.

In addition to the models developed for financial failure prediction in the literature, there are also studies conducted using failure criteria. Some of the financial failure criteria used in these studies are; declaring a loss for 3 consecutive years, declaring a loss for 2 consecutive years, losing half of the capital, negative net income, failure to make principal and interest payments on the debt, failure of cash flow to meet long-term liabilities, failure to make stock dividend payments, partial or complete cessation of activities, restructuring, bankruptcy, low stock performance, delisting, high leverage use, negative operating profitability. Güriş, Akay, Ün, and Kızılarslan (2017) examined the financial failure probabilities of 175 companies traded in the manufacturing sector in Borsa İstanbul using the financial ratios between 2012 and 2015 with the Multivariate Probit model. In the creation of dependent variables, the criteria of losing half of the capital, losing for two consecutive years, and losing for three consecutive

years were used as financial failure indicators. As a result of the study, it was found that the probability of companies to suffer losses in three consecutive periods is explained more by financial ratios than other failure criteria and that the most effective ratio in predicting financial failure is the current ratio. In addition, companies should pay attention to short-term debts and equity capital in their balance sheets against the negative consequences of financial distress.

In this study, the financial failure status of companies in Borsa Istanbul is investigated with a new estimation method called Alternative, which was developed using the Altman Z'-score multiple discriminant analysis model and the failure criteria specific to this study.

MATERIALS AND METHODS

In this study, a data set consisting of public companies within Borsa Istanbul is used, excluding companies operating in the financial sector from the model. The data covering the period 2010-2022 was obtained from Thomson Reuters Eikon data terminal, classified, formulated and converted into financial ratios, and included in the sample to be used in the model. The data set sample was prepared from 235 public companies selected to cover all sectors within BIST, 35 financial ratios and 15 different main sectors. In this study, the financial distress status of the companies is investigated with an alternative estimation method developed through the Altman Z'-score model and failure criteria. The ratios that determine the financial distress cost of the companies whose financial distress status is determined are modeled using panel data econometrics. Eviews and Stata computer programs are used in statistical and econometric analyses performed by selecting the panel ordered logit model. Models in which dependent and independent variables change according to both units and time are defined as Panel Data models. Data created by combining time series and cross-section data are called longitudinal or pooled data, and pooled or longitudinal data showing the change of the same set of units over time, where the cross-section units remain the same, is called panel data. (Güriş, 2018, p.4). In panel data models, dependent and independent variables take different values that change in different periods of time. In this study, which was conducted by selecting the panel ordered logit model, the LR test statistic shows that there is a random effect and that the random effect ordered logit model is more appropriate instead of the classical ordered logit model. For this reason, random effects Random Effect (RE) was selected in logistic regression analyses and panel data analyses of the model were conducted. Selected financial ratios used in the research are given in Table 1 below.

Table 1: Selected Financial Ratios Used in the Study

Variables	Name
% Change in Net Working Capital	YNIS
% Change in ROE	YROE
% Change in Total Debt	YTB
% Change in Leverage Ratio	YKL
% Change in Net Profit	YNK
% Change in EBITDA	YFAV
% Change in Net Sales	YST
% Change in Company Market Value	YPD
EBIT / Net Sales	FVKST
Net Profit / Net Sales	NKST
Short-Term Liabilities / Total Assets	KVTV
Short-Term Liabilities / Total Liabilities	KVTB
Net Profit / Equity	NKOK
Working Capital / Total Liabilities	ISTB
EBIT / Total Liabilities	FVKTB
Net Profit / Short-Term Liabilities	NKKV
Short-Term Liabilities / Current Assets	KVDV
Cash Flows from Operating Activities / Total Liabilities	NAITB
Cash Flows from Investing Activities / Total Liabilities	NAYTB
Cash Flows from Financing Activities / Total Liabilities	NAFTB
PBT / Equity	VKOK
EBIT / Interest Expenses	FVKF
log (Net Sales)	LST
log (Total Assets)	LTV
Net Working Capital / Total Assets	NISTV
Retained Earnings / Total Assets	DKTV
EBIT / Total Assets	FVKTV
Market Value of Equity / Total Liabilities	OKPTB
Book Value of Equity / Total Liabilities	OKDTB
Net Sales / Total Assets	STTV
Net Profit / Total Assets	NKTV
Total Liabilities / Total Assets	TBTV
Current Assets / Short-Term Liabilities	DVKV
Working Capital / Total Assets	ISTV
EBIT / Short-Term Liabilities	VKKV

In the first stage of the research, the Altman Z'-score estimation method's multiple discriminant analysis function shown below is used to determine the financial failure status of the companies included in the model.

Model 1: Altman Z'-Score Failure Prediction Model

Altman Z'=0,717*$X_1 + 0{,}847 * X_2 + 3{,}107 * X_3 + 0{,}420 * X_4 + 0{,}998 * X_5$

$X_1 = Net\ Working\ Capital\ /\ Total\ Assets$

$X_2 = Retained\ Earnings\ /\ Total\ Assets$

$X_3 = EBIT\ /\ Total\ Assets$

$X_4 = \text{Book Value of Equity / Total Liabilities}$

$X_5 = Net\ Sales\ /\ Total\ Assets$

The results of the model are interpreted as financial distress if Z'-score<1.23, gray zone if Z'-score is between 1.23 and 2.90, and no financial distress if Z'-score>2.90. According to the Z'-score results found in the study conducted using the Altman Z'-score model, companies with a score below 1.23 were considered financially unsuccessful, and the presence of financial distress was indicated with (1), and the absence of financial distress was indicated with (0).

In the second stage of the study, a new estimation method called Alternative, designed using financial distress criteria and developed for this study, was used in determining the financial distress status of companies.

Model 2: Financial Failure Alternative Estimation Method

1. Step: Δ%Total Debt>Δ%Net Sales, it is financially unsuccessful if not it is successful

Δ%Total Debt: % Change in Total Debt

Δ%Net Sales: % Change in Net Sales

2. Step: Δ%Total Debt>Δ%ROE, it is financially unsuccessful if not it is successful

ROE: Return On Equity

3. Step: $N\dot{I}S_{(t)} < N\dot{I}S_{(t-1)}$, it is financially unsuccessful if not it is successful

NİS=Net Working Capital

According to the alternative estimation model, if the percentage change rate in total debts is greater than the percentage change rate in net sales, if the percentage change rate in total debts is greater than the percentage change rate in equity profitability, and if net working capital decreases compared to the net working capital in the previous period, the company is financially unsuccessful. In the interpretation of the results of the model, companies that meet all three estimation criteria are considered financially unsuccessful. The dependent variable group of the model is created by indicating the presence of financial failure as (1) and its absence as (0). An econometric model was created to determine which financial ratios are determinants of financial distress costs in companies whose financial success and failure statuses were determined using the Altman Z'-score model and the alternative estimation method. In the analyses, independent variables that are correlated with each other were not used together in the same model, and 3 different panel data models were created with significant variables. The models are subjected to econometric regression analyses using Eviews and Stata programs with 35 independent variables. In the panel ordered logit model, the estimated effect of a unit change in the independent variable on the dependent variable, namely the marginal effect, is calculated and the results are interpreted. In the Altman Z'-score model, 22 different ratios that have a significant relationship with financial distress have been identified. In order to make the econometric estimates more consistent and unbiased and to improve the level of significance, control variables have been added to the models. In the Altman Z'-score model, the variables used in determining financial distress; NISTV, DKTV, FVKTV, OKDTB and STTV have been included in the model as control variables and have been found to yield significant results. As a result of the econometric analysis conducted using the alternative estimation model, it has been concluded that there are 19 ratios that have a significant relationship with the dependent variable out of 35 independent variables in the model. The variables used in the alternative estimation model, YST, YTB, YROE, have been included in the analysis as control variables and have been found to yield significant results. As a result of the Random Effect Panel Ordered Logit regression analysis, the significant ratios determined as the determinants of the probability of financial distress and indirect financial distress costs are interpreted econometrically on the basis of 3 different models.

The econometric models created in the research were selected according to a statistical significance level of 10%. The LR test statistic shows that there is a random effect and that the random effect (RE) ordered logit model is more appropriate than the classical ordered logit model. In order to interpret the coefficients of the Random Effect Panel Ordered Logit model econometrically, marginal effects were calculated separately for all 3 models and other sectoral models. In the marginal effects analysis, statistical significance levels were separated according to the rates of 1%, 5% and 10% and added to the regression findings table. In the estimation model, the average marginal effect of all independent variables is also calculated.

In the literature, financial failure and distress costs are associated with the leverage ratio, loss of sales, decrease in profitability and decrease in the market value of the company. It is seen that the findings obtained as a result of this analysis support the evidence in the literature.

FINDINGS

As a result of the research, it was found that 22 ratios with a significant relationship between the dependent variable and the independent variables in the Altman Z'-score models were found, while 19 ratios were found in the models created with the alternative estimation method. The ratios found to be significant for Altman Z'-score were determined as KVTB, STTV, OKPTB, ISTB, KVTV, LTV, NKST, YKL, FVKTV, YST, YPD, KVDV, OKDTB, FVKTB, NISTV, LST, YTB, ISTV, FVKF, DKTV, TBTV, NKTV. In the models called Alternative developed on the financial failure estimation criteria, 19 ratios with a significant relationship between the dependent variable and the independent variables were found. These ratios are; YST, YPD, ISTV, KVTB, FVKF, LST, OKDTB, DKTV, NAYTB, NAITB, YTB, YROE, NKTV, LTV, ISTB, YKL, YNK, NAFTB, FVKTV. In the findings, it is seen that the panel ordered logit model coefficients are statistically significant according to 1%, 5% and 10% error margin. lnsig2u shows the logarithm of the variance of the cross-section effect, and sigma_u shows the estimated variance component. The values found for the variance component in Altman models are 2.939593, 3.211806, 1.944326, respectively. This test statistic follows the chi-square distribution with degrees of freedom equal to the number of independent variables. Accordingly, the hypothesis that all coefficients are zero at the same time is rejected and it is seen that 22 variables included in the random effect ordered logit model are significant determinants on companies experiencing financial distress. The values found for the variance component in the alternative models are 0.1990, 0.1204, 0.2588, respectively. Accordingly, the hypothesis that all coefficients are zero at the same time is rejected and it is seen that 19 variables included in the random effect ordered logit model are significant determinants on companies experiencing financial distress. When the marginal effects of the random effect panel ordered logit model are calculated and the coefficients of the models are interpreted in order, the following results are obtained.

Findings of Determinant Ratios of Financial Distress Costs

As a result of econometric analyses, 11 different positive significant ratios were determined as determinants of indirect financial distress costs out of 35 independent variables used in all models in the study. In the study conducted for the analysis of determinant ratios of financial distress costs, models with significant relationships between the dependent variable and independent variables are explained below.

Altman Model 1: While the values of other independent variables in the model are constant, a one-unit increase in KVTB reduces the probability of financial distress by 0.3212, 0.4049 in STTV, 0.0063 in OKPTB, 0.1197 in ISTB, 0.0361 in LTV, 0.0001 in NKST, 0.00004 in YKL, 1.3746 in FVKTV, and a one-unit increase in only KVTV increases the probability of financial distress by 0.9529.

Altman Model 2: While the values of other independent variables in the model are constant, a one-unit increase in STTV reduces the probability of financial distress by 0.3330, by 0.8081 in FVKTV, by 0.00007 in YPD, by 0.0022 in KVDV, by 0.1671 in OKDTB, by 0.1815 in FVKTB, by 0.3940 in NISTV, by 0.0495 in LST, by 0.00005 in YTB, and only a one-unit increase in YST increases the probability of financial distress by 0.00002.

Altman Model 3: While the values of other independent variables in the model are constant, a one-unit increase in STTV reduces the probability of financial distress by 0.3623, by 0.0072 in OKPTB, 0.2227 in ISTB, 0.3107 in FVKTB, 1.00e-06 in FVKF, 0.3006 in DKTV and 0.2631 in NKTV, and increases it only by 0.2561 in TBTV and 0.2800 in ISTV.

Alternative Model 1: While the values of other independent variables in the model are fixed, a one-unit increase in YST decreases the probability of financial distress by 0.0025, by 0.00024 in YPD, by 0.3638 in ISTV, by 5.28e-07 in FVKF, by 0.0070 in OKDTB, by 0.0312 in NAYTB, by 0.00003 in YROE, by 0.3425 in NKTV, and by 0.3195 only in KVTB, by 0.0200 in LST, by 0.0510 in DKTV, by 0.0275 in NAITB, and by 0.00137 in YTB.

Alternative Model 2: While the values of other independent variables in the model are constant, a one-unit increase in YST reduces the probability of financial distress by 0.0016, by 0.00017 in YPD, by 0.3142 in ISTV, by 0.0183 in ISTB, by 0.00001 in YNK, and by 0.2993 only in KVTB, by 0.0240 in LTV, and by 0.0018 in YKL.

Alternative Model 3: While the values of other independent variables in the model are held constant, a one-unit increase in YST decreases the probability of financial distress by 0.0020, decreases it by 0.00023 in YPD, 0.2972 in ISTV, 0.00003 in YROE, 0.0187 in ISTB, 0.0317 in NAFTB, 0.2799 in FVKTV, and increases it only by 0.3058 in KVTB, 0.0011 in YTB and 0.0244 in LTV.

Table 2: Ratios with Positive Coefficients as Determinants of Financial Distress

Independent Variables	Positive Significant Coefficients	Model Name	Model No
YTB	+ 0.00137	Alternative	M1
	+ 0.0011	Alternative	M3
YKL	+ 0.0018	Alternative	M2
YST	+ 0.00002	Altman	M2
KVTV	+ 0.9529	Altman	M1
KVTB	+ 0.3195	Alternative	M1
	+ 0.2993	Alternative	M2
	+ 0.3058	Alternative	M3
NAITB	+ 0.0275	Alternative	M1
LST	+ 0.0200	Alternative	M1
LTV	+ 0.0240	Alternative	M2
	+ 0.0244	Alternative	M3
DKTV	+ 0.0510	Alternative	M1
TBTV	+ 0.2561	Altman	M3
ISTV	+ 0.2800	Altman	M3

In examining the findings of the models in the research sample, the magnitude of the coefficients of the positively significant ratios that increase the probability of financial distress is taken into account. The magnitude order of the coefficients of the ratios that increase the probability of financial distress and are accepted as determinants of indirect financial distress costs is shown in Table 3 below and will also be used in the interpretation of the results. Although there are common ratios in the models, it is seen that there are also non-common ratios, and their results are different from each other.

Table 3: Coefficient Ranking of Determinant Ratios of Financial Distress

Independent Variables	Model Name	Model No	Positive Significant Coefficients	Rank
KVTV	Altman	M1	0,95287	1
KVTB	Alternative	M1	0,31947	2
KVTB	Alternative	M3	0,30583	3
KVTB	Alternative	M2	0,29927	4
ISTV	Altman	M3	0,27995	5
TBTV	Altman	M3	0,25614	6
DKTV	Alternative	M1	0,05096	7
NAITB	Alternative	M1	0,02753	8
LTV	Alternative	M3	0,02444	9
LTV	TZ	M2	0,02401	10
LST	TZ	M1	0,01998	11
YKL	TZ	M2	0,00181	12
YTB	TZ	M1	0,00137	13
YTB	TZ	M3	0,00109	14
YST	AZ	M2	0,00002	15

Failure Models' Forecast Accuracy Analysis Findings

As a result of the business failure prediction study conducted with 2 different methods using the annual financial ratios of the publicly held companies within BIST included in the sample of the research, the prediction capabilities were investigated on the basis of models. For this purpose, a computer program was used for econometric analyses and the econometric findings shown in the tables below were reached. The prediction accuracies of the panel regression models created after the business failure prediction made using the Altman Z'-score prediction model are given in Table 4 below. According to the findings of the study, Altman Model (2) ranks first among the models with an accurate prediction ability of 95.30%. The prediction accuracy of Altman Model (1) is 93.35%. The model determined 3.24% of the actually unsuccessful companies as successful in prediction and 3.41% of the actually successful companies as unsuccessful in prediction. The prediction accuracy of Model (2) is 95.30%. The model determined 2.15% of the actually unsuccessful companies as successful in prediction and 2.55% of the actually successful companies as unsuccessful in prediction. The prediction accuracy of Model (3) is 95.16%. The model identified 2.18% of the cases that actually failed as successful in prediction and 2.65% of the cases that actually succeeded as unsuccessful in prediction.

Table 4: Predictive Accuracy of Altman Financial Failure Models

Prediction Accuracy Rates	***Altman Model (1)***		***Altman Model (2)***		***Altman Model (3)***	
	In Prediction (1)	In Prediction (0)	In Prediction (1)	In Prediction (0)	In Prediction (1)	In Prediction (0)
In Reality (1)	820	98	851	65	857	65
	27,12%	3,24%	**28,19%**	2,15%	**28,79%**	2,18%
In Reality (0)	103	2003	77	2026	79	1976
	3,41%	**66,24%**	2,55%	**67,11%**	2,65%	**66,38%**

The prediction accuracies of the panel regression models created after the business failure prediction using the alternative prediction model are given in Table 5 below. According to the findings of the study, the Alternative Model (3) ranks first among the Alternative models with an accurate prediction ability of 81.87%. The prediction accuracy of the Alternative Model (1) is 81.58%. The model determined 15.51% of the actually unsuccessful companies as successful in prediction and 2.91% of the actually successful companies as unsuccessful in prediction. The prediction accuracy of Model (2) is 81.37%. The model determined 16.61% of the actually unsuccessful companies as successful in prediction and 2.02% of the actually successful companies as unsuccessful in prediction. The prediction accuracy of Model (3) is 81.87%. The model determined 15.71% of the actually unsuccessful companies as successful in prediction and 2.42% of the actually successful companies as unsuccessful in prediction.

Table 5: Predictive Accuracy of Alternative Financial Failure Models

Prediction Accuracy Rates	***Alternative Model (1)***		***Alternative Model (2)***		***Alternative Model (3)***	
	In Prediction (1)	In Prediction (0)	In Prediction (1)	In Prediction (0)	In Prediction (1)	In Prediction (0)
In Reality (1)	93	459	60	501	87	474
	3,14%	15,51%	**1,99%**	16,61%	**2,88%**	15,71%
In Reality (0)	86	2321	61	2395	73	2383
	2,91%	**78,44%**	2,02%	**79,38%**	2,42%	**78,99%**

The findings obtained as a result of comparing the estimation accuracy rates of econometric models produced using financial failure estimation models in the analysis of indirect financial distress cost determinants show that the model with the highest accuracy rate is the Altman Model (2). The estimation accuracy of the models produced specifically for this study and called Alternative is over 81% and findings have been obtained that they can be preferred as a practical alternative to the methods in the literature in financial failure estimation. The estimation accuracy rates of financial failure models are listed in Table 6 below.

Table 6: Estimation Accuracy Rates of Financial Failure Models

Rank	***Model Name***	***Estimation Accuracy Rate***
1	Altman Model (2)	95,30%
2	Altman Model (3)	95,16%
3	Altman Model (1)	93,35%
4	Alternative Model (3)	81,87%
5	Alternative Model (1)	81,58%
6	Alternative Model (2)	81,37%

DISCUSSION AND CONCLUSION

Financial distress is a concept that affects a wide range of society, such as businesses, market stakeholders, creditors, shareholders, suppliers, customers, employees, and managers. Topics such as financial failure prediction, causes of financial distress, costs, and ways out of distress are frequently investigated in the field of corporate finance. Studies in the literature have focused on the prediction of financial distress, and financial distress and distress costs are generally associated with the leverage ratio, decline in sales, decline in profitability, and decline in the market value of the company. The findings obtained as a result of the analyses conducted in this study support the evidence in the literature on the ratios that are determinants of financial distress. It has been concluded that the probability of financial distress increases as the KVTV, YST, TBTV, and ISTV rates increase, and that financial distress is associated with the company's borrowing preferences, sales, and changes in working capital.

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MANAGEMENT CONTROL PRACTICES IN CONSTRUCTION SMES: AN EMPIRICAL STUDY OF FREQUENCY OF USE IN THE MARRAKECH-SAFI REGION

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Abstract

This study investigates management control practices within construction small and medium-sized enterprises (SMEs) in the Marrakech-Safi region of Morocco, focusing on the frequency of use of various control tools. Despite significant government efforts to enhance the economic landscape for SMEs, the construction sector continues to face organizational and financial challenges that hinder growth. Utilizing a sample predominantly from the Marrakech prefecture, where 68.3% of respondents operate, our findings reveal that 76.7% of these companies are non-family businesses, primarily structured as limited liability companies (LLCs). A diverse leadership demographic, with 66.7% being business owners and a significant number possessing varied educational backgrounds, underlines the need for a balance between experience and formal education in effective management practices. The results indicate high usage rates for strategic planning (82%) and budgeting (78%), yet reveal inconsistencies in the application of cost accounting and performance monitoring tools, such as dashboards and variance analysis. Approximately 70% of respondents regularly employ pricing studies, highlighting the critical importance of pricing strategies in this sector. These findings suggest substantial opportunities for enhancing management control practices through systematic integration of underutilized tools. Ultimately, improved management control will support the resilience and competitiveness of construction SMEs in the Marrakech-Safi region.

Keywords: Management Control, SMEs, Construction Sector.

INTRODUCTION

Over the last few decades, Morocco has undergone significant institutional transformations, notably with the adoption of a new constitution that reflects the aspirations of its citizens and addresses contemporary national and international issues. This constitutional reform aims to establish a more equitable balance of power and modernize the management of public affairs by anchoring essential principles such as transparency, accountability, and responsibility. To support these advances, it is imperative to implement a new organic finance law aimed at strengthening governance and promoting the modernization of the State. In this context, supporting small and medium-sized enterprises (SMEs) and encouraging investment have emerged as strategic priorities for national economic development. In alignment with the King's high directives and as part of the 2021-2026 government program, the 2022 Finance Act focuses on revitalizing the national economy through initiatives such as the establishment of the Mohammed VI Fund for Investment, support for young entrepreneurs, improvement of the business climate, and implementation of tax reform under framework law No. 69-19. Additionally, a new investment charter has been introduced to stimulate private investment and enhance access to financing for SMEs, which are recognized as a crucial lever for economic growth.

However, despite these efforts, Moroccan SMEs, particularly in the construction and public works (BTP) sector, face significant challenges that hinder their development. These challenges include organizational difficulties, financing issues, cost management problems, skill shortages among human resources, and the complexity of administrative and tax procedures. To address these obstacles, it is essential for these companies to adopt effective management tools, such as management control, which is recognized as a key process for optimizing organizational performance, from strategy development to results evaluation and the implementation of corrective actions. It is undeniable that a country's success largely depends on the performance of its businesses, which play a central role in its development model. Consequently, it is crucial to analyze how SMEs can enhance their performance and operational efficiency to contribute effectively to Morocco's economic and social development. Thus, this study aims to explore the frequency of use and practices of management control within construction

SMEs in the Marrakech-Safi region, in order to identify the levers and obstacles that influence their effectiveness. In this context, it is imperative that Moroccan companies adopt effective management tools to overcome the organizational and financial challenges they encounter. The present research addresses this issue by focusing on the specific difficulties faced in the application of management control within SMEs in the construction and public works sector. The main objective of this study is to contribute to a better understanding of the role and importance of management control in this sector. The central research question can be formulated as follows:

What are the management control practices, and how frequently are they utilized in construction and public works SMEs in the Marrakech-Safi region?

MATERIALS AND METHODS

Theories used: Contingency Theory

In the 1950s, the role of technology in shaping organizational structures gained growing recognition. Joan Woodward, a British sociologist (1916-1971), conducted an empirical study to explore what drives organizations to adapt their structures and which organizational types yield the best performance. Her work, published in 1965 under the title Industrial Organization: Theory and Practice, is one of the most significant contributions to the technological contingency theory. Woodward's study, conducted between 1953 and 1957, involved analyzing around a hundred industrial companies located in southeast Essex, England, ranging in size from 100 to 4,000 employees. The study aimed to identify the organizational characteristics linked to company performance. The findings revealed that the technology employed by an organization significantly affects its structure, and certain organizational structures are more effective depending on the technology in use. Specifically, firms using mass production technologies performed better with a hierarchical structure, while those employing customized production methods thrived in decentralized, participative structures. Technology, according to Woodward (1965), is regarded as an internal contingency variable, a view supported by Perrow (1970) and Pfeffer (1981). Technological changes can influence organizational structure in two ways: first, by affecting the formal structure, which impacts the division of labor and the relationships among activities resulting from this division; and second, by altering the informal structure, which modifies power dynamics and communication patterns within the organization.

The managed positivism paradigm and research approach

Our research falls within the paradigm of "managed positivism," as described by Miles and Huberman (1991, p. 31), which represents a continuum between positivism and interpretivism. This paradigm has been used by several authors, including Charreire and Huault (2001), Cappelletti (2005), Colle (2006), and Demaria (2008). The modified positivist paradigm challenges the traditional positivist approach, which posits that scientific knowledge is a prerequisite for developing new knowledge.

Mode of reasoning and research approach

The quantitative approach is a research strategy aimed at discovering and quantifying relationships between several objects, as described by Grawitz (1993). It is characterized by the enumeration of a large number of cases and units, as well as the countability and frequency of the phenomena to be studied or described, with the ultimate aim of capturing objective knowledge, as emphasized by Bergadaà and Nyeck (1992). This method requires statistical measurements and tests to establish the significance of the relationship under study.

Questionnaire collection and SPSS analysis

We have chosen to use a questionnaire survey in our study, as this method seems to be the most suitable for answering our research question. This method of data collection is commonly used in the field of management control. According to Baumard et al. (2003), a questionnaire is a tool used to question individuals directly, using a qualitative approach to define the response modalities through so-called closed-ended questions.

IBM® SPSS® Statistics (version 26) is the leading statistical software used worldwide to solve business and research problems through ad hoc analysis, hypothesis testing, and predictive analysis. Organizations use IBM SPSS Statistics to understand data, analyze trends, forecast, plan, and validate hypotheses, and draw accurate conclusions. Hypothesis testing in research involves testing theoretical or methodological concepts against reality,

with the aim of producing an explanation. This process involves a series of operations carried out by the researcher to assess the relevance of a hypothesis, model, or theory, aiming to explain observed reality while maintaining neutrality and objectivity. As part of our research, we recognized the need for a theoretical framework, which led us to bring an original perspective to our understanding of New Information and Communication Technologies (NICT) and financial performance.

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FINDINGS

Descriptive Analysis

Table 1: Monograph of Surveyed Companies

Variables	Categories	Frequencies	Percentages
Headquarters	Prefecture of Marrakech	153	68.3%
	Province of Essaouira	41	3.3%
	Province of Chichaoua	2	3.3%
	Province of Safi	2	8.3%
	Province of Youssoufia	5	8.3%
	Province of Rehamna	5	8.3%
Ownership Structure	Non-family businesses	46	76.7%
	Family businesses	14	23.3%
Legal Form	Limited Liability Company (LLC)	37	61.7%
	Single-member Limited Liability Company (SMLLC)	23	38.3%
Class	Class 2	4	6.7%
	Class 3	10	16.7%
	Class 4	37	61.7%
	Class 5	9	15%
Age	Less than 5 years	28	46.7%
	5 to 10 years	9	15%
	10 to 15 years	15	25%
	15 to 20 years	6	10%
	20 years and more	2	3.3%
Main Activity	Building construction	33	55%
	Road works	13	21.7%
	Other	10	16.7%
	Building construction, Other	1	1.7%
	Building construction, Road works	3	5%

The prefecture of Marrakech is the primary location for companies, representing 68.3% of the total, while the remaining companies are distributed across various provinces. Most companies are non-family businesses (76.7%), with a predominance of the Limited Liability Company (LLC) legal form (61.7%). Regarding company classification, the majority fall into class 4 (61.7%). The age distribution shows that nearly half of the companies are less than 5 years old (46.7%). Lastly, in terms of main activities, building construction is the most prevalent (55%), followed by roadworks (21.7%). This table provides a comprehensive overview of the surveyed companies, offering key insights into the economic landscape of the region under study.

Table 2: Characteristics of Surveyed Managers

Variables	Categories	Frequencies	Percentages
Status of Managers	Owner	40	66.7%
	Co-owner	19	31.7%
	Partner	1	1.7%
Age of Manager	20 to 30 years	1	1.7%
	30 to 40 years	27	45.0%
	40 to 60 years	15	25%
	Over 60 years	17	28.3%
Level of Education	No diploma	22	36.7%
	High school diploma (Baccalaureate)	6	10%
	Two-year college degree	15	25%
	Three-year university degree	7	11.7%
	Master's degree or higher	10	16.7%
Type of Education	No specific training	23	38.3%
	In a discipline other than management	29	48.3%
Manager's Experience	Management sciences	8	13.3%
	Less than 5 years	2	3.3%
	5 to 10 years	7	11.7%
	10 to 15 years	22	36.7%
	15 to 20 years	10	16.7%
	20 years and more	19	31.7%

The table provides a summary of the characteristics of the company directors included in the study. The majority of managers are business owners, representing 66.7% of the sample, followed by co-owners at 31.7%. Regarding the age of the managers, the distribution is fairly diverse, with a notable concentration in the 40 to 60 and over 60 age groups. In terms of education, most managers hold at least a Bac+2 level, and a significant proportion have completed training in fields other than management. Regarding professional experience, a significant number of managers have between 10 to 15 years or 20+ years of experience, highlighting their extensive expertise and knowledge in the field. This analysis offers valuable insights into the profile of the leaders of the companies in the study, providing an in-depth understanding of the composition and dynamics of leadership in the given context.

Table 3: Overview of the Frequency of Use of Management Control Tools in the Surveyed Companies

Control Tool / Frequency of Use	Management Controller	Manager	Financial Director	Accountant (Assistant Accountant)	External Person	Owner	Technician	Other	Total
Strategic and Operational Plan									
Never	0	2	0	0	0	0	0	2	4
Rarely	0	5	0	0	0	0	0	1	6
Sometimes	0	27	0	3	0	0	0	0	30
Often	1	29	0	0	0	0	0	0	30
Always	1	124	1	1	1	2	0	0	130
Budgets									
Never	0	2	0	0	0	0	0	2	4
Rarely	0	5	0	0	0	0	0	1	6
Sometimes	0	27	0	3	0	0	0	0	30
Often	1	29	0	0	0	0	0	0	30
Always	1	124	1	1	1	2	0	0	130
Analytical Accounting									
Never	0	0	0	0	0	0	1	2	3
Rarely	0	4	0	3	1	0	0	0	9
Sometimes	0	3	0	8	0	0	0	0	11
Often	0	8	0	13	0	0	2	0	23
Always	8	38	2	65	0	1	39	1	154
Dashboards									
Never	1	14	0	1	1	1	84		102
Rarely	0	5	1	1	0	6	1		14
Sometimes	0	14	0	8	0	8	0		30
Often	0	9	0	6	0	16	0		31
Always	3	6	1	5	0	8	0		23
Variance Analysis									
Never	0	0	0	0	0	0	5		5
Rarely	0	13	0	0	0	0	1		14
Sometimes	0	90	2	9	0	1	0		102
Often	0	51	1	3	1	2	0		58
Always	1	16	1	2	0	1	0		21
Pricing Studies									
Never	0	0	0	0	0	1	4		5
Rarely	0	4	0	3	0	0	1		8
Sometimes	0	17	1	4	0	0	0		22
Often	0	72	0	6	1	0	0		79
Always	2	69	0	11	0	4	0		86
Total	2	187	1	160	1	2	43	3	200

The analysis of the results regarding the use of management control tools in the surveyed companies reveals significant trends. Strategic and operational plans, along with budgets, are widely adopted, with a majority of respondents indicating that they use them consistently. This underscores their importance in the decision-making process. In contrast, cost accounting shows varied usage; while 154 individuals report using it regularly, some respondents indicate that they never utilize it. This discrepancy may reflect a lack of emphasis on this tool in certain companies. Dashboards are less frequently employed, with 102 respondents stating that they never use them, whereas variance analysis is primarily utilized on an occasional basis. This suggests a recognition of its usefulness, but it is not systematically integrated into performance monitoring. Finally, pricing studies are widely used, indicating that pricing is a significant concern for businesses, even though a few respondents report never employing them. Overall, the results demonstrate that while most management control tools are viewed as

essential, there are notable opportunities for improvement, particularly concerning the use of dashboards and variance analysis.

DISCUSSION AND CONCLUSION

This study offers significant insights into the management control practices of construction SMEs in the Marrakech-Safi region, focusing on the frequency of use of various control tools. The prefecture of Marrakech stands out as the primary hub for these businesses, representing 68.3% of the total sample, illustrating the economic importance of this region. Moreover, a notable finding is that 76.7% of the companies studied are non-family businesses, with a predominance of 61.7% organized as limited liability companies (LLCs). This legal structure seems to favor a more formalized approach to management control practices, which are essential in a sector where regulation and resource management are crucial for success. The demographic analysis of company leaders reveals a diverse set of profiles. Indeed, 66.7% of leaders are business owners, while a substantial share of 31.7% acts as co-owners. The age distribution shows a concentration of leaders in the 40 to 60 and over 60 age groups, suggesting a blend of experience and varying perspectives on management practices. In terms of education, the majority of leaders hold at least a Bac+2 diploma. However, a significant portion of leaders has received training in fields other than management, which could influence how they approach management control. This educational diversity, combined with significant professional experience—46.7% of leaders having less than 5 years of experience and 53.3% having over 10 years—demonstrates a solid foundation of knowledge within the industry.

The leaders fall into three distinct categories. On one hand, there are older and experienced leaders, often without diplomas, who value experience as a determining factor of performance. On the other hand, there are intermediate leaders with Bac+2 or Bac+3 diplomas who recognize the importance of training and experience for the effective functioning of the company. Finally, there are young engineers, although less experienced, who believe that a high level of education is essential for success in an ever-evolving sector. This classification highlights the need for a balance between experience and education for effective management. Regarding management control tools, the results show that 82% of companies use strategic and operational plans, while 78% apply budgets. These high rates underscore the essential role of these tools in the decision-making process. However, the variable usage of cost accounting, where 154 respondents (approximately 57%) report regular use while some never utilize it, highlights a potential gap in the importance attached to this tool in certain companies. The infrequent use of dashboards, with 102 respondents (38%) indicating they never use them, coupled with the occasional application of variance analysis by about 42% of companies, suggests that while these tools are recognized for their value, they are not systematically integrated into performance monitoring.

The notable use of pricing studies among the surveyed companies underscores the importance of pricing strategies in this sector. Approximately 70% of respondents claim to regularly use these studies, indicating a proactive approach to managing costs and profitability. However, 8% of respondents report never using these studies, which could pose a risk to their competitiveness. The results reveal significant opportunities for improvement in the management control practices of these SMEs, particularly in the systematic integration of dashboards and variance analysis. Addressing these gaps could lead to improved performance monitoring and decision-making capabilities, thereby fostering a more competitive environment within the construction industry in the Marrakech-Safi region. The often-informal evaluation of management control in many companies highlights the need for additional training and development in formal control practices.

This study not only sheds light on the current management control practices within construction SMEs but also emphasizes the need for continued evolution in response to market dynamics. By enhancing the use of management control tools, particularly in data visualization and analysis, these companies can more effectively navigate the complexities of the construction sector and achieve sustainable growth. The varied profiles of leaders highlight the importance of balancing experience with formal education and ongoing development programs to optimize overall performance and ensure compliance with existing technical and regulatory standards. Ultimately, improving management control practices will contribute to the resilience and competitiveness of the construction sector in the Marrakech-Safi region.

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Thanks to these companies for their availability and willingness to share their experiences, thus contributing to the improvement of management and control practices in the sector. Their commitment is crucial for the economic development of the region and helps identify challenges and opportunities. This collaboration serves as an inspiration for building a prosperous and sustainable future for SMEs in the BTP sector in the region.

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THE DETERMINANTS OF BANK PROFITABILITY: CASE OF EUROPE

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Abstract

This study explores the factors influencing bank profitability, with a particular focus on the European banking sector. It seeks to enhance our understanding of the financial drivers behind banks operating in this diverse and complex market. Through comprehensive empirical analysis, the research identifies key elements that affect profitability across European banks. Using a dataset of 31 major European banks, covering the period from 2013 to 2023, advanced econometric methods, such as panel data analysis, are employed to assess various determinants of bank profitability. The study considers internal factors specific to each bank, drawn from their financial data, alongside macroeconomic indicators like GDP growth and inflation, sourced from the World Bank. The findings reveal that both bank-specific factors, such as size and capital ratios, and broader economic conditions, including inflation and the effects of the COVID-19 pandemic, have a significant impact on profitability. The results underscore the importance of maintaining adequate financial reserves, effective loan management, and the ability to navigate economic uncertainties, especially during crises. Among the econometric models evaluated, the fixed-effects model proved to be the most accurate in explaining variations in bank profitability.

Keywords: Europe, bank sector, capital ratio, inflation, profitability, COVID-19

INTRODUCTION

The banking industry is a fundamental pillar of worldwide financial systems, which is essential in sustaining stability and promoting economic prosperity. As a central middleman in financial markets, banks help credit flow across borders and within countries. Therefore, bank profitability is a barometer for the economic system's general condition and for one institution's performance. A bank's profits show its operational efficiency, risk-management skills, and financial stability. Establishing investor trust, guaranteeing regulatory compliance, and promoting economic growth via continuous lending and investment activity depends on this profitability.

Banking is fundamental to the European economy and directly affects many different economic activities like consumer expenditure and corporate investment. Driven by changing market dynamics, technological breakthroughs, and legislative changes, the European banking industry has seen significant changes recently. For banks, these changes have brought possibilities and difficulties, which emphasizes the need to know the elements influencing profitability in this framework. For many reasons, one should study the factors affecting European bank profitability. First, it clarifies the financial system's stability and resiliency during times of economic instability. Second, it helps to create policies and plans meant to improve the efficiency and effectiveness of the banking industry. For legislators, investors, authorities, and financial experts, a thorough awareness of the factors influencing bank profitability is beneficial. Stakeholders may make well-informed choices that support sustainable development, the best use of resources, and economic stability by knowing the main elements under the influence of the banking sector.

As a measure of a bank's financial situation, profitability shows its capacity to provide steady income throughout time regularly. This indicator shows managerial performance and is very important in the more general economic context. Variations in profitability significantly affect economic growth, shaping choices on capital distribution, savings, and investments. Higher profitability banks are more suited to improve cash flow, increase access to finance, and generate more investment and growth chances. This dynamic may increase general economic productivity, create employment, and intensify competitiveness. From fields including finance, marketing, strategic management, accounting, and industrial economics, research on bank-level profitability has been a

primary emphasis in financial studies. Many studies have looked at the elements influencing bank performance, providing information on the causes of profitability. Knowing these components is especially important in unpredictable economic periods, such as financial crises or world events.

This paper investigates the complex field of bank profitability, especially concerning European banks. Its goal is to uncover many elements affecting European banks' profitability through thorough empirical study, thereby deepening our knowledge of the dynamics influencing financial institutions in this complex and varied market.

This study investigates the factors influencing bank profitability using a dataset of 31 of the biggest banks in Europe by asset size from 2013 to 2023. It uses sophisticated econometric approaches, including panel data analysis, and draws from their financial records. The study covers a range of internal elements unique to every bank as well as macroeconomic data like GDP growth and inflation from the official World Bank website.

The results show that profitability is much influenced by macroeconomic factors like inflation and the consequences of the COVID-19 epidemic, as well as by bank-specific factors such as size and capital ratio. Particularly in times of crisis like the COVID-19 epidemic, the study underlines the need for banks to keep sufficient financial reserves and control loans and autonomic difficulties. Out of all the models tested, the fixed-effects model was the most realistic depiction of bank profitability. Studies from past times repeatedly show that internal issues largely influence bank profitability. These elements include operational effectiveness, capital structure, managerial techniques, and risk control measures. Although many studies have been done on banks' financial situation, targeted studies on specific areas and times are still much sought. The European banking industry is unique because of its different regulatory frameworks, market circumstances, and economic contexts throughout nations.

For the worldwide banking industry, the COVID-19 epidemic has brought unheard-of difficulties impacting operations, profitability, and general stability. The crisis has affected consumer behavior, corporate procedures, financial markets, and economic activity. Therefore, one of the most critical areas of investigation is how the epidemic affects the financial sector. Examining the effects of this worldwide crisis on the industry, this paper seeks to investigate how COVID-19 has affected bank profitability in Europe. The study addresses many vital questions: How has the European banking industry responded to the COVID-19 epidemic? Which effects has this worldwide crisis had on bank profitability? What knowledge may one acquire from this event to improve future disturbance preparedness? Using a thorough analysis of these issues, the research aims to provide an insightful analysis of the internal and external elements influencing bank profitability, thereby improving the knowledge of the difficulties and prospects confronting the European banking industry after the epidemic.

The banking sector is a basic component of Europe's economic structure, comprising a broad spectrum of institutions vital in financial intermediation, investment, and general economic stability. To understand the dynamics of this sector, one must study its structure, legal environment, main actors, and current developments.

Diversity defines the European banking scene, which ranges from minor regional and municipal institutions to big worldwide corporations. Among the prominent participants are Deutsche Bank (Germany), BNP Paribas (France), HSBC (UK), and Banco Santander (Spain). Operating within the European Union (EU) and beyond, these institutions greatly help create the worldwide financial system. With national authorities such as the Bank of England (BoE), Banque de France, and Bundesbank, the European Central Bank (ECB) shapes the regulatory environment for European banks. Basel III and other regulatory changes were meant to support financial stability, increase liquidity management, and lower risk in the banking industry after the 2008 financial crisis. Borri and Di Giorgio's (2022) research shows that these updated rules, which set higher capital requirements and more thorough stress testing for banks, have successfully reduced the probability of another significant financial catastrophe.

This research first reviews the body of current research on the elements affecting bank profitability and presents the theoretical framework. Then it describes the economic developments in Europe over the years. The third section describes the approach used, including model definitions and variable selection. Last it highlights the main conclusions and their ramifications, while the third chapter offers empirical data and debates.

LITERATURE REVIEW

Numerous studies have explored the factors influencing bank profitability over the years, generating significant interest in both conceptual and practical aspects of the topic within academic literature. Many researchers have investigated how specific characteristics of banks affect their profitability. Building on foundational work by Short, B. K. (1979) and Bourke, P. (1989), more recent studies have sought to identify key determinants of bank profitability across various countries. While some research focuses on panels of nations, others concentrate on individual countries.

Uralov (2020) analyzes bank performance using three metrics: return on investment, return on equity, and net interest margin. The findings reveal that the impact of these variables on profitability differs based on the profitability measure utilized, with economic growth notably influencing return on bank assets. Research by Smirlock (1985), Boyd and Runkle (1993), Bikker and Hu (2002), and Doğan (2013) demonstrates a significant positive relationship between bank size and profitability. Various studies, including those by Camilleri (2005), Athanasoglou and Delis (2008), Pasiouras and Kosmidou (2007), Gul and Zaman (2011), and Saeed (2014), suggest that larger banks typically achieve greater profitability. Menicucci and Paolucci (2016) found that, within Europe, profitability at the corporate level is significantly affected by factors such as bank size and capital ratio, with larger loan loss provisions often correlating with lower profitability. Additionally, their data indicate that banks with higher loan-to-deposit ratios generally exhibit increased profitability, though this relationship may not always be statistically significant.

Athanasoglou and Staikouras (2006), in their study of bank profitability in Southeastern Europe, found that while financial reforms and improvements in the aggregated balance sheets of credit institutions are interconnected, they have opposing effects on profitability. Rossi, Borroni and Piva (2018) explored how the factors influencing bank profitability have evolved following the recent financial crisis. Their research indicated that the determinants of profitability, once clearly defined in previous studies, have shifted due to new regulatory and competitive pressures. By analyzing commercial, cooperative, and savings banks using random effects panel regression, their study found that after a period characterized by excessive optimism—where rapid credit expansion and high leverage were seen as effective strategies for boosting profitability—maintaining a robust financial structure and prudent credit portfolio management have become the key factors for achieving higher returns.

As measured by return on average assets (ROAA) and return on average equity (ROAE), Petria, Capraru, and Ihnatov (2015) found that their empirical results matched their expectations, so highlighting several elements that significantly affect bank profitability, including credit and liquidity risks, management efficiency, business diversification, market competitiveness, and economic growth. Within the EU27, they observed a favorable relationship between bank profitability and competitiveness, supporting the European integration objective of increasing market competitiveness. Regarding ROAE, their results likewise showed that bank size had little influence on profitability; ROAA was not much affected. Their findings led them to advise regulatory agencies to increase their control of credit and liquidity risks and support more banking sector competition. They also counseled bank leaders on carefully monitoring these risks, diversifying income sources, and streamlining running expenses.

From 2004 to 2011, Căpraru and Ihnatov (2014) examined the main factors influencing bank profitability in five Central and Eastern European nations: Romania, Hungary, Poland, the Czech Republic, and Bulgaria. Their study of 143 commercial banks examined net interest margin, ROAA, and ROAE as profitability measures. Across all measures, they found that managerial efficiency and capital adequacy growth favorably affected bank profitability. But significantly influencing ROAA and ROAE was inflation and credit risk. Emphasizing the need for internal and external elements to decide bank profitability, the research also revealed that banks with better capital adequacy ratios often show more profitability.

Previous studies have pointed out various factors that may improve a bank's profitability: size (Berger, 1987; Bikker and Hu, 2002); capital ratio (Molyneux and Thornton, 1992); liquidity ratio (Bourke, 1989; Molyneux and Thornton, 1992); asset quality; operational efficiency; etc. Empirical research has carefully investigated these internal factors, and different variables have been suggested as predictors of bank profitability, thereby reflecting the qualities and objectives of every mentioned study.

Asset Size. Whether a bigger bank size results in higher profitability is one of the main unresolved issues in the literature. Larger banks often earn greater returns, for instance, according to Regehr and Sengupta (2016) and Ali and Puah (2019), suggesting a favorable link between size and profitability. They observed that banks with higher returns usually fit better for growth. On the other hand, research by Aladwan (2015), Thi Thanh Tran, Phan (2020), Zaman (2011), and Vong and Chan (2009) found that lower asset sizes are linked with greater profitability, therefore implying a negative association between size and profitability. Their results show that small and medium-sized banks generally do better than bigger ones. Other research, such as that by Tharu and Shrestha (2019) and Alzoubi (2018), concluded that bank size (measured by assets) does not significantly influence profitability, indicating no relationship at all. The existing literature on the impact of bank size on profitability presents a somewhat ambiguous picture. This research also considers bank size as an independent variable, measured by total assets, converted into Euros using annual exchange rates. The literature review suggests a positive relationship between bank size and profitability.

Capital Ratio. The capital ratio is an important metric for assessing a bank's capitalization and overall stability, reflecting its capital adequacy. Often referred to as the equity-to-assets ratio, this measure is a fundamental indicator of a bank's capital strength (Golin, 2001). Strong capital is crucial for banks as it enhances their ability to withstand financial crises and ensures depositor security during challenging economic conditions. A solid capital structure enables financial institutions to absorb losses and reduces the risk of insolvency during adverse times. Conversely, banks with insufficient capital may struggle to manage risks effectively. Hirindu Kawshala (2017), Bitar, Pukthuanthong, and Walker (2018), and Zaman (2011) found a positive and significant relationship between a bank's capital ratio and its profitability. They concluded that a higher capital ratio correlates with increased profitability. Agbeja, Adelakun, and Olufemi (2015) also reported that banks with higher capital ratios pose less risk compared to those with lower ratios, as indicated in their study on the capital adequacy ratio and bank profitability in Nigeria. Vong and Chan (2009) further emphasized the significance of the capital ratio concerning bank profitability. Conversely, Gul, Irshad, and Zaman (2011) reported no significant relationship between bank profitability and capital ratio, noting that while the association between capital ratio and both marginal cost (MC) and ROA is minimal, it is not definitive, suggesting that well-capitalized banks may experience negative returns. Overall, the research indicates a positive relationship between the capital ratio and bank profitability.

Loan Ratio. Calculated as net loans divided by total assets, the loan ratio measures liquidity. Studies by Sufian and Habibullah (2009), among other research, show a consistent positive link between liquidity and profitability. Although they may not make great profits, banks with a significant concentration of liquid assets are often less vulnerable to hazards, which helps investors tolerate less returns on equity. Particularly in terms of liquidity and profitability, loans are a significant revenue source for banks and significantly affect their operations. While loans are supposed to increase income, several studies have shown a negative correlation between bank loan volume and profitability. This contradiction emphasizes the different study results on the relationship between bank profitability and liquidity levels. Menicucci and Paolucci (2016) found that with both return on equity (ROE) and return on assets (ROA), the ratio of net loans to total assets exhibits a positive but statistically meaningless correlation. This suggests that while a higher percentage of loans might improve the possibility of profitability, the impact needs to be more substantial to support confident decisions. According to Zaman (2011), this loan ratio was a significant determinant of Pakistani bank profitability. On the other hand, Prabowo et al. (2018) revealed a hostile and statistically meaningless link between this ratio and ROA. Finally, Almazari (2014) found that for banks in Saudi Arabia, the loan ratio had a negative link with ROA; for Jordanian banks, this relationship was positive and substantial. Current research mainly points to a favorable correlation between loan ratios and profitability.

Deposits ratio, calculated as the rate of total deposits over the total assets heavily rely on consumer deposits. As a result, a bank will get more deposits, have more loan alternatives to offer consumers, and be able to make more money. Lee and Hsieh (2013) emphasize this point by stating that while low deposits may have a negative impact on banks' profitability, higher deposits might help them generate more profits. Consequently, there is a positive correlation between client deposits and bank profitability. On the other hand, because banks must pay depositor interest, their inability to release funds through loans may lower their profitability level. More deposits, however, could reduce earnings if there is not enough demand for loans because this type of financing is expensive. Hirindu Kawshala (2017) on his research paper regarding the factors affecting bank profitability has established a positive and significant relationship between deposits and bank profitability. He states that lower level of deposits

negatively impacts on bank profitability. The largest contribution to profitability comes from savings deposits, which are followed in order of importance by time deposits and, lastly, current deposits, which have the least contribution. Therefore, the Jordanian commercial bank will take a similar tack in drawing up unique strategic plans, diversifying its credit portfolio, and luring investor deposits, highlight Haddawee and Flayyih (2020) on their study. Additionally, Gul, Irshad and Zaman (2011) conclude that the total deposit over total assets has a significant and positive relationship with the profitability of banks. Therefore, most of the literature concludes a positive relationship between the bank profitability and the deposits variable.

Loan Loss Provisions, calculated as the ratio of loan loss reserves to total loans, serve as a measure of capital risk and the quality of a bank's credit portfolio. Banks operating in higher-risk environments or lacking expertise in managing loans are expected to increase their loan-loss provision ratio to mitigate risk. Consequently, a higher ratio is anticipated to be negatively correlated with profitability. The ratio of loan loss reserves to total loans is assessed to determine how a bank's asset quality influences its profitability. In regression analysis, this ratio is treated as an independent variable because a high ratio often indicates poor-quality loans, thereby increasing the risk associated with the loan portfolio. Ul Mustafa, Ansari, and Younis (2012) found that in Pakistani banks, those with lower loan loss provisions are perceived as safer and this safety can translate into higher profitability. Similarly, Ahmad, Tahir, and Aziz (2014), Alhadab and Alsahawneh (2016), and Menicucci and Paolucci (2016) observed a significant negative relationship between loan loss provisions and bank profitability in their studies. Given the theoretical expectation that increased exposure to credit risk typically leads to reduced profitability, a negative relationship between loan loss provisions and profitability is anticipated.

GDP Growth. The relationship between GDP growth and bank profitability has been extensively studied in the literature, with a consensus that macroeconomic conditions, such as GDP growth, play a crucial role in influencing the financial performance of banks. Studies generally show that improved profitability for banks and positive GDP growth have a close relationship. While firms engage in expansion and consumers raise their expenditures, the demand for loans and financial services usually rises while the economy is developing. On the other hand, negative GDP growth or economic downturn might lower bank profits. Recessions bring about more unemployment, lower consumer spending, and lower company investments, which could reduce demand for credit and financial services. Furthermore, borrowers run more risk of defaulting on their loans in times of economic crisis, which significantly influences loan loss provisions and non-performing assets and thus affects bank earnings (Athanasoglou, Brissimis, & Delis, 2008). Banks often need tight liquidity and higher financing costs during these difficult times might further compromise their profitability. External events like monetary policy, inflation, and changes in interest rates could influence the connection between GDP development and bank profitability. To prevent overheating, central banks could, for instance, increase interest rates during economic boons. Although broadening their interest margins helps banks initially, rising interest rates might also reduce loan demand, affecting long-term profitability (Dietrich & Wanzenried, 2011).

Inflation. Determining bank profitability depends critically on inflation, expressed as a percentage change in consumer prices over time. Wide-ranging research on the link between inflation and bank profitability has produced conflicting results depending on the studied areas' economic background. Inflation can influence bank profitability in multiple ways. One of the primary channels is through its impact on interest rates. As inflation rises, central banks tend to increase interest rates to control inflationary pressures. Higher interest rates can benefit banks by increasing the spread between what they pay on deposits and what they charge for loans, which positively affects their profitability. However, inflation can also lead to increased uncertainty in the economy, which may cause borrowers to struggle with loan repayments, increasing non-performing loans and loan loss provisions, which negatively affects profitability (Perry, 1992). Moreover, the ability of banks to adjust their interest rates in response to inflation is critical. Banks that can swiftly pass inflationary costs to their customers through higher interest rates are better positioned to maintain profitability. Nonetheless, inflation can also diminish the real value of loans and deposits if interest rate adjustments lag behind inflation, reducing bank profitability in real terms (Gul et al., 2011). Results of empirical research on the effect of inflation on bank profitability have been conflicting. Perry (1992) proposed that whether inflation is expected or unforeseen determines how much it affects profitability. Anticipating inflation allows banks to modify their interest rates, reducing adverse effects. Conversely, unexpected inflation could cause mispricing of loans and deposits, compromising bank profitability. Bourke (1989) also discovered a favorable link between inflation and profitability; yet, in hyperinflation the impact becomes lessened. In conclusion, while inflation can provide opportunities for banks to enhance their profitability

through broader interest margins, it can also present risks by increasing loan defaults and creating economic uncertainty. How inflation affects profitability depends on how well banks anticipate and adjust to inflationary pressures.

MATERIALS AND METHODS

This study assesses the impact of management on profitability through an analysis of financial statements. Specifically, it focuses on the income statements and balance sheets of the top 31 banks in Europe, which offer pertinent data.

Using panel data, a multiple regression analysis, including cross-sectional and time-series information, was conducted to investigate the elements affecting the profitability of European banks. This approach conforms to past studies and uses descriptive and multivariate analytic methods to evaluate how several bank features together influence profitability. The Stata program was used to investigate the connections among the variables of interest and run the regression models for the study.

The study included two separate models, each using a different profitability metric as the dependent variable. The model specifically tested two different profitability indicators, Return on Equity (ROE) and Return on Assets (ROA) and it included eight independent variables.

Dependent and Independent Variables

The dependent variables in this study are considered as alternative indicators of profitability. To evaluate bank profitability, various ratios have been used in the literature, such as those by Sufian and Habibullah (2009) and Naceur and Omran (2011). Below are represented a table which includes all the variables, dependent and independent, and their respective definition and formula.

Table 2. Variables Definition

Dependent Variables			
Symbol	**Name**	**Definition**	
ROE	Return on Equity	Net Income / Total Equity	
ROA	Return on Assets	Net Income / Total Assets	
Independent Variables			
Symbol	**Name**	**Description**	**Source**
Bank Specific Variables			
SIZE	Size	Natural Logarithm of Total Assets	Bank annual reports
CAP	Capital ratio	Equity / Total Assets	Bank annual reports
LOAN	Loan ratio	Net Loans / Total Assets	Bank annual reports
LLP	Loan loss provisions	Loan loss reserves / Total Loans	Bank annual reports
DEP	Deposits Ratio	Total deposits / Total Assets	Bank annual reports
Country Specific Variables			
GDP	GDP Growth	The percentage rate at which each economy is expanding or contracting from one year to the next.	World Bank
INFL	Inflation	The annual percentage change in consumer price for each country.	World Bank

Note: The variables SIZE, CAP, LOAN, DEP, and LLP are derived from the annual reports of each respective bank, collected from the official websites of the banks for the years 2013 to 2023. The variables GDP Growth (GDP) and Inflation (INFL) are sourced from the World Bank database.

ROA, a frequently used measure of bank profitability in academic research, reflects how effectively a bank manages its resources to generate profits and the efficiency with which management converts assets into earnings (Hassan and Bashir, 2005; Golin, 2001). It is determined by the ratio of net income to total assets. Essentially,

ROA gauges a bank's management effectiveness and operational efficiency in producing income relative to its assets. Rivard and Thomas (1997) argue that Return on Assets (ROA) is a crucial measure of a bank's effectiveness in generating profits from its financial and real assets, regardless of the bank's equity levels.

ROE is another dependent variable utilized in this study, calculated as the ratio of net income to total equity. It is the return on shareholder's equity and is of great importance since it demonstrates the efficacy with which a bank's management uses the money of its shareholders. Stated differently, return on equity (ROE) measures a company's ability to make a profit on each unit of shareholders' equity and illustrates the effectiveness of its use of capital invested to drive earnings growth. ROE is frequently used in the financial literature to measure profitability.

Most of the independent variables in this study—such as size, capital ratio, deposits ratio, loan rate, and loan loss provisions—are internal factors affecting bank performance, largely shaped by management decisions and goals. These variables can have a substantial impact on a bank's operational outcomes. Management practices directly influence these factors, with decisions typically informed by financial data from balance sheets and income statements.

Size, which is found as the natural logarithm of total assets converted into the same currency (Euro) for each bank by using their respective country's exchange rate of each year from 2013 to 2023. The question of how much size increases bank profitability is among the most crucial ones in terms of bank strategy. Generally, research indicates that an increase in size tends has a positive effect on profitability.

Capital ratio which represents the capital strength of a bank is found as the ratio of equity over total assets. The equity-to-total-assets ratio reflects a bank's ability to manage losses and risk exposures and is an indicator of its capitalization. This ratio is crucial in assessing the bank's financial health and stability. A higher ratio signifies that the bank has sufficient capital, which helps it meet regulatory capital requirements more easily. Additionally, having more capital allows the bank to extend more loans, potentially enhancing profitability.

Deposits ratio serves as a crucial source of funding for banks. The ratio of deposits to total assets indicates the proportion of a bank's assets that is financed by these deposits. According to existing research, deposits are typically expected to positively affect bank profitability. Studies have shown that banks that rely more on deposits for their funding generally experience higher Return on Assets (ROA), as increased deposits boost their lending capacity and potentially enhance profits (Menicucci and Paolucci, 2016). Nevertheless, the impact of growing deposits on profitability is also affected by factors such as the quality of income-generating assets and the bank's operational efficiency, especially its ability to transform deposit liabilities into profitable assets.

Loan ratio is used on this study as an independent variable in order to determine the effect of loans on banks' profitability and is found by the ratio of net loans to total assets. The majority of assets that carry interest are loans, which are seen to positively correlate with bank profitability. Assuming all other factors are constant, profitability should generally increase as a higher proportion of deposits is converted into loans. However, banks with rapidly growing loan portfolios may face higher funding costs, which could potentially reduce profitability.

Loan Loss Provisions (LLP) are sums financial institutions set to cover any loan default losses. This is a crucial factor determining how asset quality affects European banks' profitability. An increase in the loan loss provision ratio can arise in dangerous circumstances should banks neglect to control their lending policies adequately. A larger ratio suggests weaker credit quality and less profitability, implying an anticipated negative link between this ratio and profitability.

GDP growth reflects a nation's economy's general state and growth, and it shows its yearly percentage change in economic production. Usually, a growing economy results in more corporate activity and consumer spending, which may improve asset quality and demand for loans, boosting banks' profitability. Still, a bank's credit risk management strategies and operational effectiveness also affect how profitable it is given a GDP increase.

Inflation has a complex link with bank profitability, indicated by yearly percentage changes in consumer prices. For banks, moderate inflation may help expand the interest rate difference between loans and deposits, improving profitability. On the other hand, significant or erratic inflation might provide difficulties, including growing expenses and a devaluation of the actual loan value, affecting profitability. Banks that find it difficult to predict and control inflationary pressures might have higher default rates and smaller profit margins (Bernanke, 2007).

Therefore, the capability of banks to modify their financial policies to match changing inflationary circumstances determines the general impact of inflation on bank profitability.

The dummy variable is used to check for the **COVID-19** pandemic consequences on the banking sector. The years from 2013 until 2018, which have not been affected by the COVID-19 pandemic are denoted with a 0 at the dataset and the years from 2019 until 2023 are denoted with 1, so we can have a clear understanding on the impact that this pandemic has caused.

Model

A panel data multiple regression will be used to analyze the cross-section and time series data to look into the factors that influence the profitability of European banks. I will use both a descriptive and a multivariate analysis, as observed in many other prior studies, to investigate the combined impact of bank attributes on the profitability level of banks. The analysis will evaluate two models with distinct profitability measures (dependent variables) in each model. Two distinct measures of profitability—return on equity (ROE) and return on assets (ROA)—will be included in the regression analysis as dependent variables, and eight factors that determine profitability—size, capital ratio, loan ratio, deposits ratio, loan loss provisions, GDP growth, impact of COVID-19 and Inflation—will be included as independent variables, as explained previously.

Using a dataset of 31 of the largest banks in Europe, over a period of 10 years, this study will constitute the fundamental estimation technique by applying different tests such as correlation test, Hausman test for fixed effect or random effect models and multicollinearity test.

Panel data (also known as cross-sectional time series data) is utilized on the study due to their ability to capture both individual variability and temporal changes in the cross-sectional units. To analyze the factors influencing the profitability of European banks, the following linear regression model will be estimated:

$$y_{it} = \alpha + \beta_{it} X_{it} + \epsilon_{it}$$

Here, i represents an individual bank and t denotes the year. y_{it} signifies the profitability of bank i at time t and X_{it} denotes the determinants of the bank's profitability. The term ϵ_{it} represents a normally distributed error term.

Expanding on the equation above to incorporate the variables detailed in Table 2, the regression model is expressed as follows:

$$ROA_{it} = \beta_0 + \beta_1 SIZE_{it} + \beta_2 CAP_{it} + \beta_3 LOAN_{it} + \beta_4 DEP_{it} + \beta_5 LLP_{it} + \beta_6 GDP_{it} + \beta_7 INFL_{it} + \beta_8 COV_t + \epsilon_{it}$$

$$ROE_{it} = \beta_0 + \beta_1 SIZE_{it} + \beta_2 CAP_{it} + \beta_3 LOAN_{it} + \beta_4 DEP_{it} + \beta_5 LLP_{it} + \beta_6 GDP_{it} + \beta_7 INFL_{it} + \beta_8 COV_t + \epsilon_{it}$$

To evaluate performance, we use two different indicators: ROE and ROA. Each of these serves as an alternative measure of bank i's performance during period t. Consequently, two distinct models are tested, with each model incorporating one of these profitability measures as the dependent variable. The regression analysis for equation employs fixed effects and random effects models, where each profitability measure is considered as the dependent variable. To address cross-sectional heteroscedasticity, we apply White's (1980) correction, which adjusts the standard errors of the coefficients accordingly.

Respectively to ROA and ROE models two main hypotheses are tested, examining the relationship between various independent variables and bank profitability:

Hypotheses for ROA Model

H_0: None of the determinants, including bank-specific factors (SIZE, CAP, DEP, LOAN, LLP) and macroeconomic indicators (GDP, INFL), nor the COVID-19 pandemic effects, exhibit a statistically significant impact on the Return on Assets of European banks.

Mathematically, this implies $\beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = \beta_6 = \beta_7 = \beta_8 = 0$

H_1: At least one of the determinants (bank-specific or macroeconomic factors, or COVID-19 effects) has a statistically significant impact on the Return on Assets of European banks.

This implies that at least one of the coefficients $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7, or\ \beta_8 \neq 0$.

Hypotheses for ROE Model

H_0: None of the determinants, including bank-specific factors (SIZE, CAP, DEP, LOAN, LLP) and macroeconomic indicators (GDP, INFL), nor the COVID-19 pandemic effects, exhibit a statistically significant impact on the Return on Equity of European banks.

Mathematically, this implies $\beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = \beta_6 = \beta_7 = \beta_8 = 0$

H_1: At least one of the determinants (bank-specific or macroeconomic factors, or COVID-19 effects) has a statistically significant impact on the Return on Equity of European banks.

This implies that at least one of the coefficients $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7, or\ \beta_8 \neq 0$.

Dataset and sample collection

A panel data analysis will be conducted using a balanced panel that has data for 31 of the largest banks in Europe, including the bank with the greatest impact in Albania, for the periods between 2013 and 2023. The main sources for collecting data for bank-specific characteristics were the annual reports, balance sheets and income statements of each respective bank, at their respective official website and the website of World Bank. They are considered as the biggest banks in Europe due to their large number of assets and are selected carefully to provide all the needed information for each year that the research aims to study.

The banks selected for this study were sourced from the S&P Global Market Intelligence website, specifically the list of Europe's 50 largest banks by assets for 2023. The selection of banks from each country is designed to be proportional, with banks chosen from each country based on the availability and representativeness of data. In some countries only a limited number of banks met the necessary data requirements, therefore, selecting only one bank from these countries was essential for maintaining data integrity. This approach ensures a balanced and comparable analysis across the different countries included in the study.

The table below demonstrates the amount of total assets, total equity, and total liabilities for each country of the collected dataset for the year 2023.

Table 3. Total Assets, Total Equity, and Total Liabilities by Country for the year of 2023

Country	Nr. of Banks	Total Equity	Total Assets	Total Liabilities
Albania	1	637	5795	5158
Austria	2	48351	535396	487045
Belgium	2	36479	526100	489621
Denmark	2	276768	5452589	5175821
Finland	2	47487	745093	697606
France	3	223587	4011498	3787911
Germany	3	122451	2102564	1980113
Ireland	1	15069	136349	121280
Italy	3	134262	1890672	1756410
Netherlands	2	76352	1353492	1277140
Norway	1	23240	348237	324997
Poland	1	45227	501516	456289
Spain	2	153841	2410862	2257021
Sweden	2	39174	620088	580914
Switzerland	1	86108	1717246	1631138
UK	3	117799	2873157	2478126
Total	**31**	**1,446,832**	**25,230,655**	**23,506,591**

Focusing on three main indicators—total equity, total assets, and total liabilities—Table 3 offers a thorough picture of the financial situations of numerous European nations for the year 2023. The information in the table emphasizes every nation's financial situation and makes it possible to examine their relative stability and economic strength. With assets more than liabilities by over €1.44 trillion, this positive equity implies that this region has typically had a steady financial situation in 2023. The significant difference between total assets and liabilities also suggests

that, taken as a whole, these nations are not excessively dependent on debt, which is encouraging for economic resilience.

Furthermore, the financial data for 2023 shows that most of the nations on the table have a good equity situation—that is, total assets more than total debt. Although national governments vary greatly in terms of size and financial situation, the sample shows generally solid financial stability. While smaller nations like Albania and Ireland exhibit lesser financial buffers, larger economies as Germany, France, and the UK show significant equity bases and good asset-to-liability ratios. However, even in the smaller economies, the overall financial outlook is largely positive, suggesting that these nations have sufficient resources to manage liabilities and maintain economic stability.

FINDINGS

Including both the fixed-effects and random-effects models in the analysis allowed a more comprehensive understanding of the data. The Hausman test indicated that the fixed-effects model is preferable, but presenting the random-effects model provides additional insights and serves as a robustness check. By comparing results from both models, it's possible to identify any significant differences in findings, ensuring that conclusions drawn about the factors influencing bank profitability are well-supported and reliable.

The variables that come out as statistically not significant are omitted from the study because the aim of the study is to have variables that are significant not only economically but also statistically.

Table 4. Determinants of Financial Profitability Random-Effects Model for European Banks, 2013-2023

	ROA (random-effects model)			**ROE** (random-effects model)		
Variable	**Coef.**	**Robust Std.Err.**	**Prob.**	**Coef.**	**Robust Std.Err.**	**Prob.**
Bank-Specific Variables						
Size	-0.00207***	0.00050	0.000	-0.01118**	0.00565	0.048
Capital Ratio	0.013356*	0.00755	0.077			
Loan Ratio (Lag.1)				0.038896*	0.02103	0.064
Country-Specific Variables						
Inflation (Lag.1)	0.000285***	0.00081	0.000	0.003896***	0.00100	0.000
Dummy Variable						
COVID-19	-0.003020***	0.00090	0.001	-0.045643***	0.00911	0.000
COVID-19 (Lag.1)	0.004089***	0.00075	0.000	0.065719***	0.00903	0.000
C	0.0282827	0.00717	0.000	0.188063	0.07558	0.013
R2 *Within*	0.1201			0.1759		
R2 *Between*	0.6868			0.3350		
R2 *Overall*	0.3933			0.2273		
Nr. of obs.	310			310		

Note: ***Significant at 1% level, **Significant at 5% level, *Significant at 10% level

In the random effects model, bank-specific variables demonstrate varied influences on profitability measures. The size of the bank has a negative impact on ROA, suggesting that larger institutions may encounter inefficiencies or diminishing returns on assets. Conversely, the capital ratio shows a positive but marginally significant effect on ROA, indicating that a robust capital base can enhance asset performance, albeit with limited significance for ROE. Additionally, the lagged loan ratio positively correlates with ROE, implying that banks with higher loan ratios in prior periods are likely to achieve better returns on equity. It is noteworthy that the loan loss provisions (LLP) ratio was omitted from the analysis due to its statistical insignificance across all models, suggesting that this variable may not effectively capture the risk-adjusted profitability dynamics of banks in the examined period. This omission could indicate that factors other than loan loss provisions are more critical in influencing profitability.

Country-specific factors significantly shape the financial profitability of banks in the random effects model. Inflation, especially its lagged effect, demonstrates a positive association with both ROA and ROE. This suggests that banks can benefit from higher inflation through increased interest margins and improved pricing strategies. Conversely, the GDP growth variable was excluded from the analysis due to its statistical insignificance, which may suggest that the direct relationship between economic expansion and bank profitability is not as pronounced in this dataset, indicating that other factors play a more critical role in influencing profitability.

The inclusion of the COVID-19 dummy variable underscores the profound impact of external shocks on bank profitability. The random effects model indicates that the pandemic led to a significant decline in both ROA and ROE, with coefficients of -0.003020 for ROA and -0.045643 for ROE, emphasizing the vulnerability of the banking sector during crises. The negative coefficients illustrate the immediate adverse effects on financial performance, while the positive lagged coefficients suggest a recovery trajectory, indicating that banks are gradually returning to pre-pandemic profitability levels as conditions stabilize. The adverse effects of COVID-19 emphasize the necessity for banks to develop strategies to mitigate risks associated with external shocks in the future.

Table 5. Determinants of Financial Profitability Fixed-Effects Model for European Banks, 2013-2023

	ROA (fixed-effects model)			**ROE** (fixed-effects model)		
Variable	**Coef.**	**Robust Std.Err.**	**Prob.**	**Coef.**	**Robust Std.Err.**	**Prob.**
Bank-Specific Variables						
Size	0.002487**	0.00106	0.019	0.042587*	0.02466	0.094
Capital Ratio	0.012449*	0.00712	0.082			
Loan Ratio	0.003884*	0.00218	0.075			
Loan Ratio (Lag.1)				0.044761**	0.01933	0.028
Country-Specific Variables						
Inflation (Lag.1)	0.000285**	0.00011	0.008	0.004103***	0.00093	0.000
Dummy Variable						
COVID-19	-0.003638***	0.00069	0.000	-0.053487***	0.00827	0.000
COVID-19 (Lag.1)	0.003826***	0.00077	0.000	0.061538***	0.00919	0.000
C	-0.031387	0.13646	0.022	-0.499385	0.31540	0.124
R2 *Within*	0.1786			0.2164		
R2 *Between*	0.6123			0.3181		
R2 *Overall*	0.1265			0.0234		
Nr. of obs.	310			310		

Note: ***Significant at 1% level, **Significant at 5% level, *Significant at 10% level

In the fixed effects model, bank-specific variables demonstrate a more favorable relationship with profitability outcomes compared to the random effects model. The positive impact of size on both ROA and ROE suggests that larger banks can leverage economies of scale to improve profitability, potentially due to enhanced market positioning and operational efficiencies. The capital ratio also shows a significant positive association with ROA, reinforcing the idea that well-capitalized banks are better positioned to utilize their assets effectively. Additionally, the loan ratio exhibits a significant positive correlation with ROA and lagged ROE, indicating that effective loan management and strategic lending practices are critical to enhancing bank profitability. Similar to the random effects model, the LLP ratio was omitted from this analysis due to its consistent lack of statistical significance, suggesting that the impact of loan loss provisions on bank performance may be overshadowed by other more critical factors.

Country-specific variables remain influential in the fixed effects model, with inflation continuing to demonstrate a positive relationship with both ROA and ROE. This finding reinforces the notion that banks can benefit from rising inflation through improved interest margins and pricing power. Moreover, the GDP growth variable was

again omitted due to its statistical insignificance, suggesting that while macroeconomic growth is often linked to financial performance, other determinants provide a more direct influence on profitability in the context of this study.

The absence of statistically significant findings for variables like LLP and GDP growth suggests that bank managers and policymakers should focus on more relevant financial and operational factors when strategizing for profitability improvements.

The fixed effects model accentuates the significant impact of the COVID-19 pandemic on bank profitability, reinforcing the findings from the random effects model. The negative coefficients for the COVID-19 dummy variable across both ROA and ROE highlight the severe financial strain placed on banks during the pandemic. This model's results indicate that the adverse effects of COVID-19 are not only immediate but also lingering, with the lagged coefficients suggesting that while banks may begin to recover, the road to regaining full profitability remains challenging. This emphasizes the need for strategic adjustments and resilience in the face of ongoing economic uncertainties, ensuring that banks are well-prepared for future disruptions.

DISCUSSION AND CONCLUSION

This study sheds light on the factors influencing the profitability of major European banks, measured by Return on Assets and Return on Equity, over the period from 2013 to 2023. The findings highlight the importance of both bank-specific factors, such as size, capital ratio, loan activity, and loan loss provisions, as well as macroeconomic conditions, including inflation, GDP growth, and the impact of the COVID-19 pandemic.

The Hausman test findings show that the fixed-effects model better explains ROA and ROE, as profitability depends more on bank-specific factors. This model considers unobservable elements that could vary between banks but stay consistent over time, including managerial quality or business strategy, therefore offering a more realistic view of how bank-specific and macroeconomic variables interact to affect performance.

Regarding elements exclusive to banks, the regression analysis produces some significant results. Larger banks often exhibit higher returns on assets and equity due to economies of scale, diversified services, greater market power, better access to capital, enhanced risk management, and strong brand recognition, all of which contribute to their superior profitability. Conversely, the capital ratio positively and significantly impacts profitability, implying that banks with larger capital buffers are more suited to withstand shocks and invest in promising prospects, generating more profits. Furthermore, improving ROA and ROA is lending activity, as shown by the loan ratio and the lagged loan ratio. Although this comes with inherent risks, as indicated by the variance in loan loss terms, this result implies that banks that participate more actively in lending often produce more significant interest revenue, hence improving profitability. The lagged variable illustrates banks' difficulties in controlling credit risk, especially in uncertain economic times.

Determining bank profitability also seems to depend significantly on macroeconomic variables. Consistently the substantial effect of lagged inflation on ROA and ROE suggests that banks may gain from inflationary conditions by changing loan pricing or advantage from better interest rates. Although showing some positive effects in some models, GDP growth is only sometimes a significant predictor, suggesting that the general economic environment may have a more complex impact on bank profitability depending on other elements, such as the regulatory environment or market structure.

The way the COVID-19 epidemic affects bank profitability is among the most important results of this research. Captured by the COVID-19 dummy variable, the initial impact of the epidemic is negative and statistically significant on bank profitability, highlighting the great difficulties banks had in the early phases of the crisis. These difficulties probably include rising loan defaults, operational interruptions, and a general economic downturn. The analysis also reveals a positive and substantial delayed effect of COVID-19, implying that banks could adjust over time, thereby reducing the epidemic's negative impact and finally regaining part of their profitability. This resilience emphasizes the dynamic character of bank performance during crises and shows how well banks may change their activities in response to unheard-of difficulties.

By thoroughly examining the elements influencing bank profitability in Europe, this research adds generally to the body of knowledge already in publication. Particularly in times of crisis, the results highlight the need for

additional financial reserves, effective loan activity management, and macroeconomic adaptation capacity. With the first adverse effects followed by indications of recovery, the research also emphasizes the possible long-term consequences of the COVID-19 epidemic on the banking industry. Policymakers and bank managers should benefit from these realizations as they negotiate a more complicated and unpredictable economic environment in which both internal bank variables and outside economic circumstances powerfully shape profitability.

Finally, the study not only clarifies the elements affecting bank profitability but also emphasizes the need for flexibility and resilience in a fast-changing economy. The banking industry's complexity calls for a mixed strategy to grasp performance dynamics by combining macroeconomic elements with bank-specific ones.

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MAPPING TURKEY'S DEMOGRAPHY: REGIONAL EVIDENCY AND INPLICATIONS FOR PRO-NATALIST POLICIES

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Abstract

Demographic issues have gained prominence in Europe, driven by the low birth rates observed in several countries. In Turkey, this issue has intensified in the last decade with the implementation of pro-natalist public policies. This study aims to demographically characterize the Turkish provinces by carrying out a statistical and spatial analysis of fertility, birth and mortality rates for the year 2023. The results point to a concentration of the highest fertility and birth rates, accompanied by the lowest mortality rates, in the south-eastern region of Turkey. For a deeper understanding, a cluster analysis was carried out, which divided the municipalities into two different groups. These clusters reflect a clear spatial division between municipalities with high birth and fertility rates and low mortality and those with the opposite profile. This shows that the south-eastern region of Turkey is characterized by a higher number of births and fewer deaths. The municipality of Şanlıurfa stands out, with the highest fertility rate (3.27) and birth rate (24.8) in the country. These results provide a detailed geodemographic characterization of Turkey and contribute to the planning of territorial policies that consider regional specificities and promote territorial cohesion. This study is an essential basis for the formulation of future public policies aimed at sustainable demographic development in Turkey, as it provides a detailed understanding of regional population dynamics. The geodemographic characterization presented here provides valuable input for managers and policymakers to adapt specific strategies to the particularities of each region and to respond more effectively to the different demographic challenges across provinces. In this way, it is hoped that pro-natalist, public health and social infrastructure policies can be designed and implemented with precision to support both population balance and long-term socio-economic development across the Turkish territory.

Keywords: Demography, Pro-Natalist Policies, Regional Disparities

INTRODUCTION

Europe faces major challenges in the 21st century, one of the most worrying being an unprecedented fertility crisis, with the number of live births at its lowest level since the 60s of last decade (Gallagher, 2018). In 2022, only 3.88 million births will be registered in Europe, one of the lowest birth rates in the world (Inghan, 2024). This sharp decline in the birth rate raises critical issues that need to be addressed urgently. With the accelerated ageing of the population, many European countries will soon face a decline in the total number of inhabitants, which could have profound consequences for the sustainability of social security systems (Lopes, 2024). The decline in the number of young people entering the labour market, combined with a growing elderly population, is threatening the balance between contributors and beneficiaries of pensions and health care. This may lead to major economic and social challenges, requiring structural changes in public policies to cope with the effects of a declining and ageing population (Costa, 2024).

Turkey has become a country with low fertility and mortality compared to its previous demographic structure (Yüceşahin et al., 2016). However, studies show that there are significant regional differences in birth rates, particularly due to the prevalence of traditional cultural norms in the less developed eastern and south-eastern regions of the country (Aydın et al., 2018). In these areas, birth rates remain high, partly due to limited access to family planning services. This limited access is affected by the ongoing conflict between Turkish security forces and Kurdish groups, which exacerbates local vulnerability (Yüceşahin & Özgür, 2008). Historically, Turkey moved from a pro-natalist to an anti-natalist policy from 1965 onwards due to rapid population growth, influenced by the rapid demographic increase observed after the Second World War (Özlem, 2013). This phase was followed by a period of maintaining these policies; however, recent changes in demographic dynamics have led the government to adopt a pro-natalist stance (Yüceşahin et al., 2016). In this sense, this study aims to demographically characterise Turkey's provinces to target the right fertility policy for each region. It is hoped that pro-natalist,

public health and social infrastructure policies can be designed and implemented with greater geographical precision, thereby supporting both population balance and socio-economic development.

MATERIALS AND METHODS

This study uses quantitative methods to analyse population policies in Turkey, focusing on birth, mortality and fertility rates in all 81 provinces in 2023. The research uses a combination of statistical analysis and exploratory spatial analysis, allowing for a detailed understanding of regional variations in population dynamics.

The data used in this study were taken from the database of the Turkish Statistical Institute (see in www.tuik.gov.tr). This database provides comprehensive information on demographic indicators such as birth, mortality and fertility rates. This database was chosen because it guarantees the accuracy and reliability of the data, as it is the main official statistical institution in the country.

The variables analysed in this study are the birth rate, which represents the number of live births per year per hundred thousand inhabitants in a given area; the death rate, which represents the number of deaths per year per hundred thousand inhabitants in each area; and the fertility rate, which estimates the number of children per woman of childbearing or reproductive age. It is calculated as the ratio of the number of births to the number of women of childbearing age each year.

The sample of this study includes all 81 provinces of Turkey, ensuring a comprehensive and representative coverage of the country. The analysis of the year 2023 provides an up-to-date view of population dynamics, making it possible to assess recent changes and identify emerging challenges in terms of population planning and regional development.

FINDINGS

This section presents the results, starting with a spatial analysis and mapping of birth, mortality and fertility rates for the year 2023. This is followed by a cluster analysis to identify patterns and groupings in the data.

As for the birth rate, the national average is 11.2‰. The province with the highest rate was Şanlıurfa (24.8‰), located in the southeast, while the province with the lowest rate was Zonguldak (6.9‰), located in the north. The regional analysis, as shown in the Figure 1, demonstrations that the south-eastern region has higher birth rates than other regions of the country, while the northern provinces (Zonguldak, Sinop, Bartın, Karabük and Kastamonu) and Giresun have lower birth rates.

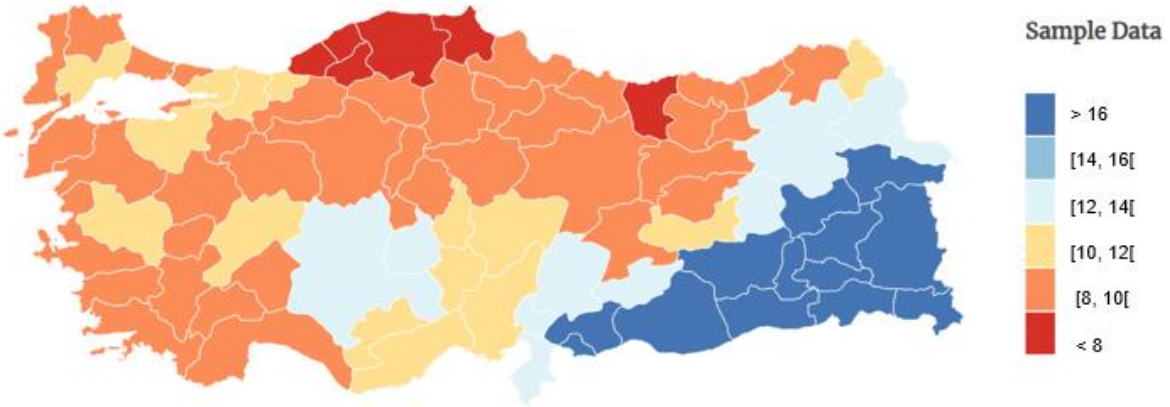

Figure 4: Birth rate – number of live births per thousand inhabitants in the Turkish provinces in 2023

The national average for the mortality rate is 6.8‰. In 2023, the province with the lowest mortality rate was Şırnak, in the southeast, with 2.9‰. On the other hand, Adıyaman registered the highest rate (18‰). This province, along with Hatay, Kahramanmaraş Sinop and Kastamonu, had the highest number of deaths per hundred thousand

inhabitants. As shown on the map in Figure 2, the south-eastern region has a significantly lower mortality rate than the north-western region.

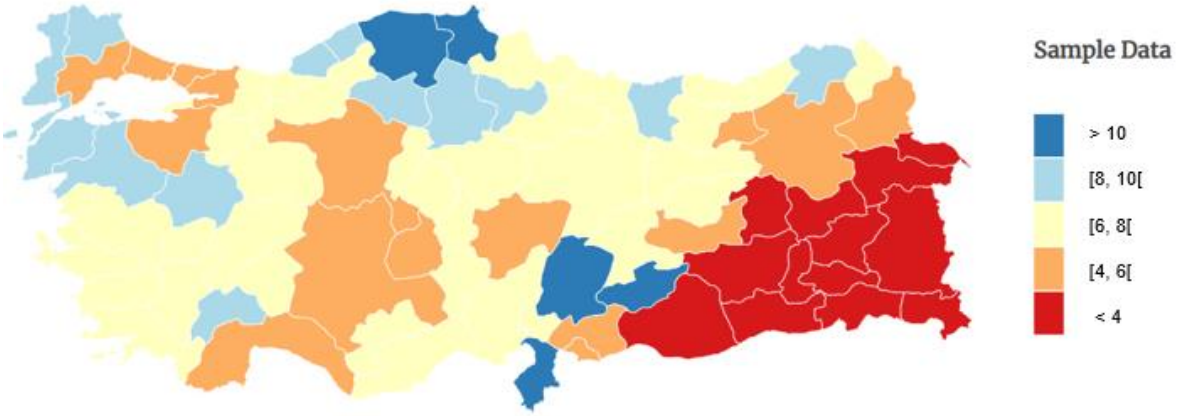

Figure 5: Mortality rate – number of people dying per thousand inhabitants in the Turkish provinces in 2023

The average fertility rate in Turkey is 1.55 children per woman of childbearing age. However, there are significant differences between the different regions of the country. The municipality with the highest fertility rate is Şanlıurfa, located in the southeast, with an average of 3.27 children per woman. On the other hand, Bartın, located in the northern region, has the lowest rate with only 1.13 children per woman. The regional analysis, as shown in the Figure 3, shows that the southeastern region of the country has a much higher fertility rate than other regions.

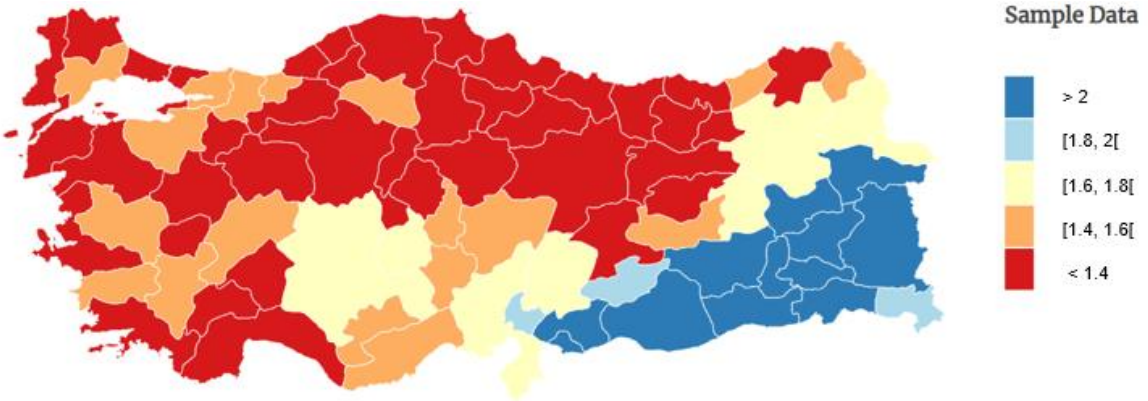

Figure 6: Fertility rate - number of children per woman of childbearing age in the Turkish provinces in 2023

For this study, a cluster analysis was performed using IBM IPSS software, limited to a maximum of 10 interactions. Based on the data provided, it was decided to create two clusters. The first cluster has a birth rate of 17.8‰, a mortality rate of 3.6‰ and a fertility rate of 2.21 children per woman of childbearing age. The second cluster has a birth rate of 9.7‰, a mortality rate of 7.6‰ and a fertility rate of 1.4. These clusters are validated by the fact that the significance of the variables in this distribution is zero, which gives confidence to the results obtained. Thus, the first cluster includes 15 provinces and is characterised by higher fertility and birth rates and lower mortality rates. The second cluster, with 66 municipalities, has lower birth and fertility rates and higher mortality rates. In the map in Figure 4, the first cluster is in light blue, while the second is in dark blue, and as you can see there is a perfect cut between the two clusters. So, geographically, the southeastern region has a more traditional birth rate, but in terms of mortality it is more developed than the rest of the country, as deaths are lower.

Figure 7: Cluster analysis (map of Turkish provinces by cluster)

DISCUSSION AND CONCLUSION

This study presents a detailed demographic analysis of the Turkish territory, highlighting significant regional variations. The results show that the south-eastern region of Turkey is characterized by a significantly higher birth rate and a lower death rate compared to other areas of the country. This demographic pattern differs from traditional demographic structures, which generally have both high birth and death rates. This contrast suggests that while the south-east maintains a high birth rate, it also benefits from factors that reduce mortality, which is not common in similar traditional demographic contexts. This peculiar demographic pattern in the southeast suggests changes in economic and cultural dynamics, which merit further study to understand the causes of these asymmetries. The higher number of births in the southeast may be associated with cultural norms that favor larger families, as mentioned in the literature by Yüceşahin and Özgür (2008).

The results of this study provide valuable input for planning territorial policies that consider regional specificities and promote territorial cohesion, especially in a context where the Turkish government is implementing pro-natalist policies (Yüceşahin et al., 2016). By providing a detailed understanding of the demographic distribution and dynamics at the regional level, this work provides an essential basis for the formulation of future public policies aimed at sustainable demographic development in Turkey.

Furthermore, this study paves the way for future research on fertility policies based on the demographic characterisation presented. By identifying regional variability in birth, mortality and fertility rates, it allows for the development of more targeted strategies capable of meeting the specific needs of each region and contributing to balanced and sustainable population growth.

ACKNOWLEDGMENT

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A DYNAMIC APPROACH TO PRACTICAL WISDOM IN RURAL COMPANIES IN LAS PALMAS DE GRAN CANARIA

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Abstract

Practical wisdom involves the ability to make sound decisions in complex, uncertain situations by addressing emotions, moral virtues, and context-rational knowledge. This issue is crucial in the case of SMEs, when there is a sudden increase in the flow of emotions, moral virtues, particularly in rural companies. Rural managers need practical wisdom to apply different proportions of knowledge effectively as managers navigate the company's challenges with a sense of purpose, adaptability, and hope. This paper adopts concepts derived from the knowledge management (KM) field to shed light on this problem. Examples from the recent history of Gran Canaria are mentioned. Useful lessons for rural companies are derived.

Keywords: Practical wisdom, emotional, rational and spiritual knowledge, case-histories, Gran Canaria

INTRODUCTION

A rural company is a business entity that operates primarily in rural areas, which are typically characterized by low population density, limited infrastructure, and a higher reliance on agricultural and natural resources (Bosworth & Turner, 2018). These companies may also have broader national, or international reach when they make sound judgments and take appropriate action in complex, real-world situations (Swaffield et al., 2019). Cooperativa Agrícola de San Nicolás de Tolentino, Fibras Naturales de Canarias, and Quesos la Caldera are Canarias companies fulfilling these needs as they serve national markets and local communities. For these rural companies, making 'appropriate decisions' aligns with the local agenda of achieving a green economy and offers a competitive advantage in the local market, where sustainability is increasingly prioritized (Barforoush et al., 2021).

Right decisions could be achieved by enhancing the practical wisdom of rural companies (Atahau et al., 2022). Practical wisdom (hereafter PW), often referred to as phronesis in Aristotelian terms, involves the ability to make sound decisions in complex, uncertain situations by addressing emotions, moral virtues, and context-rational knowledge (Cegarra-Sánchez et al., 2022; Massingham, 2019). Cegarra-Sánchez et al. (2022) emphasize that "PW" is crucial for effectively managing both tacit and explicit knowledge at the individual level. In this context, leaders of rural companies with PW can see connections between seemingly unrelated ideas, leading to innovative approaches that can give organizations a competitive edge (Briggs & Lumsdon, 2021; Jeannot, 1989). Using wisdom, rural companies can lower costs through improved energy efficiency, enhance their corporate image, comply with strict environmental regulations, and contribute to sustainable development (Barbier, 2020).

The above considerations lead us to argue that the presence of PW enables rural leaders to make sound, ethical decisions, learn from their experiences, and maintain a balanced perspective — all crucial for sustainable development (Cugueró-Escofet & Rosanas, 2020; Jeannot, 1989; Massingham, 2019; Rocha et al., 2022). In turn, PW allows rural leaders to apply different proportions of knowledge effectively as managers navigate the company's challenges with a sense of purpose, adaptability, and hope(Briggs & Lumsdon, 2021; Cegarra-Sánchez et al., 2022). Together, these qualities help individuals thrive in adversity, boosting business performance by increasing competitive intelligence and enabling workers to make informed decisions (Jakubik & Müürsepp, 2022). This study aimed to answer the following questions, considering the given reasons: Is PW different from an individual's point of view compared to a collective one? How can PW be achieved from a collective standpoint?

This study addresses the above research questions using concepts derived from the knowledge management (KM) field. In addition, three examples from the recent history of Gran Canarias are mentioned to shed light on the above research questions. The study draws inspiration from Cooperativa Agrícola de San Nicolás de Tolentino, Fibras Naturales de Canarias, and Quesos La Caldera regarding the way to achieve practical wisdom over time. These companies have shown remarkable growth and evolution in their journey towards “PW”. The study shows the evolution of the “components of practical wisdom in the different stages of these rural companies” when they must face the upsurge of time. Valuable lessons for rural companies are drawn.

The structure of the document is primarily focused on the frame of reference, which is crucial in understanding the practical implications of “PW” in the context of Canarian Rural firms. This understanding allows us to delve into the roles of rational, emotional, and spiritual capacities, which are key components in the thermodynamics model of Bratianu and Bejinaru (2019), a vital tool for operationalising “PW”. We also explore the differences between practical wisdom at the individual and collective levels. Following the theoretical framework, we present three examples that characterise rational, emotional, and spiritual capacities within the rural context. These examples, along with the results, pave the way for a comprehensive discussion and conclusions, highlighting the practical relevance of our research.

Conceptual Framework

PW invites us to consider alternatives to success in financial terms to measure business results, developing a more holistic vision that includes quality of life, social equity, cultural preservation, and environmental sustainability (Rocha et al., 2022). It not only improves efficiency but also helps companies comply with environmental regulations and maintain their reputation (Cegarra-Navarro et al., 2023; Cegarra-Sánchez et al., 2022). PW may be particularly important in communities where the business significantly impacts the daily lives of its inhabitants (Kristjánsson et al., 2021; Singer & Doktor, 2008). In these conditions, it is quite clear that the ability to integrate “PW” is crucial to supporting sustainable practices into the daily operations of rural businesses (Briggs & Lumsdon, 2021; Jeannot, 1989).

Based on resource and capacity theory, to express PW, it is important to understand the distinction between knowledge as a stock variable (i.e., PW) and the ability to share knowledge, which is a flow variable (Cegarra-Sánchez et al., 2022). Based on the literature coming especially from the cognitive sciences (Damasio, 2010; Damasio, 2003; Fauconnier and Turner, 2002; Kahneman, 2013; LeDoux, 1999), Bratianu and Bejinaru (2019) consider three fundamental fields of knowledge: rational, emotional, and spiritual. This triad construction of knowledge is convergent with that of Aristotle (1999) who defined three types of knowledge: *episteme*, *techne*, and *phronesis*. The thermodynamic approach of this metaphor suggests that knowledge should be articulated as a flow rather than as a stock (Cegarra-Navarro et al., 2023). This knowledge-as-energy metaphor provides new insights into complex and nonlinear phenomena such as sharing PW with other people (Brătianu, 2018; Nonaka, 1994; Senge, 1990).

This study argues that 'PW', as a stock, represents an organization's accumulated values, emotions, experiences, and competencies over time, serving as a stored resource for future use. 'PW', as a flow, is expressed through the combined effort of three individual capacities: rational, emotional, and spiritual capacities." Figure 1 summarizes the above arguments. The three capacities interact with each other. The rational capacity allows managers to share the know-what acquired over time (i.e., rational knowledge), while the emotional capacity enables managers to discern what is essential from the banal and not be influenced by emotions in this judgment (i.e., know-how). The

spiritual capacity, however, plays a significant role in allowing us to understand the 'why' behind our actions (know-why) for our land, family members, etc.

By effectively balancing the three types of capacities, rural entrepreneurs can preserve their cultural heritage, innovate, adapt to change, optimize resources, train and retain talent, strengthen collaboration networks, and operate sustainably (Swartwood, 2020). As a result, the balance between them is essential for rural Canarian businesses where decisions may sometimes affect conflicting objectives such as "profitability," "community well-being," "cultural preservation," or "environmental sustainability" (Sánchez Medina et al., 2007). Due to the holistic and multifaceted nature of the challenges that rural companies in Canarias face, each of these types of capacities (i.e. emotional, rational, and spiritual) brings a crucial dimension to business leadership and management (Cegarra-Sánchez et al., 2022; Nieves & Diaz-Meneses, 2018). The balance of these three types of capacities allows rural Canarian firms to develop strategies that seek profitability and social and environmental well-being (Nieves & Diaz-Meneses, 2018; Sánchez Medina et al., 2007).

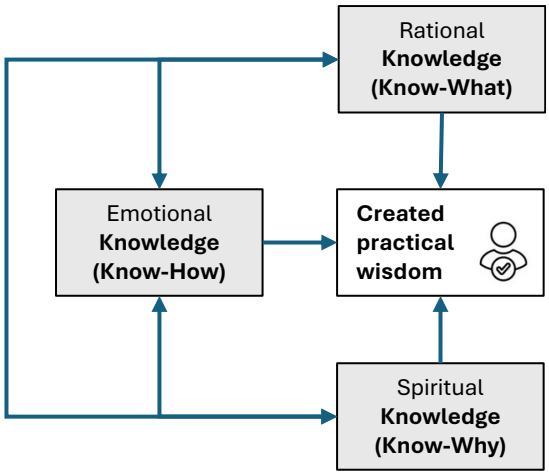

Figure 8: Articulating Practical Wisdom at the Individual Level

Rational Capacity

Rational capacity includes the ability to analyse data, understand the market, manage resources efficiently, and plan for the long term, which is essential for making well-informed and strategic business decisions. In a rural environment with limited resources and economic fluctuations, decision-making based on such rational capacity ensures the sustainability and growth of the company (Bolis et al., 2017). Previous studies have shown that the ability to manage rational knowledge allows one to identify opportunities and risks, design innovative solutions, and adapt to new technologies or practices, ensuring the competitiveness and resilience of the company (Cegarra-Navarro et al., 2023; Cegarra-Sánchez et al., 2022; Smith, 2003).

It should be also noted that many family companies depend on traditional knowledge and practices that have been transmitted from generation to generation (Cegarra-Navarro & Wensley, 2009; Singh et al., 2023). The ability to transmit such knowledge allows small companies to preserve know-how and guarantee that traditional techniques, such as agriculture, crafts, and local food production, are not lost (Singh et al., 2023). The transmission of rational knowledge helps to preserve and promote technical skills that enable professionals to perform specific tasks effectively in their roles. These skills are typically learned through formal education, training, or hands-on experience which are essential to the identity of Canarian rural companies and their attractiveness in the market, especially in sectors such as tourism (Vacik et al., 2013).

Emotional Capacity

The capacity to manage emotions, often referred to as emotional intelligence (EI), is crucial for personal and professional success since it involves recognizing, understanding, and regulating one's own emotions while also being aware of and influencing the feelings of others (Miao et al., 2017). Emotional capacities are not just about managing stress and resolving conflicts. They also play a significant role in creating and sustaining a motivating

work environment (Bratianu, 2017; Bratianu & Orzea, 2013). In the context of local collaborative networks, where rural entrepreneurs often face emotions such as anger, rage, disappointment, or disillusionment (Cegarra-Navarro et al., 2023; LeDoux, 1996), these emotional capacities can inspire positive change and growth.

As Canarian rural companies are deeply integrated into their local communities, emotional capacity may allow managers and employees to empathize with the community's needs, expectations, and concerns, crucial to maintaining healthy and mutually supportive relationships. Indeed, since business life in rural contexts can be stressful due to economic uncertainty, environmental challenges, and social pressure (de Guzman et al., 2020), emotional capacities may also allow rural companies to better connect with external resources, such as grants, specialized training, or international markets, by facilitating access to relevant information and its practical application (Brundin et al., 2022; de Guzman et al., 2020; Guan & Jepsen, 2024).

Spiritual Capacity

It is important to underline that Canarian rural businesses rely heavily on their natural environment (Sánchez Medina et al., 2007). Since spiritual knowledge involves values connection with nature, combined with attachment to the land (Bratianu, 2017; Chen & Li, 2013; Fry, 2003), managing such knowledge provides tools for sustainable management and preserving the natural environment, ensuring the long-term viability of local resources (Luetz & Nunn, 2023). Within that context, managers who value and promote spiritual knowledge help strengthen the company's identity and its connection to the cultural and spiritual values of the community, which is vital for legitimacy and local support. As Díaz et al. (2024) remarks, in a rural environment, where social and sustainable entrepreneurship can be central, the ability to foster sustainable values is key to empowering employees and managers.

The above considerations lead us to argue that the spiritual capacity of managers plays a crucial role in preparing staff to meet business challenges. For instance, the honesty, business ethics, and moral integrity displayed by rural entrepreneurs can help prevent staff turnover in areas with a shortage of skilled labor. Spiritual knowledge brings a deeper sense of purpose and meaning to work, especially for those in rural areas, where work represents more than just income but also an expression of identity and values (Do, 2018). Maintaining this spiritual balance can enhance job satisfaction and commitment to the company, fostering an organizational culture grounded in ethical principles and shared values (Do, 2018). Consequently, the capacity to impart this spiritual knowledge ensures that even if a key employee departs, their knowledge and experience are preserved and can be passed on to others.

A Dynamic Adaptive Approach to Practical Wisdom

Knowledge is the result of learning, and wisdom, from the individual's perspective, comes from a continuous process of learning, relearning, and sometimes involuntary forgetting (Klammer & Gueldenberg, 2019). In this study, as shown in Figure 2, we propose that an individual's knowledge cycle (*learning→relearning→forgetting*) is similar to the geographical profile of the island of Gran Canarias. First, we learn and prepare our knowledge to embark on a professional career (Sessa & London, 2006). Then, throughout our careers, we engage in a continuous process of relearning and adaptation, ensuring our skills remain relevant and our competence is maintained (Bedford, 2015). Finally, and it is only a matter of time, given the limited capacity of human beings, we lose faculties and end up forgotten (Bowker, 2005).

In the realm of rural knowledge workers, individuals may possess varying levels of rational, emotional, and spiritual capacities in each phase of the individual's knowledge cycle. By managing them at the individual level, managers can cultivate a more cohesive and effective environment, leveraging the unique strengths of their members to tackle challenges collaboratively. This aligns with the views of (Krueger & Carsrud, 1993) and (Roper & Hewitt-Dundas, 2015), who argue that wisdom arises not merely from knowledge but from the emotions stemming from the soul, free from external judgment. To support this statement, our study references the work of Cegarra-Sánchez et al. (2022). They propose that to accomplish the shared goal of walking across the island from south to north to south, all members of the multidisciplinary team should consider the varying importance of each capacity (emotional, rational, and spiritual) based on the difficulty of three stages of the trip and the atmospheric conditions.

The first stage is the easiest, following a clear, hot, and isolated path with full telephone coverage. The second is the hardest, traversing the island's peaks in an unpredictable, long, and uneven route with limited phone coverage

and GPS reliability. The final stage involves a well-marked descent through volcanic landscapes, where the main challenge is enduring the accumulated fatigue from the previous stages. The study suggests that the collective balance of knowledge in each stage (i.e. PW) is the result of mutual adaptation (Cegarra-Sánchez et al., 2022). This mutual adaptation, where individuals adjust their emotions and principles to align with the group, is a key factor in achieving a balanced collective knowledge (i.e. PW), which highlights the importance of our interactions in the group dynamics (Cegarra-Sánchez et al., 2022).

The above considerations suggest that individuals with rational, emotional, and spiritual capacities can help team members tackle challenges and adversities more adaptively. The more wisdom an individual possesses, the more resilient he(she) is, ***re/le***arning from his (her) experiences and finding deeper meaning in difficulties (Zhao & Wang, 2020). By adapting emotional, rational, and spiritual capacities towards solutions that enhance the lives of others and address team problems, this adaptation strengthens an organization's competitive position, contributes to the common good, and helps create more just and sustainable work. This collaborative approach to practical wisdom not only improves teamwork but also enhances time management and trust in managerial decisions (Massingham, 2019).

The above also illustrates how the importance and proportion of emotional, rational, and spiritual knowledge used in manager decisions throughout life can differ (Bratianu, 2015; Bratianu & Bejinaru, 2019). From an individual perspective, rational knowledge obtained from training is essential in the first stage of a manager's professional career. Indeed, having the necessary technical skills at this stage is critical. However, as managers advance and achieve more responsibilities, they must interact with more colleagues, and their emotional part can take on more weight. Ageing brings people face-to-face with the unknown and at this stage, spiritual knowledge may provide solace and a framework for understanding life's big questions.

The question that arises now is what happens from the collective point of view. As shown in Figure 3, collective knowledge doesn't decrease because it builds overtime through accumulating and preserving information (learning), discoveries, and experiences shared across generations (relearning). At the collective level, intentional unlearning also takes place instead of individuals forgetting, leading to innovations that extend the company's lifespan(Cegarra-Navarro & Wensley, 2019). Under this framework, the results of Cegarra-Sánchez et al. (2022) when rational knowledge weighs more in the first stage, followed by emotional in the second stage, and the values and principles prevail over the last stage do not necessarily works at the collective level.

While studying Cegarra-Sánchez et al. (2022), PW at the individual level is achieved by adapting to the needs of traveling companions, this may not hold true at the collective level. At the collective level, it would consist of achieving the work group's goal overtime by adapting best to the environment and external conditions and this, in the long term, can mean that travelling companions can change.

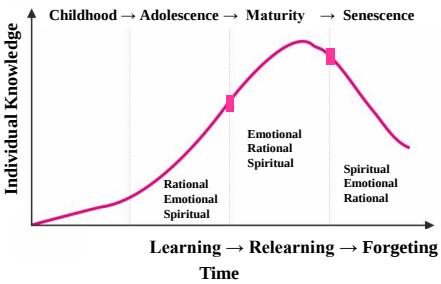

Figure 2: Achieving Practical Wisdom at the Individual Level

From a collective perspective, engaging with the above capacities fosters more creative and respectful interactions not only among individuals, but also among organizations leading to increased engagement and commitment to each other. These considerations lead us to argue that balancing emotional, rational, and spiritual capacities is crucial for rural Canarian businesses since it allows these companies to effectively manage the complex interactions between the community, the natural environment, and the market. This holistic approach ensures that

business decisions are sustainable and culturally respectful and promote both economic and social well-being in an environment that is both challenging and rich in heritage.

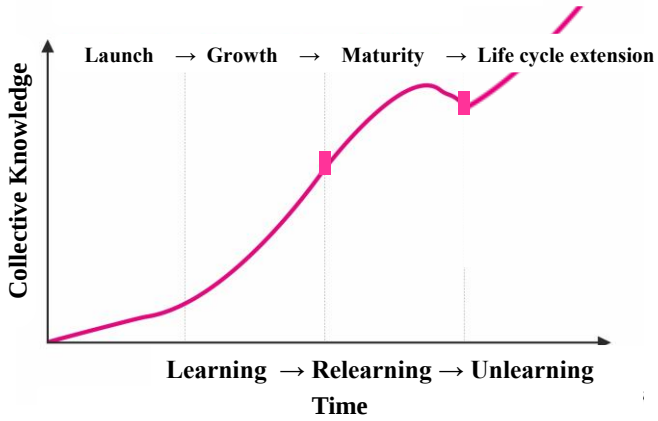

Figure 3: Achieving Practical Wisdom at the Collective Level

At the collective level, PW allows organizations to make strategic decisions that seek financial performance and consider the long-term impact on society, emphasizing the importance of considering societal well-being in decision-making. KM models can be useful to analyse the processes of PW creation and dissemination at the collective level and derive useful lessons for contrasting them. In doing so, on September 26, 2024, we interviewed the managers of three rural companies in Gran Canarias. The interviews lasted approximately two hours and involved a series of open questions. Below, we briefly describe the companies we interviewed and the main contributions of their managers regarding the management of emotional, rational, and spiritual capacities from a collective standpoint.

COAGRISAN, founded by small and medium-sized farmers from the village of San Nicolás, was created to market their products directly and group farmers from the valley together. In 1981, they joined the Fortuna Frutos Group to expand their European market, with offices in the United Kingdom and Holland. Over the years, the cooperative has made progress in agricultural innovation, adopting hydroponics in 1995 and being recognized as an Organization of Fruit and Vegetable Producers (O.P.F.H.) in 1996. In addition, in 1997, they obtained the Aenor quality certification. In the new millennium, COAGRISAN focused on making its crops more technical and guaranteeing quality through advanced systems. It obtained certifications such as B.R.C. in 2005 and Planet Proof in 2019, consolidating its commitment to food safety and sustainability. In addition, its research and development work began in 2014 with the collaboration of Biobab R&D. He has also shown social commitment, awarding scholarships to students from his community in 2016.

From the interview with the company manager, it was clear that the company's success has been shaped by significant shifts in focus. In the initial phase, the most important factor was the emotional capacities, which helped small farmers to unite and set aside conflicting emotions. This early collaboration was a key factor in the company's success. As the company matured, the rational component took over, leading to the incorporation of innovations with a significant technical component. To this end, the appointment of an agricultural engineer as general manager was key, who, moreover, was already one of the members of the cooperative. Now, in the current stage, the company is reaffirming its principles and demonstrating its commitment to long-term success through continuous work towards sustainability. Additionally, this is generated through a strong connection with the territory where it is located. For example, in the social sphere, it provides scholarships to students; in the environmental sphere, it ensures that its operations do not use pollutants and reduce water consumption; and in the economic sphere, it is one of the companies that creates the most wealth (*emotional → rational→ spiritual*).

Fibras Naturales de Canarias (FNC) is notable for its commitment to the circular economy, which involves repurposing waste from one of the largest agricultural sectors in the Canary Islands: bananas. This approach not only minimizes environmental impact but also yields sustainable products and enhances the competitiveness of

local farmers. Established in 2021, the company specializes in utilizing banana waste to produce natural fibres that have a wide range of applications in textiles, bioplastics, construction, aquaculture, and agriculture. In this initial stage, emotional capacity was fundamental for the project promoters, which later led to the spin-off, to agree on the purpose and how the company should be. Facing this type of negotiation is always complicated, especially when lacking experience in this type of venture. This was the second spin-off created at the university. Presently, the company is focused on expanding its industrial process and establishing itself as a leader in sustainable innovation within the region specializes in valorising banana waste, transforming it into natural fibres with multiple applications in textiles, bioplastics, construction, aquaculture and agriculture. Currently, the company seeks to scale its industrial process and establish itself as a benchmark in sustainable innovation in the region.

Based on the manager's comments, during its growth stage, the company was driven by an emotional commitment to environmental stewardship, contributing to the circular economy by repurposing agricultural waste. As FNC matured, it rationally expanded its industrial processes to become a leader in sustainable innovation, focusing on strategic scaling and increasing efficiency in multiple sectors. In a potential future decline stage, FNC could rely on its spiritual knowledge, staying true to its core values of sustainability and social responsibility to navigate challenges such as market changes or competitive pressures. This values-based approach would help the company maintain its mission while addressing industry fluctuations (*emotional → rational→ spiritual*).

Quesos La Caldera (QLC) highlights the island's rich tradition of cheesemaking, deeply rooted in its pastoral heritage and native breeds like the Majorera goat, Canarian sheep, and Canarian cows. Gran Canaria is renowned for its wide variety of artisanal cheeses, each influenced by the island's diverse climates and altitudes. Gran Canaria's cheese dairies have adopted modern marketing strategies, such as online sales, which have helped raise the profile of Gran Canarian cheeses around the world. A particular case of cheese factory in Gran Canaria is Quesos La Caldera. This small cheese dairy, which belongs to the denomination of origin "Quesos de Guía", produces very exclusive artisanal cheeses made only with Canarian sheep's milk and using vegetable rennet from the thistle flower. This small company was founded after a large fire in the area burned down the cheese factory of one of the entrepreneurs' parents. Additionally, in its early stages, it was affected by the Coronavirus pandemic. The QLC has earned numerous national and international awards.

As per the manager's observations, the industry's prosperity is deeply rooted in the preservation of traditional methods. This emotional connection to heritage and craftsmanship was a driving force. Although it is a young company, as it has matured, it has adopted rational strategies such as modern marketing, diversification of the products it sells (for example, butter or almogrote (a type of pâté made with cheese, pepper, oil, garlic, etc.)) and online sales to tap into global markets while upholding high-quality standards. Potential challenges could stem from market dynamics or heightened competition in a hypothetical downturn. It also represents a very real threat that other cheese dairies might fraudulently try to take advantage of the positive effect of the Queso de Flor de Guía denomination of origin without meeting the necessary traditional requirements. In such a scenario, QLC may lean on their spiritual knowledge, steadfastly upholding their core values of sustainability and respect for tradition to navigate the hurdles and adapt without compromising their identity (*emotional → rational→ spiritual*).

Figure 4 summarizes the examples provided above, illustrating the collective perspective and the goal of achieving an extended collective-knowledge life cycle.

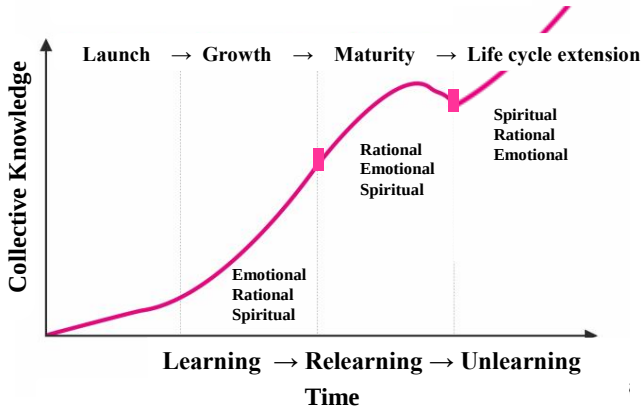

Figure 4: Achieving Practical Wisdom in Rural Companies

DISCUSSION

The combination of emotional, rational, and ethical values enables rural businesses to navigate uncertainties that a purely rational approach might overlook. This holistic balance fosters an environment where rural entrepreneurs and workers can share emotional and ethical insights, which enhances community cohesion, trust, and long-term commitment. By integrating emotional, ethical, and practical knowledge, rural companies are better equipped to address challenges such as environmental threats, operational mistakes, or misunderstandings. This approach not only strengthens interpersonal relationships within the rural business community but also encourages the exchange of valuable experiences. By striking the right balance between emotional, ethical, and rational capacities, rural businesses can more effectively leverage shared knowledge, creating a support network that fosters resilience and sustainable growth. In this vein, this article makes three contributions to management literature.

The first contribution is the recognition of how rational, spiritual, and emotional capacities interplay over time to shape practical wisdom, particularly in rural enterprises. To the best of our knowledge, no previous studies have analysed the connection between knowledge and practical wisdom of rural companies. Therefore, this study enhances understanding of how knowledge flows can inform practical wisdom in rural contexts. Achieving practical wisdom through a balance among these capacities can help managers navigate uncertainty over time through effective emotional management, empathetic interactions, and alignment with core values (Rocha et al., 2022). Our findings indicate that while practical wisdom does not guarantee optimal solutions or universal satisfaction among all stakeholders, applying it—especially in collaborative contexts—can lead to better long-term outcomes, enhanced engagement, and reduced misunderstandings. These findings support the views of (Cugueró-Escofet & Rosanas, 2020), who drew attention to the fact that it is crucial for managers to align their personal goals with those of others affected by their decisions, highlighting the need to comprehend the values and emotions of all parties involved. This understanding is essential, as a lack of common purpose can lead to underperformance and disconnection within stakeholders (Chaurasia, 2018; Cugueró-Escofet & Rosanas, 2020; Giacomarra et al., 2020).

The second contribution of the research provides evidence to test the dynamic approach to Practical Wisdom at the collective level, using examples from the recent history of Las Palmas De Gran Canarias. From a decision-making perspective, our findings show that in all three cases—COAGRISAN, Fibras Naturales de Canarias (FNC), and Quesos Artesanos de Gran Canaria (QLC)—the companies began by managing emotions to build strong foundations for growth. COAGRISAN relied on emotional unity among farmers to overcome conflicts and collaborate, FNC was driven by a passionate commitment to environmental sustainability, and QLC's success stemmed from a deep emotional connection to heritage and traditional craftsmanship. In these early stages, managing emotions helped align stakeholders around shared values, creating the emotional cohesion necessary to pursue long-term goals. This emotional foundation was later complemented by rational strategies like technical innovation, industrial scaling, and modern marketing.

A plausible explanation for the above findings is that emotions play a vital role in the early stages of rural companies' formation and growth because they help foster unity, motivation, and commitment among stakeholders (Folz et al., 2022; Guan & Jepsen, 2024; Pratt & Barnett, 1997; Stephens & Carmeli, 2016). As the company matures, it can transition to more rational, strategic approaches like process optimization, technological innovation, and market expansion (Smith, 2003). However, emotional commitment continues to serve as an anchor, especially during times of crisis or change, where returning to core values (spiritual or ethical principles) can guide decision-making and ensure long-term sustainability. This emotional-rational-spiritual progression reflects how companies balance human factors with technical and market demands throughout their lifecycle. This is in broad agreement with the conclusions of authors such as (Cegarra-Sánchez et al., 2022) who assert that the flow of rational knowledge serves as a bridge between the short-term emotions and the long-term values.

It is important to note that in all cases, managing values and principles in later stages helps companies safeguard their identity, strengthen stakeholder trust, and navigate potential downturns by adhering to a long-term vision rooted in sustainability, ethics, and tradition. This focus on principles ensures continuity and resilience while adapting to external pressures. This finding is important in the ongoing debate surrounding the relationship between internal and external stakeholders and confirms what authors such as Freudenreich et al. (2020) say when they argue that business models should shift from mere value creation for customers to structures that facilitate stakeholder relationships and values exchange for sustainability.

Managerial contributions

A significant insight for rural managers is the ongoing journey towards practical wisdom. In Figures 2 and 3, we can see that the path looks different from both an individual and collective point of view. From a personal perspective, the process is a continuous cycle of learning, relearning, and forgetting. Based on Cegarra-Sánchez et al. (2022), it's reasonable to assume that rational thinking is prevalent in the initial learning phase. During the relearning phase, we learn from our mistakes and manage our emotions. In the forgetting phase, individuals naturally and often unintentionally, as we age, revisit the values and principles that have guided us. In many cases, we are left with, above all, positive memories. These memories, even if we may try to suppress the negative ones, can bring hope and light to our lives.

From a collective point of view, and in the case of the rural companies we have studied, the collective knowledge curve in Figure 3 suggests a learning, relearning and unlearning process. The first difference lies in promoting "unlearning" instead of "forgetting" Unlike what happens with forgetting, unlearning takes place intentionally and at this point collectively (Cegarra-Navarro & Wensley, 2019), the purpose would be to replace obsolete knowledge with new ones that allow companies to innovate while preserving their principles and values (spiritual capacity). Another difference with respect to the individual cycle is that in each phase of the cycle, the importance of the components also changes; for example, in the relearning phase from the collective point of view, the way to find consensus would be to justify the decisions with rational capabilities, while in the individual cycle is the emotional capacity. In other words, no matter how much we dislike someone when he(she) is right, he(she) is correct, and it is best to acknowledge it publicly, even if, to do so, we must repress our emotions towards that person. This underscores the necessity of professional conduct even in uncomfortable situations (Kramer, 2012).

CONCLUSION

Accumulated wisdom at the individual level is essential, but more is needed to improve results continuously. In this regard, it is necessary to remember how the loss of social cohesion, changes in religious or philosophical beliefs, and corruption or moral decadence can lead to the collapse of civilization, as occurred in some cases during the expansion of Christianity in the Roman Empire. An explanation for these circumstances could be that "wisdom" is not only an individual attribute but also influences collective intelligence, which involves social interactions and structures for gathering, analyzing, and utilizing information about the environment to inform strategic decisions, including predicting competitors' actions, identifying market opportunities, and reducing risks.

Based on our work, we could say that the dynamic balance of the practical application of wisdom is achieved differently individually and collectively. At an individual level, we first try to develop our rational capacities to learn how to perform our tasks. Later, as we take on more responsibilities, we consider developing our emotional capacities, particularly empathy, to discern what is truly important and connect with our colleagues on a deeper

level. Finally, we try to preserve our principles. However, the rural companies we studied suggest a collective process of learning, relearning, and unlearning. In this dynamic process, the weight of each capacity varies. In the learning phase, the emotional capacity is fundamental, allowing us to appreciate what is essential. In the relearning phase, the rational capacity to face challenges from reason takes weight. Finally, in the unlearning phase, the spiritual capacity becomes essential since it is necessary to have a reason to continue betting on the company and know why to do it. In doing so, spiritual capacities encourage rural Canarian businesses to consider sustainable long-term objectives, while emotional capacities help them manage daily emotional challenges.

This study used a phenomenological approach to explore the rational, spiritual, and emotional capacities of rural Canarian companies in problem-solving, especially within collaborative environments. The findings suggest that companies can tap into their unique capacities to co-create practical wisdom, with each person bringing a different balance of these capacities. This process leads to more flexible, adaptive, and nuanced responses to complex problems. However, since the study is based on a single case study with only three interviewees, the results cannot be generalized to other contexts. Future research could explore how different decision-making contexts influence the use of these capacities and investigate facilitators that support them. Additionally, further studies might examine how communities can jointly use these capacities to address misunderstandings, errors, and environmental threats.

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TURKİYE ve AVRUPA BİRLİĞİ'NDE YENİLENEBİLİR ENERJİ KULLANIMI VE BEŞERî SERMAYENİN EKONOMİK BÜYÜMEYE ETKİLERİNİN ARDL VE TODA-YAMAMOTO TESTLERİ İLE ANALİZİ*

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Özet

Sanayi devrimi sonrasında ulusların refah düzeyini sürekli artırmak için ekonomik büyümeyi artırmanın yolları aranmıştır. Üretim ve tüketim faaliyetini sürekli artırmak için en önemli girdi kaynağı olarak da doğal kaynaklar özellikle de fosil yakıt tüketimi dünya çapında katlanarak artmıştır. Bugün gelinen noktada çevresel sorunları engellemek için alternatif enerji kaynaklarına yönelimin etkisiyle yenilenebilir enerji üretimi ve kullanımının etkileri araştırılmaktadır. Bununla birlikte toplumların refah artışında beşerî sermayenin önemi gittikçe artmaktadır. Buradan hareketle bu çalışmada yenilenebilir enerji kullanımı, beşerî sermaye ve bunlara ek olarak ticari açıklık değişkenlerinin Türkiye ve Avrupa Birliği içerisinde Kişi Başına Düşen Hasılanın artışına etkisi ARDL eş bütünleşme testi ve Toda-Yamamoto Nedensellik Testleri ile araştırılmaktadır. Test bulgularına göre kısa ve uzun dönemde yenilenebilir enerji kullanımı Avrupa Birliği için negatif etki yaratırken, Türkiye'de anlamlı etkilere sahip değildir. Beşerî sermaye değişkeni ise Avrupa Birliği ülkelerinde kısa ve uzun dönemde pozitif etkiye sahipken Türkiye'de sadece kısa dönemde pozitif etki yaratmaktadır. Dışa açıklık ise Avrupa Birliği'nde kısa dönemde etkileri farklılaşırken, Türkiye'de kısa dönemde pozitif etkilere sahiptir. Bunun yanı sıra Toda-Yamamoto nedensellik testlerinde de söz konusu değişkenlerin kişi başına düşen hasıla değişkenine anlamlı nedensel etkileri Avrupa Birliği içerisinde beşerî sermaye ve ticari açıklık için tespit edilirken, Türkiye için tespit edilememiştir.

Anahtar Kelimeler: Ekonomik Büyüme, Beşerî Sermaye, Yenilenebilir Enerji, ARDL

ANALYSIS OF THE IMPACT OF HUMAN CAPITAL AND RENEWABLE ENERGY USE ON ECONOMIC GROWTH IN TURKEY AND THE EU USING ARDL AND TODA-YAMAMOTO TESTS

**** This study is derived from the master's thesis titled "The Importance of Human Capital Accumulation and Renewable Energy Use in the Relationship Between Trade Openness and GDP Growth: A Comparison of Turkey and the EU" prepared by Eyüphan GÜNDOĞDU, a student at the Department of Economics, Bilecik Şeyh Edebali University, Graduate Education Institute, Department of Economics, and under the supervision of Dr. Havva Nesrin TİRYAKİ.***

Abstract

Following the Industrial Revolution, methods to enhance economic growth were pursued to perpetuate nations' welfare standards. To perpetually enhance production and consumption activities, the utilization of natural resources, particularly fossil fuels, has surged enormously worldwide as the primary input source. The impact of the transition to alternative energy sources to mitigate environmental issues is being examined in relation to renewable energy production and utilization. Nonetheless, the significance of human capital in enhancing societal welfare is growing. This study examines the impact of renewable energy utilization, human capital, and trade openness on the growth of Per Capita Income in Turkey and the European Union, employing the ARDL

cointegration test and Toda-Yamamoto Causality Tests. The test findings indicate that renewable energy utilization adversely impacts the European Union both in the short and long term, although it does not significantly affect Turkey. The human capital variable exerts a beneficial influence in both the short and long term within European Union nations. In contrast, it demonstrates a positive effect solely in the short term in Turkey. In the European Union, openness yields varying short-term impacts, producing beneficial short-term outcomes in Turkey. The Toda-Yamamoto causality tests revealed substantial causal implications for human capital and trade openness on income per capita inside the European Union, but not for Turkey.

Keywords: Economic Growth, Human Capital, Renewable Energy, ARDL

GİRİŞ

Ekonomik büyüme ve gelişme açısından büyüme kavramı toplumların gelişmişlik düzeylerini temsil eden en önemli olgudur. Bu yüzden sanayi devrimi sonrasında ulusların refah düzeyini sürekli artırmak için ekonomik büyümeyi sağlamanın yolları aranmıştır. Üretim ve tüketim faaliyetini sürekli artırmak için en önemli girdi kaynağı olarak da doğal kaynaklar özellikle fosil yakıt tüketimi dünya çapında 1800'lü yılların başından itibaren katlanarak artmıştır. Ancak fosil yakıt tüketimi ağır çevresel bozulmaları beraberinde getirmiş ve alternatif enerji kaynakları içerisinde yenilenebilir enerji en önemli yere sahip olmuştur.

Yıllar içerisinde oluşan bu enerji kısıtı sebebiyle üretim faaliyetini ve dolayısıyla ekonomik büyümeyi yavaşlatmadan, yenilenebilir enerji üretimi ve tüketiminin önemi giderek artmaktadır. Bu yüzden ekonomik büyüme literatüründe yenilenebilir enerji konusu önemli ve güncel bir yere sahip olmuştur. Bununla birlikte yenilenebilir enerji tüketimi ile ülkelerin diğer ülkeler ile olan ticareti ve beşerî sermaye kavramları da birlikte değerlendirilmelidir.

Beşeri sermaye büyüme modelleri içerisinde eğitim sonrasında iş gücünün edindiği bilgi, beceri ve deneyimi ifade etmek için kullanılan bir kavramdır. Beşerî sermaye artışı emeğin becerisini ve verimliliğini artıran bir unsur olarak Kabul edildiği için verimlilik artışı da ekonomik büyümeyi beraberinde getirir (Karagül ve Masca, 2005).

Ticari açıklık, genel bir ifadeyle uluslararası mal ve hizmet hareketlerinin önündeki engellerin kaldırılarak ülkelerin Ticaret hacimlerinin artmasıdır (Bilman,2014). Ticari açıklık, hükümet ya da uluslararası örgütler tarafından ticarete herhangi bir engel konulmaması durumunda ülkeler arasında ticaretin meydana geldiği durumdur. Mallar ve hizmetlerin serbestçe ülkeler arasında gidip gelmesine izin verilmesidir (Parasız vd. 2013) Ticari açıklığın en önemli nedenlerinden biri ülkelerin karşılıklı olarak birbirlerine bağımlılığıdır. Bu karşılıklı bağımlılık, ülkeler arası mal, hizmet ve faktör akımlarının sonucu olarak karşımıza çıkmaktadır (Seyidoğlu, 2015).

Bu çalışmada yenilenebilir enerji kullanımı, ticari açıklık ve beşerî sermaye değişkenlerinin Türkiye ve Avrupa Birliği içerisinde Kişi Başına Düşen Hasılanın artışına etkisi ARDL eş bütünleşme testi ve Toda-Yamamoto (T-Y) Nedensellik Testleri ile araştırılmaktadır.

Takip eden bölümlerde ilk olarak kullanılan değişkenlerin teorik temelleri açıklanmakta, ardından uygulamalı literatürden örnekler sunulmakta ve nihayetinde ekonometrik uygulama ve elde edilen bulgular hakkında bilgi verilmektedir.

TEORİK TEMELLER

Beşerî Sermaye

Karataş ve Çetinkaya (2010)' göre beşeri sermaye (human capital), işgücünün verimli bir şekilde çalışmasını ve gelir etmesine olanak sağlayan bilgi ve becerilerin toplamını ifade eder. Neoklasik büyüme modellerinden itibaren, ekonomik büyümenin önemli bir belirleyicisi olarak görülen beşerî sermaye, ekonomilerin verimlilik ve teknoloji düzeyi artışının temel kaynağı olarak kabul edilmektedir (Parasız vd. 2013).

Solow modeli (Solow, 1956), beşerî sermayeyi kapsayan biçimde genişletilirken iki farklı yaklaşım izlenmiştir. Neo-klasik paradigma teknolojik değişimi dışsal bir süreç olarak ele alırken, içsel büyüme literatürü bu süreci içsel hale getirerek olası itici güçleri aramaktadır. İlk olarak Robert Lucas 1988'de Solow modeline beşerî sermayeyi eklemiştir. Buna göre; Lucas modelinde beşerî sermaye, bireylerin çalışmak yerine eğitim almak için zamanı tercih etmeleri sonucunda birikir. Yani bireyler çıktı üretme ile verimlilik artışı sağlayacak olan eğitim ve beceri kazanma arasında bir değiş-tokuş ile karşı karşıyadır.

Neoklasik modellerin dışsal olarak kabul ettiği beşerî sermaye kavramı, Mankiw vd. (1992) tarafından 1992 yılında geliştirilen diğer yaklaşımda Mankiw-Romer-Weil Modelinde (MRW), çıktıyı belirleyen unsurlar fiziksel sermayenin yanı sıra, beşerî sermaye ve işgücü kullanılarak üretilir. Lucas'a göre işçinin verimliliğini artıran beşerî sermayeye ayrılan zaman arttıkça beşerî sermaye de artacak ve sonuç olarak büyüme de artacaktır. Ve Lucas modelinde beşerî sermaye artışı için bir durağan durum söz konusu değildir, yani büyümeyi sürekli artırır. Ancak MRW modeline göre beşerî sermayenin ekonomilerin durağan duruma ulaşmalarında önemli bir etkisi vardır. Yani beşerî sermayenin büyüme üzerindeki etkisi düzey etkisidir (Karşıyakalı, 2008 ve Ünsal, 2016). Mankiw vd. (1995), sermayeyi hem fiziksel hem de beşerî sermayeyi içerecek şekilde tanımlayarak bu değişikliğin neo-klasik modelin dışsal olarak kabul edilen teknolojik değişimi açıklama yolunda önemli bir yol katettiğini ileri sürmektedir.

Beşerî sermaye ölçümleri, genellikle ortalama eğitim veya öğretim düzeyinin kullanıldığı endeksler olduğunu kabul ederek, bir ülke içindeki beceri ortalamasını yansıtmaya çalışır (Miller ve Upadhyay, 2000). Beşerî sermaye ve büyüme ilişkisini araştıran literatürün çoğunda ortalama okul yılları eğitim ölçüsü olarak kullanılmaktadır yani örtük olarak bir okul yılının eğitim sisteminden bağımsız olarak aynı bilgi ve beceri artışını sağladığı varsayılır. Yani daha az gelişmiş bir ülkedeki bir okul yılı ile gelişmiş bir ülkedeki okul yılının aynı üretken beşerî sermayesi artışını yarattığı kabul edilmektedir (Hanushek ve Woessmann, 2016).

Fakat Lau vd. (1991)'e göre çoğu zaman beşerî sermaye için bir gösterge olarak kullanılan eğitim düzeyinin ekonomik büyüme için verimliliği artıracak bir etkisinin ortaya çıkmasında fiziki sermayenin gerekli olduğunu, fiziki sermayenin yetersiz olması durumunda beşerî sermayenin büyüme üzerindeki etkisinin ortaya çıkmayacağını ifade eder. Yani beşerî sermayenin bir göstergesi olarak eğitimin toplam çıktı ve üretkenlik üzerinde önemli bir belirleyici olduğunu ancak etkisinin ülkeler ve bölgeler arasında önemli ölçüde değiştiğini iddia etmektedirler.

Yenilenebilir Enerji Kullanımı

Her geçen gün artan nüfusla birlikte enerji ihtiyacı da artmakta ve fosil yakıtlarının tükenme riski, küresel bir krize sebep olmaktadır. Bu sorun ülke ekonomilerinin çözmeleri gereken en önemli problemlerin başında gelmektedir. Bununla birlikte yenilenebilir enerji kaynaklarının sürdürülebilir olması dünyanın büyüyen enerji sorununa bir çözüm olarak karşımıza çıkmaktadır.

Ülkelerin refah düzeyi kıyaslamalarında kullanılan en önemli gösterge kişi başına düşen Reel Gayri Safi Yurtiçi Hasıla (KBGSYH) düzeyleridir. Nüfus artışları ise KBGSYH'yı olumsuz etkiler. Ayrıca artan nüfuysla birlikte enerji ihtiyacı ve mal talebi de gittikçe artmaktadır. Bu yüzden enerji tüketimi çıktı artışını belirleyen önemli değişkenlerden bir tanesidir (Şengelen, 2016).

Enerji talebinin artması beraberinde yeni kaynak arayışlarına ve AR-GE çalışmalarına sebep olarak yenilenebilir enerji kaynaklarından enerji elde edilmesi için sermaye ve emek üretim teknolojilerinin gelişmesine katkıda bulunarak ekonomik büyümeyi de desteklemektedir. Ayrıca yenilenebilir enerji teknolojileri alanında oluşan yeni sektörler yeni iş olanakları yaratarak işsizlik oranlarının azalmasına da katkı sağlamaktadır. Ayrıca yenilenebilir enerji kaynaklarından elde edilen enerji ile enerji ithalat maliyetlerini de düşürmektedir (Ünüvar ve Keskinkılıç, 2020).

Yenilenebilir enerji kullanımının ekonomik etkilerini inceleyen pek çok çalışma bulunmasına rağmen bu çalışmalarda yenilenebilir enerji kullanımı ile ekonomik büyüme arasındaki ilişkinin yönüne dair tek bir görüş yoktur. Ocal ve Aslan (2013), Al-Mulali vd. (2013)'den esinlenerek yenilenebilir enerji tüketimi ile ekonomik büyüme arasındaki nedensel ilişkinin yönüne dair dört kategori ortaya atar. (i)Büyüme hipotezine göre, nedensellik enerji tüketiminden ekonomik büyümeye doğru tek yönlüdür böylece enerji tüketimindeki bir artış ekonomik büyümeyi artıran bir etkiye sebep olur. (ii) Koruma hipotezine göre nedenselliğin yönü ekonomik büyümeden enerji tüketimine doğrudur ve enerji tüketimi azalsa bile ekonomik büyüme üzerindeki azaltıcı etkisi çok az olması beklenir. Ekonomik büyüme enerji tüketiminin nedeni ise tek yönlü bir nedensellik söz konusudur ve buna koruma hipotezi denir. (iii)Geri bildirim hipotezi, enerji tüketimi ve ekonomik büyümenin karşılıklı olarak birbirlerinin nedeni olduğunu ifade eder. Böylece enerji tasarrufu için alınan önlemler çıktı seviyesini azaltabilir. (iv) Tarafsızlık hipotezi ise enerji söz konusu değişkenlerin nedensel bir ilişkiye sahip olmadığını ifade eder.

Ticari Açıklık

Adam Smith, Merkantilizmin korumacı dış ticaret politikasına karşı, serbest dış ticaretin faydalarını savunur. Adam Smith tarafından geliştirilen ve serbest ticareti savunan mutlak üstünlük teorisine göre her ülke mutlak üstünlüğe sahip olduğu malların üretiminde uzmanlaşmalıdır ve böylece bu ürünleri dış ticaret yoluyla diğer ülkelere sattığı zaman, ticaret yapmadığı duruma kıyasla daha kazançlı olur. Ricardo'nun oluşturduğu dış ticaret modelinde ise ülkeler herhangi bir ürünün üretiminde mutlak üstünlüğe sahip olmasalar bile karşılaştırmalı olarak üstünlüğe sahip oldukları ürünleri yabancı ülkelere serbestçe satarak daha çok gelir elde edebilir ve dış ticaretten fayda sağlayabilirler (Ünsal, 2016).

Daha yüksek dış ticaret hacmi, ekonominin daha verimli üretim tekniklerini benimsemesini kolaylaştıran daha fazla açıklık anlamına gelir ve bu da toplam faktör verimliliğinin ve dolayısıyla gerçek kişi başına düşen gelirin daha hızlı büyümesine yol açar (Romer, 2009). Dış ticaret sayesinde, daha düşük fiyatlar, daha büyük seçim olanağı sağlaması, kaynakların farklılığından yararlanma olanağı vermesi, ölçek ekonomilerinden yararlanmaları ve rekabetin artması gibi faydalar ortaya çıkar (Parasız vd. 2013).

LİTERATÜR TARAMASI

Bu bölümde çalışmada kullanılan bağımsız değişkenler ile ekonomik büyüme arasındaki ilişkileri inceleyen çalışmalara yer verilmiştir.

Gould ve Ruffin (1995), büyüme ile beşerî sermayenin dış etkileri arasındaki ilişkinin ticaret rejimine göre değişkenlik gösterdiğine değinmektedir. Okuryazarlık oranları yüksek olduğunda, açık ekonomiler kapalı ekonomilere göre yaklaşık %0,65 ile %1,75 oranında daha fazla büyüdüğü sonucuna ulaşmışlardır.

Nourzad ve Powell (2003), ticari açıklık, beşerî sermaye ve ekonomik büyümeye ilişkin iki denklemli eşzamanlı denklem modeli ile ticari açıklığın beşerî sermaye ve ekonomik büyüme üzerinde pozitif bir etkisi olduğunu gösteren sonuçlar bulmuş ve bu bulguların her ikisi de büyüme ve gelişme sürecine ilişkin genel anlayışa göre tutarlı çıkmıştır. Ayrıca ekonomik büyümenin kalkınmaya olumlu katkı sağladığını ancak bunun tersinin doğru olmadığı görülmüş ve sonuçlara göre kalkınmanın büyümeyi yavaşlattığı görülmüştür.

Saçık (2008)'de, Türkiye ekonomisi için 1980-2006 döneminde, ticari açıklık ve ekonomik büyüme ilişkisinde ticari açıklığın milli gelir düzeyi üzerinde bir etkiye sahip olduğunu ve beşerî sermaye ile birlikte içsel büyüme modelleri varsayımlarına uygun bir büyüme görüldüğünü tespit etmiştir

Chaudhry vd. (2010), Pakistan'da ticaretin serbestleşmesi, beşerî sermaye ve ekonomik büyüme arasındaki nedensellik ilişkisini, 1972-2007 dönemi için zaman serisi ekonometrisinin Eşbütünleşme ve Granger nedensellik tekniklerini kullanarak değişkenler arasında kısa ve uzun vadeli eşbütünleşme ve nedensellik ilişkilerinin bulunduğunu ve eğitim ve ticari açıklık politikalarının sürdürülebilir ekonomik büyüme ile mümkün olabileceğini iddia ederler. Ayrıca nedenselliğin ticaretin serbestleşmesinden ve beşerî sermayeden ekonomik büyümeye doğru olduğu da tespit edilmiştir. Sonuçlar aynı zamanda büyüme teorileri ve ekonomik literatürle de tutarlıdır.

Apergis ve Payne (2010), 13 Avrasya bölgesi ülkelerini 1992-2007 yılları için yenilenebilir ve yenilenemeyen enerji kaynaklarının ekonomik büyüme üzerindeki ilişkisini kısa ve uzun dönem için heterojen panel eşbütünleşme testi olan panel veri analizi ile incelenmiş ve çalışmada çift yönlü bir nedensellik ilişkisi tespit edilmiştir.

Ocal ve Aslan (2013), yenilenebilir enerji tüketimi, ekonomik büyüme, işgücü ve sermaye stoku değişkenlerini kullanarak Türkiye'de 1990-2010 dönemini kapsayan çalışmalarında ARDL ve T-Y yaklaşımını kullanmıştır. Sonuç olarak yenilenebilir enerji tüketimi ekonomik büyümeyi olumsuz etkilemektedir. T-Y nedensellik analizi bulgularına göre ise nedenselliğin yönü yenilenebilir enerji tüketiminden büyümeye doğrudur.

Bakırtaş ve Çetin (2016), 1992-2010 yılları arasında G20 ülkelerini kapsayan çalışmalarında yenilenebilir enerji kullanımı ile ekonomik büyüme arasındaki ilişkiyi panel veri analiz yöntemleri ile incelemektedir. Buna göre G-20 ülkelerinde yenilenebilir enerji tüketimi ile ekonomik büyüme arasında uzun dönemli bir ilişki tespit edilmiş ve kişi başına reel GSYH'da meydana gelen %1'lik artışın, kişi başına yenilenebilir enerji tüketiminde POLS analizine göre %0.79 ve FGLS analizine göre %0.59 oranında artış yarattığı ortaya konmuştur. Ayrıca ECM analizne göre G20 ülkelerinin yaklaşık %33'ünde ekonomik büyümenin yenilenebilir enerji tüketimini arttırdığı tespit edilmiştir.

Bhattacharya vd. (2016), en yükse yenilenebilir enerji tüketimine sahip 38 ülke için 1991-2012 verilerini kullanılarak, yenilenebilir enerji tüketimi ve GSYİH terimleri için heterojen panel veri analizi yaparak yenilebilir enerji tüketiminin büyümeyi pozitif olarak etkilediği sonucuna ulaşmışlardır.

Durğun ve Durğun (2018), Türkiye için 1980-2015 yılları arasında Kişi başı GSYH ve kişi başı yenilenebilir enerji tüketimi verilerini kullanarak yaptıkları ARDL sınır testi ve Toda-Yamamoto nedensellik test sonuçlarına göre değişkenler arasında uzun dönemde eşbütünleşik ilişki ortaya çıkmış ve yenilenebilir enerji tüketiminden büyümeye doğru tek yönlü nedensellik olduğu sonucuna varılmıştır.

Wang vd. (2018), Pakistan'da 1990-2014 yılları için yenilenebilir enerji tüketimi, ekonomik büyüme ve insani gelişme endeksi arasındaki ilişkiyi 2SL yöntemini kullanarak araştırmıştır. Elde edilen sonuçlara göre yenilenebilir enerji tüketimi Pakistan'daki insani gelişmeyi olumlu etkilememektedir. Ticari açıklık da Pakistan'daki insani gelişme sürecini olumsuz etkilemekte ve nedensellik analizi, uzun vadede çevresel faktör ile insani gelişme süreci arasındaki hipotezini doğrulamaktadır.

Mahmood vd. (2019), ekonomik büyüme ve yenilenebilir enerji tüketiminin karbondioksit (CO2) emisyonları üzerindeki etkilerini beşerî sermayeyi de dahil ederek analiz etmiş ve ekonomik büyüme ile yenilenebilir enerji tüketimi arasındaki etkileşimi incelemişlerdir. Gelir düzeyinin, enerji tüketimini ve CO2 emisyonlarını nasıl etkilediğini 1980'den 2014'e kadar Pakistan verileriyle üç aşamalı en küçük kareler ve regresyon yöntemiyle açıkladıkları çalışmanın bulgularına göre, gelir ve yenilenebilir enerjinin etkileşim etkisinin CO2 emisyonlarına katkıda bulunduğunu göstermiş ve ayrıca ticari açıklık da CO2 emisyonlarını artırırken, beşerî sermaye CO2 emisyonlarını azaltmıştır.

Dineri ve Çayır (2020), AB15 ve Türkiye için enerji tüketimi, sermaye stoku ile beşerî sermayenin ekonomik büyümeye etkileri yatay kesit bağımlılığını kapsayan AMG tahmincisi ile test ettikleri panel veri çalışmasında panel genelinde enerji tüketiminde %1'lik artış ekonomik büyümeyi %0.31 artırdığını, sermaye stokundaki artışın ekonomik büyümeyi %0.22'i artırdığını tespit etmiştir. Beşerî sermayenin ise ekonomik büyüme üzerinde anlamlı bir etkisi bulunamamıştır.

Güzel ve Oluç (2021), yenilenebilir enerji tüketimi, ticari açıklık ve büyüme ilişkisi Türkiye için 1990-2018 dönemlerini kapsayan verilerle ARDL yöntemi ile test ettikleri çalışmalarında ticari açıklık, emek ve sermaye değişkenlerinin uzun dönemde pozitif katsayılara sahip iken yenilenebilir enerji tüketiminin ise negatif katsayıya sahip olduğu tespit etmiştir.

Pata ve Caglar (2021), Çevresel Kuznets eğrisi hipotezi çerçevesinde Çin için gelir, beşerî sermaye, küreselleşme, yenilenebilir enerji tüketimi ve ticari açıklığın ekolojik sonuçlarını ampirik olarak incelenmiş ve 1980-2016 dönemi boyunca yıllık zaman serisi verilerini araştırmak için tek bir yapısal kırılmanın varlığında artırılmış ARDL yaklaşımını kullanmıştır. Sonuç olarak, hipotezin Çin için geçerli olmadığını ve CO2 emisyonları ile ekolojik ayak izi açısından çevre kirliliği ve gelir düzeyi arasında U şeklinde ikinci dereceden bir ilişkinin belirlendiğini ortaya koymuş ve sonuçlar aynı zamanda küreselleşmenin, ticari açıklığın ve gelirin çevre kirliliğine yol açtığını, beşerî sermayenin arttırılmasının ise uzun vadede ekolojik ayak izini azalttığını göstermiştir. Yenilenebilir enerji tüketimi için herhangi bir etki bulunamamış ve Çin'de çevresel bozulmanın azaltılmasında beşerî sermayenin önemli bir rol oynadığını, yenilenebilir enerjinin ise çevresel gereksinimleri karşılamak için yeterli olmadığı sonucuna varılmıştır.

Wang ve Zhang (2021), 1990'dan 2015'e kadar 186 ülkede nüfus, ekonomi ve teknolojinin etkisini dikkate alarak serbest ticaretin yenilenebilir enerji üzerindeki etkilerini araştırmıştır. Ticaret hacimleri, farklı gelir düzeylerindeki ülkelerde serbest ticaretin yenilenebilir enerji üzerindeki etkilerinin heterojen olduğunu göstermiş, yüksek ve orta gelirli ülkeler için serbest ticaretin yenilenebilir enerji gelişimi üzerinde olumlu bir etkisi olduğunu ortay koymuştur. Ancak bu etki daha düşük gelirli ülkeler için olumsuzdur. Ayrıca nüfus artışı, ekonomik gelişme ve teknolojik ilerleme 186 ülkede yenilenebilir enerji gelişimini desteklemektedir.

Aktop (2023), 1997-2020 yılları arasında OECD ülkeleri için ticari açıklık ile ekonomik büyüme arasındaki ilişkiyi Westerlund eşbütünleşme ve Dumitrescu Hurlin Panel Nedensellik Testlerini kullanarak analiz ettikleri çalışmada seriler arasında eşbütünleşme ve ticari açıklık ile ekonomik büyüme arasında çift yönlü nedensellik ilişkisi saptanmıştır. AMG tahmincisine göre ise panelin genelinde ticari açıklık ekonomiyi pozitif etkilemektedir.

Bozkaya ve Aytekin (2023), BRICS ülkelerinde 1990-2015 dönemini kapsayan verilerle enerji tüketimi, enflasyon, fiziki ve beşerî sermayenin ekonomik büyümeye etkileri için yapılan panel veri analizinde enerji tüketimi ile büyüme arasında anlamlı bir ilişkiye rastlamamış, beşerî sermayenin büyümeyi negatif etkilediği tespit edilmiş ve enflasyon ve fiziki sermayenin ise büyümeyi pozitif olarak etkilediği tespit edilmiştir.

Çetin vd. (2023), 1970-2018 döneminde Türkiye'de ticarette dışa açıklığın ekonomik büyüme üzerindeki etkisini araştırmaktadır. Eşbütünleşme analizi için Hatemi J- Irandoust saklı eşbütünleşme tekniği kullanılmış ve ticari dışa açıklık + bileşini ile ekonomik büyüme + bileşeni arasında asimetrik eşbütünleşme sonucuna varılmıştır. Uzun dönem tahminleri için ise FMOLS tahmincisi kullanılmış ve sonuç olarak ticari dışa açıklık + bileşeni ile ekonomik büyüme + bileşeni arasında pozitif bir ilişki elde edilmiştir.

Bank-Ola vd. (2024), Nijerya için yenilenebilir enerji tüketiminin ekonomik büyüme üzerindeki etkisini her iki değişken arasındaki dinamik ilişkiyi 1990-2022 yılları arasında analiz etmiştir. Johansen eş-bütünleşme testi ve Vektör Hata Düzeltme Modeli (VECM) ile her iki değişken arasındaki nedensellik ilişkisini incelemek için ikili Granger nedensellik testi kullanılmıştır. Bulgular, yenilenebilir enerji tüketimi ile ekonomik büyüme arasında uzun vadeli bir ilişki olduğunu ortaya koymuş, her iki değişken arasında tek yönlü veya çift yönlü bir nedensellik olmadığını göstermiştir. Çalışma kısa vadede yenilenebilir enerji tüketiminin ekonomik büyüme üzerinde önemli bir pozitif etkisi olduğu ve yenilenebilir enerjinin, özellikle ekonomik büyüme üzerinde sermaye oluşumundan daha kısa vadeli bir etkiye sahip olması nedeniyle ekonomik büyümeyi teşvik edebileceğini göstermiştir.

VERİLER VE METODOLOJİ

Çalışmada, Türkiye ve AB ülkelerinde beşerî sermaye, yenilenebilir enerji kullanımı ve ticaret açıklığının kişi başına düşen hasılanın büyüme hızına etkilerini ölçmek ve karşılaştırmak için bağımlı değişken olarak kişi başına düşen gayrisafi yurtiçi hasıla büyüme oranı (KBGSYH), bağımsız değişkenler olarak Penn World Table'dan elde edilen beşerî sermaye indeks değişkeninin logaritması (LHC)(Avrupa Birliği için üye ülkelerin beşerî sermaye indeksinin ortalaması alınmıştır.), Dünya Bankası veri sisteminden elden edilen yenilenebilir enerji kullanımı (RE) ve ticari açıklık değişkeni olarak ithalat ve ihracat toplamının logaritması (LTRADE) kullanılmıştır. Kullanılan veri seti 1990-2019 yıllarını kapsamaktadır. Değişkenler arasındaki kısa ve uzun vadeli ilişkiyi tespit edebilmek için öncelikle ARDL analizi, değişkenler arasındaki nedenselliğin yönünü tespit edebilmek için de Toda-Yamamoto nedensellik analiz yöntemleri kullanılmıştır.

ARDL, bağımlı ve bağımsız değişkenlerin gecikmeli değerlerinin açıklayıcı bir değişken olarak yer aldığı bir modeldir. Geleneksel eşbütünleşme analiz yöntemlerinde kullanılan değişkenlerin aynı düzeyde durağan olmaları gerekirken Pesaran vd. (2001) tarafından oluşturulan ARDL modelinde değişkenlerin I(0) veya I(1) düzeyinde durağan olup olmamasına bakılmaksızın, uzun ve kısa vadeli tahminler eş zamanlı olarak yapılabilir. Çünkü bu yöntemde genelleştirilmiş Dickey-Fuller tipi bir regresyondaki Wald veya F istatistiğinde olduğu gibi bir koşullu kısıtlamasız denge hata düzeltme modelinde incelenen değişkenlerin gecikmeli seviyelerinin önemini test etmek için kullanılır. Bu yararlı özellik, ARDL modelini diğer eşbütünleşme tekniklerinden ayırır. Dahası, geleneksel modellerle karşılaştırıldığında, ARDL modelinde kısa vadeli analiz için geliştirilen hata düzeltme modeli ECM, küçük örneklerde daha güvenilir ve anlamlı sonuçlar üretir (Pesaran vd. 2001).

ARDL Sınırları test metodolojisi temel olarak üç aşamadan oluşur. Başlangıçta, incelenen değişkenler arasında uzun vadeli bir ilişkinin varlığı değerlendirilir; bir eşbütünleşme ilişkisinin tanımlanmasına bağlı olarak, sonraki adımlar kısa ve uzun vadeli esnekliklerin türetilmesini içerir (Yılancı, 2014).

Bununla birlikte, eşbütünleşmenin varlığı tespit edildikten sonra, nedenselliğin yönünü tespit edebilmek için, Toda-Yamamoto (1995) nedensellik testi kullanılmıştır. Granger nedensellik testinin parametrelerin birlikte sıfır olması varsayımı, eşbütünleşik değişkenler için geçerli değildir. Bu nedenle, geleneksel nedensellik testindeki bu kısıtları aşmak için, Toda ve Yamamoto (1995) bir VAR sistemini oluşturan parametreler üzerindeki kısıtlamalar için modifiye edilmiş WALD (MWALD) testini kullanan bir nedensellik testi önermiştir. MWALD testi değişkenlerin durağanlık seviyeleri farklı olsa bile, yani I (0) ve/veya I (1) durumunda, değişkenler arasındaki mevcut nedenselliği araştırma yeteneğine sahiptir. Toda ve Yamamoto (1995) nedensellik testi için, doğru VAR gecikme uzunlu değeri (k) ve kullanılan değişkenlerin maksimum bütünleşme sırasını *(dmax)* belirlenir. Daha sonra, elde edilen uygun gecikme uzunluğu k'ya, maksimum eşbütünleşme derecesi dmax eklenerek sistemin gecikme uzunluğu (p=k + dmax) yapay olarak değiştirilir. Ancak, modele eklenen terimlerin katsayıları dikkate

alınmaz. Bu nedensellik prosedüründe, dmax değeri k değerini aşmamalıdır (Allou vd. 2020). Değişkenlerin entegrasyonunun karışık sırası, yani I (0) ve/veya I (1) durumunda, MWALD testi değişkenler arasındaki mevcut nedenselliği araştırma yeteneğine sahiptir.

Eşitlik(1)'de çalışmaya konu olan KBGSYH ile ilişkili olduğu tahmin edilen bağımsız değişkenleri kapsayan hem Türkiye hem de AB için kullanılan model yer almaktadır.

$$KBGSYH_t = \alpha_0 + \alpha_1 LHC_t + \alpha_2 RE_t + \alpha_3 LTRADE_t + \varepsilon_t \quad (1)$$

Eşitlik 1'de yer alan modelin ARDL versiyonu için Eşitlik 2 elde edilmektedir.

$$\Delta KBGSYH_t = \alpha_0 + \sum_{i=1}^{n_1} \sigma_{1i}\, \Delta KBGSYH_{t-1} + \sum_{i=0}^{n_2} \beta_{2i}\, \Delta LHC_{i,t-i} + \sum_{i=0}^{n_3} \partial_{3i}\, \Delta RE_{i,t-i} + \sum_{i=0}^{n_4} \pi_{4i}\, \Delta LTRADE_{i,t-i} + \delta_{1i} KBGSYH_{t-1} + \delta_{2i} LHC_{t-1} + \delta_{3i} RE_{t-1} + \delta_{4i} LTRADE_{t-1} + \varepsilon_{it} \quad (2)$$

Eşitlik 2'deki modelde, Δ ilk diferansiyel operatörü, α_0 sabit terimi, $\sigma_1, \beta_2, \partial_3$ ve π_4 kısa dönem katsayıları ve *δ1, δ2, δ3* ve *δ4* uzun dönem katsayıları temsil eder. *ε* ise hata terimini temsil etmektedir. Eşitlik 2'deki değişkenler arasında uzun vadeli bir ilişkinin varlığını test etmeden önce, F testini kullanmak gerekir. F testinin sıfır hipotezi, $H0 = \delta_1 = \delta_2 = \delta_3 = \delta_4 = 0$ denklemiyle gösterildiği gibi değişkenler arasında anlamlı bir uzun vadeli ilişki olmadığını öne sürmektedir. $H_1 = \delta_1 \neq \delta_2 \neq \delta_3 \neq \delta_4 \neq 0$ ise alternatif hipotezidir. F testinin sonuçları Pesaran vd. (2001) tarafından belirtilen kritik değerleri aşarsa, uzun vadeli ilişkiyi destekler ve ikinci aşama ARDL modelinin 3. denklemine hata düzeltme teriminin (ECT_{t-1}) dahil edildiğini varsayar. *δ5* istatistiksel olarak anlamlıysa ve negatif bir değere sahipse, geçici bir şokun uzun vadede istikrara dönme hızını gösterir.

$$\Delta KBGSYH_t = \alpha_0 + \sum_{i=1}^{n_1} \sigma_{1i}\, \Delta KBGSYH_{t-1} + \sum_{i=0}^{n_2} \beta_{2i}\, \Delta LHC_{i,t-i} + \sum_{i=0}^{n_3} \partial_{3i}\, \Delta RE_{i,t-i} + \sum_{i=0}^{n_4} \pi_{4i} \Delta LTRADE_{i,t-i} + \delta_1 KBGSYH_{t-1} + \delta_2 LHC_{t-1} + \delta_3 RE_{t-1} + \delta_4 LTRADE_{t-1} + \delta_5 ECT_{t-1} + \varepsilon_{it} \quad (3)$$

Ampirik Bulgular

Çalışmada değişkenlerin durağanlık seviyelerini belirlemek için yapısal kırılmalı birim kök testleri uygulanmıştır. Tablo 1 AB için, Tablo 2 Türkiye için sonuçları kapsamaktadır.

Tablo 1: Yapısal Kırılmalı Birim Kök Testleri-AB

Değişken			Kırılma Tarihi	t-istatistiği	SONUÇ
KBGSYH	Düzey	Sabit	2009	-6.333825(0)*	I(0)
		Sabit+Trend	2009	-6.246348(0)*	
	Fark	Sabit			
		Sabit+Trend			
LHC	Düzey	Sabit	2017	-13.63724(0)*	I(0)
		Sabit+Trend	1993	-6884215(0)*	
	Fark	Sabit			
		Sabit+Trend			
RE	Düzey	Sabit	2006	-2.483217(0)	I(1)
		Sabit+Trend	2001	-3.925440(6)	
	Fark	Sabit	2005	-4.504818(0)**	
		Sabit+Trend	2005	-4.745320(0)	
LTRADE	Düzey	Sabit	2000	-2.207608(6)	I(1)
		Sabit+Trend	1999	-4.307127(2)	
	Fark	Sabit	2009	-6.328513(1)*	
		Sabit+Trend	2009	-5.976333(1)*	

Tablo 2: Yapısal Kırılmalı Birim Kök Testleri-Türkiye

Değişken			Kırılma Tarihi	t-istatistiği	SONUÇ
KBGSYH	Düzey	Sabit	2009	-6.354312(0)*	I(0)
		Sabit+Trend	2009	-6.219005(0)*	
	Fark	Sabit			
		Sabit+Trend			
LHC	Düzey	Sabit	2010	-1.986862(6)	I(1)
		Sabit+Trend	2015	-3.806311(1)	
	Fark	Sabit	2010	-9.119396(4)*	
		Sabit+Trend	2005	-9.889736(4)*	
RE	Düzey	Sabit	1999	-3.429803(2)	I(1)
		Sabit+Trend	2012	-2.674611(0)	
	Fark	Sabit	2010	-7.183140(1)*	
		Sabit+Trend	2009	-7.000014(1)*	
LTRADE	Düzey	Sabit	1993	-2.977030(0)	I(1)
		Sabit+Trend	1993	-4.141250(0)	
	Fark	Sabit	1998	-6.174712(0)*	
		Sabit+Trend	1998	-5.817240(0)*	

Tablo1 ve Tablo 2 için;
1- Parantez içindeki değerler yapısal kırılma birim kök testinde gecikme uzunluğunu göstermektedir.
2- Zivot-Andrews yapısal kırılma birim kök testi için kullanılan gecikme uzunlukları (maxlag=10),Schwarz bilgi kriterine göre otomatik olarak seçilmiştir.
3- * değişkenlerin %1 anlamlılık düzeyinde durağan olduklarını, ** değişkenlerin %5 anlamlılık düzeyinde durağan olduklarını göstermektedir.

Yapısal kırılmalı birim kök testlerine göre serilerin durağanlık dereceleri I(0) ve I(1) olduğundan ARDL yöntemi uygun bulunmuştur. Ayrıca, değişkenlerimizin en yüksek durağanlık düzeyi I(1) olduğu için, T-Y nedensellik testinde oluşturulan düzeltilmiş VAR için kullanacağımız, değişkenlerin maksimum bütünleşme derecesi (dmax) de 1 olarak kabul edilmiştir.

Değişkenlerin durağanlık seviyelerini tespit edildikten sonra değişkenler arasındaki uzun dönemli ilişkiyi tespit etmek amacıyla eşbütünleşme sınır testi uygulanmıştır. Testin sonuçları Tablo 3'te yer almaktadır.

Tablo 3: ARDL Sınır Testi

AB için MODEL: KBGSYH=f(LHC, RE, LTRADE)	**Uygun Lag Uzunluğu**	**F-istatistik**	**Sınır Kritik Değeri**		**Sonuç**
KBGSYH	(4, 5, 5, 5)	**12.90681***	I(0)	I(1)	Eşbütünleşme
			3.65	4.66	
Türkiye için MODEL: KBGSYH=f(LHC, RE, LTRADE)	**Uygun Lag Uzunluğu**	**F-istatistik**	**Sınır Kritik Değeri**		**Sonuç**
KBGSYH	(4, 2, 0, 3)	**6.384062***	I(0)	I(1)	Eşbütünleşme
			3.65	4.66	

1. * ifadesi%1 anlamlılık düzeyinde birim kök varlığının reddedildiğini gösterir.
2. Sınır testi alt ve üst kritik değerleri Peseran vd. (2001)'e göre belirlenmiştir.

Değişkenler arasında eşbütünleşme varlığını tespit etmek için yapılan ARDL sınır testi yaklaşımında Tablo 3'te yer alan hem AB hem de TR için hesaplanan F istatistik değeri sırasıyla 12.90681 ve 6,384062'dir. Hesaplanan bu değerler I (0) ve I(1) alt ve üst kritik değerlerden daha yüksek olduğu için seriler arasında %1 anlamlılık düzeyinde eşbütünleşme ilişkisi olduğu sonucuna ulaşılmıştır.

Tablo 4 ve Tablo 5 AB ve Türkiye için hesaplanan kısa dönem ve modelin anlamlılık sonuçlarını göstermektedir.

Tablo 4: Kısa Dönem ARDL Bulguları-AB

Bağımlı Değişken = KBGSYH				
Kısa dönem ARDL sonuçları				
Değişkenler	**Katsayı**	**Std. Hata**	**t-istatistik**	**Olasılık**
D(KBGSYH(-1))	**0.778414**	0.104896	7.420820	**0.0177**
D(KBGSYH(-2))	**-0.283081**	0.076442	-3.703193	**0.0658**
D(KBGSYH(-3))	**-.0651091**	0.135479	-4.805830	**0.0407**
D(LHC)	**4154.255**	479.1196	8.670601	**0.0130**
D(LHC(-1))	**-328.7735**	375.6406	-0.875234	**0.4737**
D(LHC(-2))	**814.3058**	372.0497	2.188702	**0.1601**
D(LHC(-3))	**-1378.205**	364.6100	-3.779944	**0.0634**
D(LHC(-4))	**-2687.949**	278.0950	-9.665580	**0.0105**
D(RE)	**-3.515575**	0.271917	-12.92886	**0.0059**
D(RE(-1))	**-0.517787**	0.172039	-3.009696	**0.0949**
D(RE(-2))	**-2.901630**	0.279945	-10.36499	**0.0092**
D(RE(-3))	**1.391800**	0.201725	6.899489	**0.0204**
D(RE(-4))	**2.202151**	0.288674	7.628510	**0.0168**
D(LTRADE)	**-1.262027**	2.373300	-0.531760	**0.6480**
D(LTRADE(-1))	**112.1892**	10.10078	11.10699	**0.0080**
D(LTRADE(-2))	**112.1581**	7.298398	15.36749	**0.0042**
D(LTRADE(-3))	**70.52724**	7.369379	9.570310	**0.0107**
D(LTRADE(-4))	**27.02996**	2.606831	10.36889	**0.0092**
CointEq(-1)*	**-2.211123**	0.158912	-13.91410	**0.0051**

Kararlılık (Stability) Testi: Ramsey Reset Test			
F-istatistik : 3.954853		Olasılık: 0.2966	
Değişen Varyans (Heteroscedasticity) Testi: Breusch-Pagan-Godfrey Test			
F-istatistik: 1.548480		Olasılık: 0.4661	
Otokorelasyon Testi: Breusch-Godfrey LM Test			
F-istatistik: 28.30045		Olasılık: 0.1183	
Normal Dağılım Testi			
Skewness: 0.208762	Kurtosis: 2.475698	Jarque-Bera: 0.467936	Olasılık: 0.791387

CUSUM: Kararlı	**CUSUMQ**: Kararlı	**R2**=0.996259	**Düzeltilmiş R2**: 0.955109	**F istatistik: 24.2107**(0.0403)	**Durbin-Watson:** 3.6437

Tabo 4'te yer alan bilgiye göre AB 'de LHC ve RE değişkenleri kısa dönemde anlamlı etkilere sahiptir. LHC pozitif olarak KBGSYH'yı etkilerken, RE negatif etkilemektedir. LTRADE ise kısa dönemde KBGSYH üzerinde anlamlı etkiye sahip değildir. Kullanılan her değişkenin gecikmeli değerleri cari dönemde farklı etkilere sahip olduğu gözlemlenmiştir. Ayrıca CointEq (-1) değişkeni %1 anlamlılık düzeyinde anlamlı ve katsayı işareti negatiftir. Yani kurulan modelin gerçekten bir hata düzeltme mekanizması vardır. Ayrıca modelin anlamlılık sınamalarına göre model kurulumu doğru, değişen varyans ve otokorelasyon sorunu yok ve hatalar normal dağılıma sahiptir.

Tablo 5: Kısa Dönem ARDL Bulguları-Türkiye

Bağımlı Değişken = KBGSYH				
Kısa dönem ARDL sonuçları				
Değişkenler	**Katsayı**	**Std. Hata**	**t-istatistik**	**Olasılık**
D(KBGSYH(-1))	**0.690485**	0.253277	2.726205	**0.0173**
D(KBGSYH(-2))	**0.887889**	0.221197	4.013988	**0.0015**
D(KBGSYH(-3))	**0.660271**	0.170752	3.866852	**0.0019**
D(LHC)	**837.7943**	355.9113	2.353942	**0.0350**
D(LHC(-1))	**-1437.486**	348.1628	-4.128774	**0.0012**
D(LTRADE)	**29.57294**	8.732082	3.386700	**0.0049**
D(LTRADE(-1))	**-30.26091**	8.026157	-3.707730	**0.0026**
D(LTRADE(-2))	**26.44009**	7.15697	-3.694314	**0.0027**
CointEq(-1)*	**-1.991587**	0.308257	-6.460800	**0.0000**
Kararlılık (Stability) Testi: Ramsey Reset Test				
F-istatistik : 0.242117		Olasılık: 0.6316		
Değişen Varyans (Heteroscedasticity) Testi: Breusch-Pagan-Godfrey Test				
F-istatistik: 1.082180		Olasılık: 0.4426		
Otokorelasyon Testi: Breusch-Godfrey LM Test				
F-istatistik: 0.665658		Olasılık: 0.5335		
Normal Dağılım Testi				
Skewness: -0.572319	Kurtosis: 4.299117	Jarque-Bera: 3.247925	Olasılık: 0.197116	

CUSUM: Kararlı	**CUSUMQ**: Kararlı	**R2**=0.851114	**Düzeltilmiş R2**: 0.78105	**F istatistik: 2.442056**(0.0620)	**Durbin-Watson: 1.6617**

Tablo 5'te ise Türkiye için kısa dönem bulguları yer almaktadır. Bu modelde de CoinEq(-1) terimi negatif işarete sahip ve %1 düzeyinde anlamlıdır. Yani kullanılan modelin şokların etkilerinin zaman içerisinde düzeltildiği kabul edilmektedir. Türkiye için elde edilen kısa dönem bulguları AB'den farklılaşmaktadır. Yenilenebilir enerji için kısa dönemde bir etki hesaplanamazken LHC ve LTRADE KBGSYH üzerinde anlamlı ve pozitif etkilere sahiptir. Modelin anlamlılık sınamaları da uygundur.

Tablo 6 ise hem AB hem de Türkiye için uzun dönem bulgularını göstermektedir. AB için değişkenler uzun dönemde %5 anlam düzeyinde KBGSYH'yı etkilemektedir. AB için LHC pozitif etkiye sahipken, RE ve LTRADE negatif etkilere sahiptir. Türkiye'de ise değişkenlerin uzun dönemde anlamlı etkileri gözlemlenememiştir.

Tablo 6: AB ve Türkiye İçin Uzun Dönem ARDL Bulguları

Bağımlı Değişken KBGSYH									
Uzun Dönem ARDL Sonuçları-AB					**Uzun Dönem ARDL Sonuçları-Türkiye**				
Değişken	**Katsayı**	**Std. Hata**	**t-istatistik**	**Olasılık**	**Değişken**	**Katsayı**	**Std. Hata**	**t-istatistik**	**Olasılık**
LHC	267.392	47.8133	5.59241	0.0305	**LHC**	-16.988	12.3299	-1.3777	0.1915
RE	-0.9677	0.15075	-6.4193	0.0234	**RE**	-0.1508	0.31276	-0.4821	0.6377
LTRADE	-54.096	13.0968	-4.1304	0.0539	**LTRADE**	22.993	13.3443	1.72306	0.1086
C	-59.019	22.9669	-2.5697	0.1239	**C**	-66.943	48.7462	-1.3733	0.1929

Çalışmada kullanılan değişkenlerin birbirlerine olan etkilerinde nedenselliğin yönünü tespit etmek için kullanılan T-Y testinin MWALD bulguları Tablo 7 ve Tablo 8'de yer almaktadır.

Tablo 7: MWALD Test Sonuçları- AB (*P=k+dmax=1+1=2)*

H_0 Hipotezi	Ki-Kare	Df.	Olasılık	Karar
LHC, KBGSYH'nın nedeni değildir	11.16003	2	0.0038	Red
RE, KBGSYH'nın nedeni değildir	1.87322	2	0.3920	Kabul
LTRADE, KBGSYH'nın nedeni değildir	16.48327	2	0.0003	Red
KBGSYH, LHC'nin nedeni değildir	4.551814	2	0.1027	Kabul
RE, LHC'nin nedeni değildir	5.472519	2	0.0648	Kabul
LTRADE, LHC'nin nedeni değildir	9.476987	2	0.0088	Red
KBGSYH, RE'nin nedeni değildir	4.754340	2	0.0928	Kabul
LHC, RE'nin nedeni değildir	0.983102	2	0.6117	Kabul
LTRADE, RE'nin nedeni değildir	2.441292	2	0.2950	Kabul
KBGSYH, LTRADE'in nedeni değildir	3.194755	2	0.2024	Kabul
LHC, LTRADE'in nedeni değildir	23.20427	2	0.000	Red
RE, LTRADE'in nedeni değildir	4.516925	2	0.1045	Kabul

Tablo 7'ye göre hesaplanan ki-kare ve olasılık değerleri dikkate alındığında, LHC ve LTRADE'den KBGSYH'ya doğru %1 anlamlılık düzeyinde nedensellik tespit edilmiştir. T-Y analizine göre ise RE, KBGSYH'nın anlamlı bir şekilde nedeni değildir. Ancak ARDL test sonuçlarına göre kısa ve uzun dönemde RE KBGSYH'yı negatif olarak etkilediği sonucuna ulaşılmıştır. Bunun yanı sıra AB' de LTRADE ve LHC arasında %1 anlamlılık düzeyinde karşılıklı nedensellik de tespit edilmiştir.

Tablo 8'e göre ise kullanılan değişkenlerden KBGSYH yönüne doğru anlamlı bir nedensel ilişki gözlemlenmemiştir. Ancak RE ve LTRADE'den LHC'ye doğru sırasıyla %5 ve %1 anlamlılık düzeyinde nedensellik tespit edilmiştir. Ayrıca KBGSYH, LHC ve RE'den LTRADE'E doğru anlamlı bir nedensellik olduğu görülmektedir. RE ile LTRADE arasında da %1 ve %5 anlamlılık düzeyinde karşılıklı nedensel bir ilişki vardır.

Tablo 8: MWALD Test Sonuçları- AB (*P=k+dmax=2+1=3)*

H_0 Hipotezi	Ki-Kare	Df.	Olasılık	Karar
LHC, KBGSYH'nın nedeni değildir	6.641996	3	0.0842	Kabul
RE, KBGSYH'nın nedeni değildir	5.247538	3	0.1545	Kabul
LTRADE, KBGSYH'nın nedeni değildir	6.854006	3	0.0767	Kabul
KBGSYH, LHC'nin nedeni değildir	4.944306	3	0.1759	Kabul
RE, LHC'nin nedeni değildir	8.533943	3	0.0362	Red
LTRADE, LHC'nin nedeni değildir	19.41027	3	0.0002	Red
KBGSYH, RE'nin nedeni değildir	2.063711	3	0.5593	Kabul
LHC, RE'nin nedeni değildir	3.304435	3	0.3470	Kabul
LTRADE, RE'nin nedeni değildir	12.44273	3	0.0060	Red
KBGSYH, LTRADE'in nedeni değildir	9.886153	3	0.0196	Red
LHC, LTRADE'in nedeni değildir	19.35052	3	0.0002	Red
RE, LTRADE'in nedeni değildir	8.992053	3	0.0294	Red

SONUÇ VE TARTIŞMA

Çalışmada, Türkiye ve AB'de beşerî sermaye, yenilenebilir enerji ve ticari açıklık değişkenlerinin kişibaşına düşen hasılanın artışına etkisini incelemek için ARDL ve T-Y nedensellik analiz yöntemleri kullanılmıştır. Literatürde bu alanda söz konusu değişkenlerin ekonomik büyümeye etkileri pek çok çalışmada incelense de ülkeden ülkeye sonuçlar farklılaşabilmektedir. Bu çalışmada daha çok gelişmiş ülkelerden oluşan bir grup olan AB ile gelişmekte olan bir ülke olan Türkiye'de elde edilen bulguların ne kadar farklılaştığı gözlemlenmiştir.

Bu çalışmada elde edilen bulgulara göre beşerî sermaye değişkeni ekonomik büyüme üzerinde kısa ve uzun dönemde anlamlı ve pozitif etkiye sahipken Türkiye'de uzun dönemde etkisi görülmemektedir. Bu da Lau vd. (1991)'in görüşlerini destekler niteliktedir. Yani beşerî sermayenin ekonomik büyümeyi pozitif etkilemesi için fiziki sermaye birikiminin rolü önemli olabilir. Yenilenebilir enerji kullanımı ise AB'de ekonomik büyümeyi kısa ve uzun dönemde negatif etkilemektedir. Türkiye'de ise yenilenebilir enerji ile ekonomik büyüme arasında anlamlı ilişkiler kurulamamıştır. T-Y sonuçlarına göre Ocal ve Aslan (2013)'ün çalışması baz alındığında AB ve Türkiye için tarafsızlık hipotezleri geçerlidir. Ticari açıklık ise AB'de ekonomik büyümeyi negatif etkilerken Türkiye'de kısa dönemde pozitif etkilere sahiptir.

Elde edilen sonuçlara göre ise gelişmekte olan ülkelerde beşerî sermayeyi artırmak için yapılan politikalarda eğitimin niceliğinden çok niteliğinin önemli olduğu ve söz konusu beşerî sermayenin etkili olabilmesi için fiziki sermaye yatırımlarının da önemli olduğu sonucuna ulaşılmıştır.

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BETWEEN THE EMBRACE AND THE BOOT: ANALYSING PAKISTAN'S DEPORTATION OF AFGHANS IN LIGHT OF GEOPOLITICS AND ETHNICITY

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Abstract

This thesis conducts an in-depth examination of Pakistan's deportation of Afghan refugees, contextualized within the intricate dynamics of geopolitics and ethnicity. It investigates the causes behind the variation in Pakistan's policy toward Afghan refugees in the 1974-2023 period. Pakistan has moved from an open arms policy towards the Afghan refugees in the 1980s and 1990s towards an increasingly unaccommodating stance in the next two decades, reaching a peak with the mass deportations in 2016 and the ongoing deportation since 2023. Challenging influential extant explanations in the literature on the causes of refugee deportation, such a refugee rentier state theory and accounts focusing on political institutions, I argue that the reason behind the variation in Pakistan's policy toward Afghan refugees lies in the nexus between geopolitics and ethnicity. Specifically, I find that periods of increased geopolitical tensions between Pakistan and Afghanistan and periods of increased ethnic tensions within Pakistan reflected in the increased threat perceptions of the Punjabi-dominated elites from the Pashtun-majority refugees and Pakistani politicians accommodating refugee demands, make refugee deportations more likely. Drawing from a diverse array of sources, including governmental archives, media reports, and scholarly literature, this study illuminates the nuanced and intersectional nature of forced migration, underscoring the confluence of geopolitical exigencies and ethnic tensions. The reflections stemming from this scholarly endeavor emphasize the imperative of integrating geopolitical and ethnic considerations into both policy frameworks and academic discourses, offering invaluable contributions to scholars, policymakers, and practitioners engaged in the realm of refugee studies.

Keywords: Afghanistan, Deportation, Ethnicity, Geopolitics Pakistan, Refugees.

INTRODUCTION

Historically, Pakistan's policy on Afghan refugees shifted significantly. Initially welcoming, it grew hostile due to evolving security concerns and regional power dynamics, particularly as Afghan militant groups posed threats to Pakistan. Despite international theories framing refugee issues primarily around rentier and securitization theories, these often overlook the nuanced geopolitical and ethnic motivations that drive Pakistan's approach to deportation.

This thesis explores these motivations, analyzing Pakistan's evolving stance on Afghan refugees, the geopolitical backdrop, and the ethnic tensions involved. By examining these elements, the research seeks to clarify how Pakistan's deportation policies impact refugee rights, regional stability, and policy discussions on sovereignty and refugee protections.

MATERIALS AND METHODS

This study employs a qualitative methodology integrating geopolitics and ethnicity to analyze Pakistan's deportation policies toward Afghan refugees. A process-tracing approach elucidates causal mechanisms by examining historical records, government data, and news coverage from diverse sources, including Dawn, UNHCR reports, and major international news outlets. Theoretical frameworks around ethnic fault lines and geopolitical pressures contextualize the shifting policies toward Afghan refugees, largely Pashtun, with ties across the Durand Line. Case selection highlights the overlooked Global South refugee flows, examining interethnic dynamics, security concerns, and implications for South Asian stability. The study's limitations include challenges in capturing broader structural factors.

FINDINGS

The findings of this research underscore the centrality of both ethnic and geopolitical factors in shaping Pakistan's deportation policy towards Afghan refugees. First, the ethnic dimension, dominated by the Pashtun composition

of Afghan refugees, creates a demographic imbalance challenging the Punjabi-dominated elite's status quo. Imran Khan's proposal to grant citizenship to Afghan refugees, largely Pashtuns, illustrated the deep-rooted ethnic tensions as this move directly contested the power structure, a factor contributing to his falling favor with the military. Similarly, Khan's alignment with the Pashtun Tahafuz Movement (PTM), advocating for Pashtun rights, accentuated his dissonance with the military establishment, a rift intensified by the subsequent political upheaval and protests following his ouster.

Geopolitically, Pakistan's fluctuating stance towards Afghan refugees is intricately tied to regional dynamics, including US and NATO withdrawals from Afghanistan and the subsequent Taliban ascendancy. Historically, the Pakistani state's shifting support, from offering refuge to imposing border controls, reflects its response to changes in Western interests and funding. The 2014 APS attack marked a turning point, leading to heightened border security, culminating in mass expulsions and strained Pakistan-Afghanistan relations, particularly as Kabul grew increasingly opposed to Pakistan's policies. Pakistan's interactions with Afghan refugees have mirrored its strategic imperatives, using the refugee population as leverage against the Afghan Taliban, especially post-2021 when Taliban cooperation waned.

These findings reveal the inadequacy of purely economic or security-based explanations, as they overlook the intertwined ethnic and geopolitical complexities. Rather than stemming from limited resources or security threats alone, Pakistan's policy towards Afghan refugees reflects an amalgamation of state-centric ethnic power dynamics and shifting regional alliances. This research posits that the deportation order, while framed by security rhetoric, primarily serves to reinforce existing power structures and geopolitical strategy, aligning state actions with broader ethnic and regional priorities.

DISCUSSION AND CONCLUSION

This research reveals that Pakistan's approach to Afghan refugees is deeply influenced by a complex intersection of ethnic hierarchies and geopolitical imperatives, challenging conventional explanations that prioritize economic or security concerns. The dominance of the Punjabi elite and the corresponding marginalization of the Pashtun minority create demographic sensitivities; the substantial Pashtun presence among Afghan refugees has disrupted the status quo, increasing resistance to integration efforts, as illustrated by Imran Khan's contentious citizenship proposal for Afghan refugees. Khan's sympathy for the Pashtun cause, evident in his support for the Pashtun Tahafuz Movement (PTM) and his electoral backing in Pashtun-majority regions, underscores the deeply rooted ethnic dimensions shaping Pakistan's refugee policies. Comparatively, while other Global South countries also contend with refugee pressures, Pakistan's unique ethnic and geopolitical context calls for a reconsideration of traditional refugee deportation frameworks, particularly given the disparity between Global South and Global North narratives on refugee handling. In Pakistan, deportations reflect not only resource constraints but also an intricate power structure sustained by ethnic boundaries and shifting political alignments.

Geopolitically, Pakistan's fluctuating stance toward Afghan refugees reflects its response to regional power shifts and its strategic interests. Initially welcoming Afghan refugees during the Soviet Afghan War, Pakistan capitalized on Western support; however, as Western priorities shifted, this acceptance became more restrictive, peaking after incidents like the 2014 APS attack that intensified national security rhetoric and led to increased border fortifications. The Taliban's resurgence in 2021 and its strained cooperation with Pakistan further complicated matters, with Pakistan leveraging the refugee population to influence Taliban compliance. This study, therefore, finds that Pakistan's refugee policy is not only a tool for maintaining internal power structures but also aligns with broader geopolitical shifts, challenging dominant theoretical frameworks and suggesting that ethnicity and strategic motivations must be integral to understanding refugee policies worldwide. Future studies could expand on these findings through comparative analyses across geopolitical settings, yet this research provides a foundation for understanding how ethnic power dynamics and strategic calculations distinctly shape refugee deportation practices in Pakistan.

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HANNAH ARENDT: POLİTİKANIN DERİNLİKLERİ VE KAVRAMLARIN YENİDEN TANIMLANMASI

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Özet

Hannah Arendt (1906-1975), şiddetin yılları olan 20. yüzyılda doğmuş etkili bir düşünürdür. Kendi döneminde cesaret ve özveri ile ele aldığı kavramlar ve felsefi düşünceler onu hem bir kadın olarak hem de Nazi zulmüne tanık olmuş bir Yahudi olarak önemli yere koymaktadır. Yapmış olduğu çarpıcı açıklamalar ile beklenmeyenin anlatıcısı olarak tarih sahnesinde yerini almıştır. Yazmış olduğu konular ve kavramlar düşünme eyleminin özünü oluşturmaktadır. Aynı zamanda soruları açığa çıkaran bir yanı da vardır. Düşüncelerinin altyapısını oluşturan kavramları Antik Yunan polisine kadar dayanmaktadır. Siyaset felsefesi üzerine yazılar yazmış gibi görünse de kendisi bunu kabul etmemektedir. Arendt'i bir taraf ilan etmenin zorluğu onun düşüncelerine farklı ideolojiler ile bakıldığında değişiklik göstermesindendir. Nitekim kendisi bir taraf değildir, taraf olmayı reddeder. Siyasi düşün tarihine etki eden en önemli eserlerinden birisi İnsanlık Durumu'dur. Bu eser içerisinde ele almış olduğu Vita Activa kavramı onun düşünce sisteminin temelini oluşturmaktadır. Üç temel insani etkinlik olarak 'emek, iş ve eylem' üzerine yazmıştır. Bu kavramlar onun için düşün hayatının temelini oluşturan kavramlardır. Bu etkinlikleri daha iyi anlamak için ele almış olduğu diğer kavramlar ise kamusal ve özel alan arasında yapmış olduğu ayrımlardır. Kamusal alan Arendt felsefesinde önemli bir yerde durmaktadır. Eylem kavramının etkinlik alanı kamusal alandır. Birey olarak var olabilmemizin yegâne koşulu kamusal alanda yapıp ettiklerimizdir. Bu alan içerisinde önemli olarak gördüğü ve üzerinde durduğu bir diğer kavramı ise özgürlüktür. İnsanın eylemde bulunabilme kapasitesini oluşturan özgürlük, kişilerin kendilerini gerçekleştirebilmesine imkân verir. Eylem etkinliğini ve kamusal alanı özgürlük olgusu olmadan kavrayamayacağımız aşikârdır. Şiddetin yüzyılında doğmuş kadın bir düşünür olarak şiddet kavramını ayrıca incelemiştir. Kamusal alanda meydana gelen şiddet durumunun nasıl olduğunu ve neden olduğunu incelemektedir. Şiddet kavramını araçlara bağlar. Bu araçları elinde bulunduran otorite Arendt için Devlettir. Bu da, kendini haklılaştırmak için kullanılan, nihai sonucunu bilemeyeceğimiz ancak kısa süreli sonuçlar almak istediğimizde rasyonel olabilen bir olgudur. Politikaya ve tarihi olaylara bakış açımızı değiştirecek ve çarpıcı açıklamalar getirmiş olduğu diğer kavram ise yalandır. Siyasi emeller için kullanılan yalanı açıklarken, sahtekârlığın tarih boyunca yanımızda olduğunu ancak doğruculuk ve hakikatin hiçbir zaman siyasi bir eylem olarak görülmediğini belirtir. Bu kavramlar genel olarak onun siyaset felsefesini ve düşün hayatını anlamamıza yardımcı olacak kavramlardır. Kapsayıcılığı ve çarpıcı tanımları günümüz politika alanını anlamak açısından önemli bir yerde durmaktadır.

Anahtar Kelimeler: Hannah Arendt, Vita Activa, Kamusal Alan, Özel Alan, Özgürlük, Siyasi Eylem

HANNAH ARENDT: THE DEPTHS OF POLITICS AND THE REDEFINITION OF CONCEPTS

Abstract

Hannah Arendt (1906-1975) is an influential thinker born in the 20th century, the years of violence. The concepts and philosophical thoughts she addressed with courage and devotion in her time put her in a meaningful place both as a woman and as a Jew who witnessed Nazi persecution. She took her place on the stage of history as a narrator of the unexpected with her striking statements. The subjects and concepts she wrote constitute the essence of the

act of thinking. At the same time, she has a side that reveals questions. The concepts that form the basis of her thoughts date back to the Ancient Greek polis. Although she seems to have written articles on political philosophy, she does not accept this. The difficulty of declaring Arendt a party is that her thoughts change when viewed with different ideologies. She is not a party; she refuses to take sides. One of her most important works that has influenced the history of political thought is The Human Condition. The concept of Vita Activa, which she addressed in this work, forms the basis of her thought system. She wrote about three basic human activities: 'labor, work, and action'. These concepts form the basis of her intellectual life. Other concepts she has addressed to understand these activities better are the distinctions she has made between the public and private spheres. The public sphere has an essential place in Arendt's philosophy. The field of activity of the concept of action is the public sphere. The only condition for our existence as individuals is what we do in the public sphere. Another concept she considers necessary and focuses on within this field is freedom. Freedom, which constitutes the capacity of a person to act, allows people to realize themselves. It is evident that we cannot comprehend the activity of action and the public sphere without the concept of freedom. As a female thinker born in the century of violence, she has also examined the concept of violence. She discusses how and why violence in the public sphere occurs. She connects the concept of violence to tools. The authority that holds these tools is the state for Arendt. It is a phenomenon used to justify itself, whose final result we cannot know but can be rational when we want short-term results. Another concept that will change our perspective on politics and historical events and for which she has brought striking explanations is a lie. Lying and fraud used for political purposes have been with us throughout history, but truth and honesty have never been seen as a political action. These concepts will help us understand her political philosophy and thought life in general. Her comprehensiveness and striking definitions are essential in understanding today's political field.

Keywords: Hannah Arendt, Vita Activa, Public Sphere, Private Sphere, Freedom, Political Action

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GİRİŞ

Hannah Arendt şiddetin yılları olarak tanımlanan 20. yüzyılda Yahudi bir kadın olarak dünyaya gelmiştir. Cesaret ve özveri ile ortaya koymuş olduğu eserleri ve düşünce sistemi onu tarih sahnesinde önemli bir yere koymaktadır. Siyaset bilimi içerisinde yer alan birçok kavramı yeniden tanımlamış ve farklı bir gözle yorumlamıştır. Tanımlamış olduğu kavramlar ile politik olanı bilinenden farklı kurgulamıştır. Soruları açığa çıkaran yönü ve düşünme eylemini tekrar oluşturmaya çalışan çabası ise diğer düşünürler gibi bir reçete yazıp verme biçiminde olmamıştır. Onun yapmış olduğu daha çok düşün sistemiyle ilgilidir; bireyleri düşünmeye itmesidir. Totalitarizmin dehşetine tanık olmuş bir kadın olarak insanların düşünme eyleminden uzakta olduğunun farkına varmıştır. Bu dehşetin arkasından yapmaya çalıştığı bir yerde düşünmeyi unutan ve otonomlaşan kişileri tekrar düşünmeye davet etmekti. Bizler için politik olanı düşünürken eylem etkinliğini bu olgunun merkezine koymaktır. Antik Yunan polis devleti politika kurgusunu modern çağda yeniden ele almıştır. Yaşam içerisinde kişilerin var oluşu üzerine ele almış olduğu 'Vita Activa' kavramı ile politik olanın ne olduğunu sorgulamıştır. Modern dönemde mevcut politik olanın tanımına itiraz eden Arendt, bunu yeni kavramlar ve farklı anlamlar ile yeniden yorumlamıştır. Politikanın derinliklerini anlamamızda bize yardımcı olan diğer kavramlar; kamusal alan, özel alan, yalan, şiddet, totalitarizm, özgürlük ve çoğulluk olmuştur. Bu kavramlar, içinde yaşamış olduğumuz mevcut politika alanını anlamamız için yardımcı olmaktadır.

Politika tanımları yeni bir dünyanın üretilmesi için bir kapı açmaktadır. Buradan, bu kapı gerçek mi yoksa ideal olan mı tartışması çıkmaktadır. Ancak en iyisini bulmak için düşünmeye devam ederek farklı bakış açıları sunmak; hatta eyleme geçmek gerekmektedir. Düşünmeyen bir toplumun akıbeti yok olmaya mahkûmdur. Dolayısıyla politik olanın ne olduğu ile ilgilenenler, yeni kavram arayışları içerisinde olanlar için Arendt okumaları farklı bir bakış açısı sunmaktadır. Hakikatin ve yalanın ayrımını tartışan Arendt, politik olan için hakikat arayışları içerisine girmiştir.

Çalışmanın amacı Arendt'in siyasi düşün temelini oluşturan kavramları onun gözüyle yeniden tanımlamak ve politikanın derinliklerine inerek eylemlerin temelini yeniden inşa etmektir. Modern çağın siyaset anlayışını ele alarak Arendt'in gözü ile politik olanın ne olduğunu incelemek hedeflenmektedir. Bu kıymetli analizlerin günümüzde hala geçerliliğini koruyor olması hem geçmişin hem de günümüzün politikasını anlamak için

önemlidir. Tarihi olaylara bakış açımızı etkileyecek, günümüz siyasi olaylarını yorumlamamızı değiştirecek türden kışkırtıcı soruları açığa çıkarmaya yönelik, alana mütevazı bir katkı sunmak hedeflenmektedir.

Hannah Arendt'in Yaşamı ve Yazmış Olduğu Eserler

Arendt, ele almış olduğu kavramlar ve yapmış olduğu analizler ile siyaset felsefesi alanında önde gelen bir kadın düşünürdür. 20. yüzyılın karabasanlarını ortaya çıkarmak için eserlerini kaleme almıştır. Bu bağlamda politik olanın ne olduğunu düşündürmeyi amaçlamıştır. Totalitarizmin dehşet dolu yıllarına bizzat tanık olmuş Yahudi bir kadın olarak hayatını akademisyen olarak geçirmiş ve yazmaktan, düşünmekten geri durmamıştır. Felsefe alanından politikaya kadar uzanan bir düşünce sistemini ele almış; yapmış olduğu çarpıcı açıklamalar ile tanınmıştır.

1906 yılında Hannover'da Yahudi bir ailenin tek çocuğu olarak dünyaya gelmiştir. Marburg ve Freiberg'de üniversite hayatını geçirmiş; yine burada 22 yaşında doktorasını tamamlamıştır. Martin Heidegger'den felsefe öğrenmiş ve ilişkileri hayatının sonuna kadar devam etmiştir.

Hitler'in iktidara gelmesi ve Yahudilere karşı zulüm yapmasından dolayı 1933 yılında Fransa'ya göç etmiştir. Yahudi göç hareketinin içerisinde yer almış ve 1941 yılında Amerika'ya göç etmiştir. 1951 yılında Amerika Birleşik Devletleri'nin vatandaşı olana kadar hayatına herhangi bir ülkenin vatandaşı olmadan devam etmiştir. 1953 yılında Princeton'da Christian Gauss konferanslarına çağrılarak akademik hayatına devam etmiş ve o yıllar içerisinde göz önüne çıkmaya başlamıştır. New York'ta bulunan New School for Social Research'te felsefe profesörü olmuştur. 1975 yılında ise hayata veda etmiştir.1

Düşünme eyleminin yol haritasını belirleyen eserleri onun hayatının amacını oluşturmaktadır. Nitekim kendisi düşünmek için yazan bir akademisyendir. Düşünmek olgusu onun için önemli bir konu olmuştur. Eserlerinde kesin bir reçete sunmaktan ziyade yorumlamayı tercih etmektedir ve ele aldığı kavramlar ile olguların üzerine düşünmeyi okuyucularına bırakır. Okuyucularını da düşünmeye sevk etmiş bir düşünür olarak; düşünce selinde onu bir taraf olarak ilan etmek oldukça zordur. Kendisi de taraf olmayı reddeder.

Dünyayı daha iyi bir hale getirmek için gelecek olan nesillere bir şeyler bırakmanın öneminin bilincindedir. Felsefe ve politikayı birleştirerek toplumsal olanın ne olduğunu anlamaya çalışmıştır. Genel olarak siyaset felsefesi üzerine yazmış olsa da; o bunu kabul etmez ve felsefe ile harmanlanmış siyasi düşünceleri bizlere vermemektir.2 Kendisi bu durumu cevaplandırdığını öne sürerek uğraştığı şeyin siyasi düşünce ya da siyaset kuramı olduğunu ifade etmiştir.3

Hitler'in iktidara gelmesi ve totalitarizmin dehşetini yayması, onu bu dünya için sorumlu olmaya itmiştir. 20. yüzyılın şiddet coğrafyasından etkilenmesi kendisini düşünmeye ve eyleme geçmeye yöneltmiştir. Eyleme geçmenin ve kamusal alanda var olabilmenin öneminin farkındadır. Nitekim eserlerinde bu öneme değinmiştir. Kavramlar arası yaptığı analizlerde bireylerin var olduğunu kanıtlaması için neler yapması gerektiğini göstermeye çalışmıştır. Bu düşünce sisteminde ve siyaset kuramında onun fikirlerini daha iyi anlamak için eserlerine göz atmak ve ele almış olduğu kavramları incelemek yerinde olacaktır:

Eserleri; Totalitarizmin Kaynakları 1-2-3 (The Origins of Totalitarianism-1951), İnsanlık Durumu (The Human Condition-1958), Rahel Varnhagen: The Lifeof a Jewess (1958), Geçmişle Gelecek Arasında (Between Past and Future-1961), Devrim Üzerine (On Revolution-1963), Kötülüğün Sıradanlığı, Eichmann Kudüs'te (Eichmann in Jerusalem-1963). Men in Dark Times (1968), Crises of the Republic (1972), Şiddet Üzerine (On Violance-1970), Zihnin Yaşamı (The Life of Mind-1979), Kant'ın Siyaset Felsefesi Üzerine Notlar (Lectures on Kant's Political Philosophy-1992).

İnsan Etkinliklerinin Tümü: 'Vita Activa'

Hannah Arendt ile politika derinliklerine girmeden önce İnsanlık Durumu kitabında yer alan Vita Activa kavramını incelememiz gerekmektedir. İnsani etkinlik olarak konumlandırdığı bu kavramı üç temel başlık ile incelemektedir.

[1] E. Ettinger, (1996). *Bir Aşkın Anatomisi, Hannah Arend-Martin Heidegger*, (çev.) Pınar Kür, Oğlak Yayınları, İstanbul.
[2] H. Arendt. (2021). *İnsanlık Durumu*, (çev.) Bahadır Sina Şener, 10.b, İletişim yayınları, İstanbul, sayfa 10.
[3] H. Arendt. (2014). *Formasyon, Sürgün, Totalitarizm Anlama Denemeleri 1939-1954* (çev.) İbrahim yıldız, Dipnot Yayınları, İstanbul, s. 10.

Bunlar emek, iş ve eylemdir. Bu kavramlar neticesinde insanın toplumsal ve politik olan ile ilişkilerini incelemektedir. Bunlar, insanın hayatının temel koşullarını oluşturan kavramlar olduğu için aslidirler. Yaşam sürecine karşılık gelen ilk kavram olan emektir (labor). İnsanın doğması büyümesi ve ölmesi sürecini bu kavram ile nitelemektedir. Bu yaşam sürecine karşılık gelen şey insandır. İnsan varlığının doğa dışı unsuruna karşılık gelen diğer kavram ise iştir (work). İş, bu yaşam sürecinin dışında, şeyler dünyasında yer alır. Böylelikle maddesel bir kimlik oluşturur. Dünyevi olanı, işin yarattığı kalıcı dünyayı nitelemektedir. Bu noktada emek ve işin insanın yapıp ettikleri ile dönüştürülmesi, üretimi oluşturmaktadır. İnsani faaliyetleri içeren eylem (action) kavramını ise insanların birbiri ile yapıp ettikleri olarak tanımlar.4 Eylem kavramı sadece tikel olarak insanı değil; insanları ele almaktadır. Nitekim insanların birbiri ile karşılıklı olarak oluşturdukları durumlar, eylem kavramına karşılık gelmektedir.

Bu kavramların içerisinde siyasi olan kavramı eylem oluşturmaktadır. Politik olanın koşulunu eylem etkinliği oluşturmaktadır. Eylem etkinliği insanlar ile birlikte olunduğunda ortaya çıkar. Bu ilişkiler ağı insanlar içerisinde eylemleri oluşturur. Eylemlerin sonucu belirsizdir ancak ortaya çıktığı vakit kendi koşulunu oluşturmaktadır. İnsanlar arasındaki bu eylem etkinliği farklı birçok insanı aynı dünya şartları içerisinde bir araya getirir. Neticesinde ise farklı bir göz ile etrafı tanımamıza ve yorumlamamıza imkân vermektedir. Dolayısıyla eylem etkinliğini çoğulluk olma durumu ile de görmekteyiz. Nitekim çoğulluk kavramı Arendt'in politikası içerisinde önemli bir yerde durmaktadır. Eylem etkinliği, neticesi belli olmayan bir etkinliktir. Bundan dolayı sonucu kişileri mutsuz edebilir ya da bunun tam tersi de mümkündür. Bu ikilem haline çare olacak olan yine eylemin ta kendisidir. Mevcut bir eylemin sonucunu başka bir eylem ile değiştirmek mümkündür. Politikanın gücünü ise işte buradaki bu hal oluşturur.

Kamusal Alan ve Özel Alan

Arendt'in felsefi düşün hayatını Antik Yunan'dan Modern Çağa kadar olan olaylar ve yazarlar etkilemiştir. Kendi döneminde yaşamış olduğu olayların da düşünce sistemini ve kullandığı kavramları etkilediği görülmektedir. Üzerine konuştuğumuz birçok edinim, politikanın kendisini oluşturmaktadır. Kamusal ve özel alanın tanımını yaparken Antik Yunan polisini bir temel olarak kullanmaktadır. Bu kelimelerin tanımına yüklenen anlamlar Antik Çağ'dan beri farklılık göstermektedir. Antik Yunan polisinde toplumun önemli bir kısmının kamusal alandan dışlanmışlığının farkında olmasına rağmen; modern çağda bu tanımları yaparken o dönemler üzerine bir çatı oluşturmuştur. Bu durumun politik ve toplumsal alan kurgusunda günümüz açısından anlaşılacağının bilincindedir. Politika öncesi alanı özel alan olarak konumlandırmaktadır. Özel alan hane içerisinin tezahürünü oluşturmaktadır. Burada yaşanan durumlar zorunluluktan oluşmaktadır. Ayırt edici kısım ise kişilerin istek ve ihtiyaç doğrultusunda burada yaşıyor olmalarıydı.5 Özel alan, kamusal alanın zıttını oluşturmakta ve bu alandan ayrı tutulmaktadır. Özel alan içerisinde sadece belli başlı etkinlikler yerine getirilebilmektedir. Hiyerarşik olarak ise bu iki alan birbirinden aşağı ya da yukarı değildir. Ancak görünürlük açısından, özgürlüğün ve eylemin alanı olan kamusal alanı seçmek gerekmektedir. Burası, politika öncesi bir alan olarak karşımıza çıkmaktadır. Zihinsel yargıların oluştuğu, eğitimin yer aldığı yer burasıdır ve aynı zamanda burası düşünme eylemini oluşturan gerekli sessizlik ve sakinlik alanıdır.

Bu iki alanın ayrımı Arendt'in analizi için oldukça önemlidir. Özel alanın tahribatı ve kamusal alana karışması ile birlikte totalitarizme giden adımlar hızlanmaktadır. Totalitarizm dehşeti, kamusal alan içerisinde eylemlerde bulunulamayan, politikanın yok edildiği ve dahası özel hanenin yok edildiği bir yönetim yapısı olarak karşımıza çıkmaktadır. 6 Burada toplumun yapı taşını oluşturan aile bireyleri birbirlerine yabancılaşır ve yozlaşır. Böylesi bir dünyada ise politika alanı şiddetin alanına dönüşmüş olacaktır. Sonsuz bir tüketim içerisinde müşterek dünyanın sonu hazırlanacaktır. Toplumun yararına olan tercih, bu iki alanın ayrımını gerektirir. Müşterek dünyanın sonunu bu iki alanın birbirine karışması getirmektedir.

Özgürlüğün sahası Arendt için kamusal alandır. Özel alanda zorunluluğun doğurmuş olduğu durumlar, kamusal alanda özgür olarak genişleyebilmektedir. Özel alanın içerisi mahremiyetin yeri olarak görülmektedir. Bu alanın zıttını oluşturan kamusal alan ise görünür olabilme yeridir ve var olduğumuzu gösteren insani etkinlik alanını oluşturmaktadır.

[4] H. Arendt. (2021). *İnsanlık Durumu*, s. 35-37.
[5] İnsanlık Durumu, (age), s.67.
[6] F. Berktay (2012). *Dünyayı Bugünde Sevmek*. İstanbul: Metis Yayınları, s. 223.

Özgürlük

İnsanlığın temel problemlerinden birisi olan özgürlüğü Arendt, siyasi bir tema olarak ele almıştır. Onu sadece düşünce alanında gördüğü bir olgu olmaktan çıkarmış; özgürlüğün sahası olan kamusal alan ile eşitlemiştir. Özgürlüğün siyasi alanda yer alması gerektiğini düşünmektedir. Dolayısıyla içsel özgürlük tanımının karşıtıdır. Bireylerin dış dünyadan kaçarak kendi iç dünyalarına yönelmeleri, iç alan içinde özgürce düşünebilmeleri Arendt için özgürlük alanı değildir. Nitekim bireylerin özgürlüğü ancak kamusal alanda yapıp ettikleri ile anlaşılmaktadır. Çünkü içsel alandaki özgürlük kamusal alandan uzak olduğu için, bu özgürlüğü yok sayar.7 Arendt için bireyler eğer kamusal alanda özgürlük adına bir şey ile tanışmamış olsaydı içsel özgürlük denen durumu da anlamayacaklardı. Çünkü insanlar kendileri ile ilişki içerisindeyken değil; başkaları ile bir arada olduklarında durumların farkına varmaktadır.8

Arendt için siyasal alanda eylemlerimizi oluşturmamız özgürlüğümüz ile mümkündür. Özgürlük kelimesinden bahsettiğimizde aklımıza genel olarak politika gelmektedir. Eylem ve siyaset etkinlikleri özgürlük olgusunu oluşturmaktadır; belki de özgürlük bu iki olgunun var olmasını sağlamaktadır.

Arendt'in Antik Yunan filozoflarının özgürlük anlayışı ile aynı bakış açısında olmadığı görülmektedir. Antik Yunan filozofları özgürlüğü insanın başkaları ile eylemde bulunması olarak değil; kendi içsel etkileşimleri ile oluşan bir olgu olarak değerlendirmektedirler. Arendt ise özgürlükle ilgili bu anlatıyı, saf bir acı yokluğunun yaşandığı ve kamusal alanın işitselliğinden uzak dünyasızlık eylemi olarak nitelemektedir. Eğer içsel olarak özgürlüğü tatmışsak bunun sebebi dünyevi, elle tutulur bir gerçeklik olarak özgürlük hakkında bilgimiz olmasından kaynaklanmaktadır.9

Şiddet

Şiddetin yüzyılı olan 20. yüzyılda yaşamış bir düşünür olarak şiddet kavramı Arendt'in politik anlayışı için önemli bir yerde durmaktadır. *Şiddet Üzerine* eserinde yaşamış olduğu dönemdeki öğrenci hareketleri ve siyah hareketin şiddet kavramı konusunda ne denli çeliştiğini incelemiş; şiddet hareketlerini eleştirmiştir. Savaş ve devrimle ilerleme düşüncesini savunan modernite, bu kapsamda şiddeti haklı kılmaktadır. Devrim dediğimiz kavram şiddeti meşrulaştırarak eski düzenden kopuşu simgelemektedir. Şiddet kavramı iktidarın en çok görünen dışavurumu ve kişilerin kişilere egemen olma isteğidir. Şiddet, iktidarın bir aracı olarak görünse de; Arendt için şiddeti anlayabilmek için diğer kavramları da göz önünde bulundurmak gerekmektedir. İktidar, zor, kuvvet, otorite ve şiddet gibi kavramları ayrı ayrı incelemiş ve bunların birbirinden ayrı tanımlarını yapmıştır. Arendt'e göre bu kavramlar birbirinden ayrı fenomenlerdir; eğer böyle olmasaydı varlıklarının da bir anlamı, nedeni olmayacaktı.10

İktidar kavramı insanın eyleme yeteneğine değil; insanların bir arada eyleme durumuna tekabül etmektedir. İktidar, bireyin elinde değil bir gruba aittir. Bu grup bir arada olduğu müddetçe iktidar var olabilmektedir. Kuvvet kavramı bireysel bir olgudur. Kişinin içinde onun karakterine ait bir özelliği nitelemektedir. Güç kavramı toplumsal hareketlerin serbest bıraktığı enerjiyi nitelemektedir. Eğer şiddet bir baskı aracı olarak kullanılıp kabul görüyorsa, genellikle şiddet ile güç aynı anlamda kullanılır. Otorite kavramı ise baskı ya da ikna olmadan sorgusuz bir şekilde itaat edilmesini kabul etme anlamına gelmektedir. Şiddet diğerlerinden araçsal olarak ayrılmaktadır. Kuvvete yakın olarak görülse de doğal olan kuvveti arttırmak için kullanılır.11 Bu kavramlar neticesinde göreceğimiz hiçbir şey iktidar ve şiddetin bir arada kullanılmasından daha yaygın değildir. Bunların aynı kavramlar olduğunu ve aynı anlamı taşıdığını söylemek doğru değildir ancak iktidarı şiddet ile eşitlemek oldukça çekicidir.

Yalan

Hannah Arendt, siyaset ile yalan arasında derin bir felsefi ikilem görmekte ve bu konu hakkında çarpıcı düşünceleri savunmaktadır. Politik eylemin doğasını yalan söylemek olarak ele alır. Böylelikle siyasi tarihin doğasını yeniden düşünebilmemiz açısından bizlere bir kapı aralar. Modern çağda yalan söylemenin politika içerisindeki istilacı

[7] H. Arendt (2022). *Geçmişle Gelecek Arasında.* (Çev.) Bahadır Sina Şener, Onur Eylül Kara, 8.b, İletişim Yayınları, İstanbul, s.198.
[8] Yılmaz, Z. (2007) Hannah Arendt'in Özgürlük Anlayışı, Atatürk Üniversitesi Sosyal Bilimler Dergisi, 9(1), s.228.
[9] H. Arendt, Geçmişle Gelecek Arasında, (age), s.209.
[10] H. Arendt (2021), Şiddet Üzerine, (çev.) Bülent Peker, İletişim Yayınları, İstanbul, s.53.
[11] (age), s.55-56.

rolüne duyduğu ilgiyi ele alır. Arendt'e göre siyasetin ortaya çıktığı kamusal alanda aynı zamanda siyasetin içerisinde yer alan yalan kavramı da ortaya çıkmıştır. Yani tarihin oluşturulduğu yer ile o tarihin inkârının yapıldığı yer aynıdır. Yalan söyleme eylemini şiddet araçlarını elinde bulunduranların yapması kadar kötü bir şey yoktur. Bu durum kötü sonuçlar doğurabilir. Fakat yalanın sonsuza kadar sürmesi bu sonuçların içerisinde yer almaz. Nitekim yalan bir müddet sonra kendine zarar vermeye başlayan sonuçları içerir.12 Güvenilebilir gerçek, kamusal alandan tamamen azade olduğunda sürekli değişen kişilerin olaylarının temel dengeleyici şartı da onunla birlikte yok olur.

Hannah Arendt ile Politikanın Derinlikleri

Arendt'in politika anlayışı 20. yüzyılın dehşet verici anları ve politik yapısı ile yüzleşme imkânını mümkün kılmaktadır. Totalitarizmin dehşetine tanık olmuş bir akademisyen olarak eserlerinde ele almış olduğu konular bu olayların etkilerini taşımaktadır. Bütün bu olup biten, onun düşün dünyasını etkilemiştir. İnsanları düşünme eyleminden uzak tutan ve birer otonoma çeviren totalitarizmi deneyimlemiştir. Yapmış olduğu çalışmalarda ise politik olan kurgusunda bizlere hazır reçete vermekten kaçınır. Onun yaptığı, bu totalitarizm dehşeti ile insanı düşünmeden alıkoyan durumları incelemek ve yeniden düşünmeye sevk etmeye çalışmaktır. Geleneksel olan politika anlayışından uzaklaşarak kendi kuramlarını yazmıştır. Arendt'in anlayışına göre politika alanı birbirleri ile etkileşim içerisinde olan ve eyleyen insanların oluşturduğu çoğulluk ve özgürlük uzamını oluşturan yerdir; burası aynı zamanda kamusal alandır.

Çoğulluk kavramı onun literatüründe önemli bir yerde durmaktadır. Nitekim bizzat deneyimlemiş olduğu totalitarizm dehşeti çoğulluğu ortadan kaldırmayı hedeflemektedir. Farklı fikirlerin ve eylemlerin bir arada olduğu kamusal alan, totalitarizm için tehdit unsuru olduğundan, totalitarizm bu alanı yok etmek istemektedir. Çoğulluk birbirinden farklı bireylerin bir arada olduğu ve birlikte eyleyebildikleri gücü oluşturmaktadır. Politika ise bu benzersiz insanların bir arada oluşuyla ilgilidir. Farklılıkların egemen olduğu yer, kamusal alan içerisinde yer almaktadır. İşte bu nedenden dolayı totalitarizm, burayı yok etmek istemektedir. Totalitarizmin politikayı yok etme çabası, kamusal alanda insanların birlikte hareket etmesi ve oluşmuş düzende kendilerini denetleyecek bir kamudan korkmaları sebebiyledir.13 Politikanın yok olması durumunu sadece 20. yüzyılın karabasanları içerisinde görmemekteyiz. Bugün için bile politik olanın çarpıklaştırılması ve anlamsız hale getirilme çabası kamusal alanın, dolayısıyla insanın yok olması tehlikesini artırmaktadır. Bu noktada Arendt'in yapmış olduğu, insanların salt hayvanlar olmasından ziyade; onların toplum içinde benzersizliklerini kontrol edebildikleri ve birlikte eyleyebildikleri sürece güçlü olabileceklerini hatırlatmaya çalışmaktır. Ayrıca insanın bu gücünü tehdit eden durumdan, düşünme eylemi ile nasıl kurtulabileceğimiz fırsatını yaratmaya çalışmasından dolayı oldukça kıymetli bir çaba ortaya koymaktadır.

Dünyaya politik bir çerçeveden bakmak ve politik bir biçimde eyleme geçmek, durumlar karşısında sorumluluk hissedip aksiyon almak anlamına gelmektedir. Bu durum sadece politikacılara ya da filozoflara ait bir şey değil; tüm yurttaşların görevidir. Bu noktada Arendt'in politika anlayışı, politik olana cevabı totaliter rejimlerin içerisinde düşünmeyi bırakmaya ve otonomlaşmış insanları bu rejimlerin yok oluşundan sonra düşünmeye çağırmasına bağlıdır. Yazıları, düşünmeye geçmeye yönelik çağrılar içermektedir.14 Hazır reçeteler oluşturup "olması gereken budur" demekten ziyade politik olanı anlamamızı ve bunun için düşünmemizi ister.

Kamusal ve siyasal öznelerin içinde bulunduğu ortak dünya, eylemlerimiz ile göstermiş olduğumuz farklılıklarımızın ürünüdür. Özgürlük ve eylem arasında ciddi bir bağ vardır: İnsanı hayvanlardan ayıran üstün özellik olarak özgürlüğün, eylemi saklandığı yerden çıkarmaya yarayan ve dünyasal uzamı ortaya çıkaran etkisi önemlidir. Özgürlük ile eylem arasındaki bağ, bu ilişkiden kaynaklanmaktadır.15 Özgürlüğü anlayabilmemiz kamusal alanda eyleme geçmemiz ile mümkündür. Ancak kamusal alan geri plana atıldıkça totaliter rejimler ortaya çıkmaktadır. Bu noktada ise gerçekler ve yalanlar birbirine karışmıştır.16 İnsanlar böyle bir toplumda özgür olduğu düşüncesinde olabilir ancak bu bir yanılgıdır. Düşünme ve söz söyleme algısından uzaktadırlar. Totalitarizm

[12] H. Arendt (2021), Siyasette Yalan, (çev.) İmge Oranlı, Berfu Şeker, Sel Yayınları, İstanbul, s.16.
[13] F. Berktay, Dünyayı Bugünde Sevmek, (age), s.34.
[14] (age), s.36.
[15] H. Arendt, Geçmişle Gelecek Arasında, (age) s.215.
[16] Gülmelek Doğanay, (2018), Siyaset Alanı Arındırma: Hannah Arendt'i Yeniden Düşünmek, Dokuz Eylül Üniversitesi Sosyal Bilimler Dergisi, cilt 20, sayı 2, s.219

burada ortak dünyadaki çoğulluğu yok ederek kendince mükemmel gördüğü toplumu yaratma çabası içerisine girer. Siyaseti ve iktidarı bir araç olarak kullanmaktadır. Böylesi bir toplumdan kurtulmanın yolunu Arendt, insanların farklılıklarının benzersizliğine ve birlikte eyleme durumlarına dayandırmaktadır. Totaliter bir rejimin insanları tek tip bir modele benzetmeye çalışmasının yolu, insani farklılıklarımızı korumamız ve birlikte bu farklılıklardan güç alarak eyleme kabiliyetimizden geçmektedir.

Kamusal alanı bir tehdit olarak gören totaliter rejimlere karşı yapılan kamusal ve özel alan ayrımı Arendt'in politika anlayışında önemli bir yere sahiptir. Kamusal ile özel alanın sınırları belli; esasen bir arada ama aynı zamanda birbirinden ayrı olmalıdır. Kamusal alanın içerisinde yer alan politik olan vurgusu, Arendt için varoluşsal bir durumun söz konusu olduğu insanları birbirleri ile hem ayıran hem de birleştiren bir uzam olarak görülmektedir. İnsanlar bu alanda söz söyleyerek ve eylemde bulunarak ve çoğulluğu oluşturarak kendilerini güvence altına alacak bir form oluşturabilirler. İnsanlar ile birlikte eylemler ilişkiler ağı içerisinde bulunmaktadır. Yapılan eylemler her zaman sadece kendimizi ilgilendirmez. Yine de yapmayı seçtiğimiz eylem bizi diğerlerinden farklı bir yere konumlandırır. İnsanın kim olduğunu anlamanın özü, onun başkaları ile ne yaptığından geçer. Etkin ve demokratik birer yurttaş olmak için farklı perspektiflerimizi ilişkiler ağı içerisinde bir araya getirmemiz gerekmektedir. İşte düşünen aktörlere biçilen görev, etkin birer yurttaş olarak kamusal alana çıkarak eylemde bulunmaktan geçmektedir. Bunun için belli bir statü sahibi olmak gerekmemektedir. Arendt için ortak dünyaya sorumluluk hisseden herkes, bu görevin bilincinde olmalı ve bu görevi üstlenmelidir. Şunu da ifade etmek gerekir ki; bu görevleri kendi kendimize değil, hep birlikte bir çoğulluk durumu yaratarak yapmamız koşulu ile gerçekleştirebiliriz. Mahremiyet alanından çıkıp görünür bir alan olan kamusal alana geçerek ve kendimizin benzersizliklerini ötekiler ile bir arada eyleyerek anlamlandırabiliriz.

SONUÇ

Farklı bir dünya tezahürü ya da düşünme eyleminin tekrar ortaya çıkışını sağlamak, yaşadığımız dünyanın sonsuz olasılıkları içerisinde mümkündür. Olağan ya da olacak olan bir durumu değiştirip dönüştürmek insani bir potansiyeldir. Bugün düşündüğümüz hayali evren yarının gerçeği olabilir. Arendt yapmış olduğu çalışmalarında insanları otonomluktan uzak yeniden düşünmeye çağıran bir tutum sergilemiştir. Ele almış olduğu kavramlar o günün şartları içerisinde yazılmış olsa da günümüz politik alanına da ışık tutmaktadır. İnsanların birlikte, bir arada ilişkiler ağı içerisinde eyleme geçmesi ve çoğulluk yaratması müşkül bir yaşam için kendilerini garantiye almak demektir. Bunun için yurttaş olarak görev ve sorumluluklarımızın farkına varmalı ve insani olarak farklılıklarımıza sahip çıkmalıyız. Düşünen ve eyleme geçen bir toplumu bir diğerinden ayıran önemli özelliği bireylerin benzersiz farklılığından oluşmaktadır. Bu farklılıklar bizi birbirimizden ayırmak yerine bir arada tutmalı ve yarının dünyası için sorumluluk hissettirip harekete geçirmelidir. Politik olanın ne olduğu ya da nasıl olması gerektiği üzerine düşünmeye başladığımız zaman hakikati yalandan, kamusalı özelden, şiddeti iktidardan ve insan olmayı hayvan olmaktan ayırmaya başlayacağımız bir gerçektir. Dünyayı değiştirenler özgürlük yetilerini kullanarak eyleme geçen ve hakikati yaratabilme potansiyeline sahip insanlar olacaktır. Bunun için bir statü sahibi olmamıza gerek yoktur. Eylemlerimizin sahnesini kamusal alan oluşturmaktadır. İnsan olarak var olduğumuzun kanıtını kamusal alanda eylediklerimiz ile gösterebilmekteyiz. Eyleyebildiğimiz sürece görüneni ve beklenmedik olanı değiştirenler anlayacaktır ki; bu bir mucize ya da batıl inanç değildir. İnsani eylemin kamusal alanda yarattığı çoğulluğun gücüdür. Arendt'in çalışmaları, daha insani bir dünyanın mümkün olduğunu anlamaya ve bu göreve katkıda bulunmaya yardım eder.

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KAMU GELİRLERİ VE KAMU HARCAMALARI HİPOTEZİ GRANGER NEDENSELLİK TESTİ: TÜRKİYE ÖRNEĞİ

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Bu çalışma, Bilecik Şeyh Edebali Üniversitesi Lisansüstü Eğitim Enstitüsü Maliye Anabilim dalı Tezli Yüksek Lİsans Programında Hazırlanmakta olan ''Kamu Gelirleri ve Kamu Harcamaları Hipotezi Granger Nedensellik Testi: Türkiye Örneği 2006-2024'' başlıklı tezden türetilmiştir.

Özet

Geçmişten günümüze devletlerin en önemli ortak sorunlarından biri bütçe açıklarıdır. Devletler kamu harcamalarına finansman sağlanması amacıyla çeşitli mali araçlara başvurmaktadır. Bu araçlar yeni vergiler koyma, mevcut vergileri artırma ve borçlanma şeklindedir. Kamu harcamaları devletin sunduğu mal ve hizmetlere ait giderler olarak tanımlanırken kamu gelirleri ise devletin mükelleflerden topladığı zorunlu veya isteğe bağlı mali yükümlülükler olarak tanımlanabilmektedir. Gelir ve giderlerin yeterliliğine dair analiz çalışmaları bütçe açıklarının kontrolü, ekonomik büyümenin sağlanması ve mali sürdürülebilirliğin korunması açısından önem arz etmektedir.

Çalışmada 2006:1-2024:9 yıllarına ait bütçe gelir ve gider kalemlerine ait ekonomik veriler kullanılmıştır. Verilerin Analizinde Granger nedensellik Analizi yöntemine başvurulmuştur. Analizin uygulamasının kolaylığı, yaygınlığı ve güvenirliliği tercihimizi etkilemiştir. Kamu Gelirleri- Kamu Harcamaları ile ilgili alternatif teoriler yani harcama-vergi, vergi-harcama, mali senkronizasyon ve kurumsal farklılık teorileri çerçevesinde elde edilen veriler yorumlanmıştır. Daha önce yapılan araştırmalarda, ülke ekonomisindeki değişimlerden kaynaklanan veri setleri üzerinde gerçekleştirilen testler analiz edilmiştir. Analiz sonuçları, Türkiye için literatürde yer alan vergi-harcama, harcama-vergi, mali senkronizasyon ve kurumsal ayrılık hipotezlerinin geçerli olduğunu göstermektedir.

Araştırmalar sonucunda elde edilen bulgular, bütçe açıklarının giderilmesi ve kamu maliyesinin sürdürülebilirliği açısından literatüre katkı sağlamaktadır. Araştırma çalışmamız sonucunda harca-vergilendir hipotezini destekler sonuçlar elde edilmiştir.

Anahtar kelimeler: kamu gelirleri, kamu harcamaları, bütçe açıkları, mali disiplin

GRANGER CAUSALITY TEST FOR PUBLIC REVENUES AND PUBLIC EXPENDITURES HYPOTHESIS: TÜRKIYE EXAMPLE

Abstract

From past to present, one of the most significant common challenges faced by states has been budget deficits. Governments employ various fiscal instruments to finance public expenditures, including introducing new taxes, increasing existing taxes, and borrowing. While public expenditures are defined as the costs associated with goods and services provided by the state, public revenues refer to mandatory or voluntary financial obligations collected by the government from taxpayers. Analyzing the adequacy of revenues and expenditures is crucial for controlling budget deficits, achieving economic growth, and maintaining fiscal sustainability.

In this study, economic data pertaining to budget revenues and expenditures for the period 2006:1-2024:9 was utilized. The Granger causality analysis method was employed due to its simplicity, widespread use, and reliability. The findings were interpreted within the framework of alternative theories concerning public revenues and expenditures, namely the expenditure-tax, tax-expenditure, fiscal synchronization, and institutional differences theories. Previous research has indicated that all four hypotheses have been valid for different periods in Turkey. The findings obtained from this research contribute to the literature by providing insights into

addressing budget deficits and ensuring fiscal sustainability. The results of our study support the spend-tax hypothesis.
Keywords: public revenues, public expenditures, budget deficits, fiscal discipline

GIRIŞ

Kamu maliyesinin sürdürülebilirliği ve bütçe dengesinin sağlanması için kamu harcamaları ve kamu gelirleri arasındaki ilişki önem arz etmektedir. Kamu gelirleri ile kamu harcamaları arasındaki ilişkinin analiz edilmesi mali disiplinin korunmasına, bütçe açıklarının kontrol altında tutulmasına ve ekonomik istikrarın sağlanmasına yönelik politikaların belirlenmesine olanak sağlamaktadır.

Ülkelerin gelişmişlik düzeylerine bağlı olarak kamu gelirleri ve kamu harcamaları farklılıklar göstermektedir. Gelişmiş ülkelerde, özel sektör harcamalarının yüksek olması genellikle devletin ekonomi üzerindeki müdahalesini minimum düzeyde tutmasına olanak tanımaktadır. Bu durum, kamu harcamalarının daha çok sosyal refah, altyapı, eğitim ve sağlık gibi hizmetlere odaklanmasına, ekonomik faaliyetlerde ise piyasa dinamiklerinin ön planda olmasına yol açmaktadır. Gelişmekte olan ülkelerde özel sektör faaliyetlerinin yetersiz olması, devletin ekonomiye daha fazla müdahalesini gerektiren Keynesçi yaklaşımı ön plana çıkarmaktadır (Aslıkara, 2019:69).

Kamu gelirleri, devletin toplumun ihtiyaçlarını karşılamak ve kamu hizmetlerini finanse etmek amacıyla topladığı kaynaklardır. Kamu harcamalarının finansmanında en büyük pay vergi gelirlerine aittir ve bu gelirler öncelikli kaynak olarak kullanılmaktadır. Ancak, vergi gelirlerinin yetersiz kaldığı durumlarda devlet, borçlanma, harçlar, para cezaları, varlık gelirleri ve özelleştirme gelirleri gibi alternatif finansman kaynaklarına başvurarak kamu giderlerini karşılamaktadır (Karaca, 2021; Noyan ve Samancı, 2023).

Kamu harcamaları, devletin farklı birimleri tarafından çeşitli amaçlarla gerçekleştirilen geniş kapsamlı harcamalardır ve her ülkenin ihtiyaçları ve mevcut şartlarına göre farklılık gösterebilir. Bu harcamaların türlerine göre sınıflandırılması, harcama programlarının daha etkili bir şekilde hazırlanmasına ve uygulanmasına olanak tanıyarak, harcamaların iktisadi büyümeye olan katkısını ve meydana getirdiği sonuçları değerlendirmede önemli bir rol oynar (Celepcioğlu, 2011: 8).

Kamu gelirleri ile harcamaları arasındaki nedensellik ilişkisi maliye literatüründe sıkça araştırma konusu olmaktadır. Gelişmiş ve gelişmekte olan ülkelerde meydana gelen bütçe açıkları bu ilişkinin araştırılmasını kaçınılmaz hale getirmiştir. Kamu gelir ve harcamaları arasındaki ilişkinin anlaşılması, bütçe açıklarının azaltılmasına ve sürdürülebilir maliye politikalarının oluşturulmasına olanak sağlamaktadır. Bu ilişkinin araştırılması üzerine literatürde sıkça başvurulan dört ana hipotez bulunmaktadır (Barış, 2012:12).

Bunlardan ilki Friedman, Buchanan ve Wagner'in savunduğu vergi- harcama hipotezidir. Friedman'a göre, kamu gelirlerindeki artış kamu harcamalarının da artmasına yol açmaktadır (Akbulut ve Yereli, 2016). Vergilerin artırılması yoluyla kamu harcamalarına finansman sağlanması kamu harcamalarının artması yönünde baskı oluşturacağı için bütçe açıklarını artırıcı etki oluşturmaktadır (Arslan, 2019). Vergi-harcama hipotezine dair başka bir görüş ise Buchanan ve Wagner'e göre kamu gelirlerinde meydana gelen artış kamu harcamalarını azaltmaktadır. Vergi oranlarında gerçekleştirilen indirim mal ve hizmet maliyetlerinin düştüğü algısı oluşturmaktadır. Bu durumda kamu hizmet talebi artırılmasına teşvik oluşturmaktadır (Mutascu, 2016:491). Vergi-harcama hipotezi, kamu gelirlerinin kamu harcamalarını tek yönlü bir nedensellikle etkilediğini öne sürmektedir (Aksu, Hüsnü ve Bozma, 2017;314).

İkinci hipotez ise Peacock ve Wiseman'ın (1979) maliye literatürüne kazandırdığı sıçrama hipotezidir. Söz konusu harcama- vergi hipotezine göre afet ve kriz gibi olağanüstü dönemlerde kamu harcamaları artmaktadır. Peacock ve Wiseman'a (1961) göre, olağanüstü dönemlerde gerçekleşen kamu harcamaları artışı kamu gelirlerinin büyük kısmını oluşturan vergilerinde yükselmesine olanak sağlamaktadır (Dökmen, 2012; Günaydın, 2004). Olağanüstü dönem son bulduktan sonra kamu harcamaları azalmaktadır ancak vergi oranlarında azalma görülmemektedir. Bu durum harcamalardan gelirlere doğru tek yönlü nedensellik ilişkisini ortaya koymaktadır (Aksu, Künü ve Bozma, 2017;314).

Üçüncü hipotez ise Musgrave (1966) ve Meltzer ve Richard (1981) tarafından temsil edilen ve mali uyum veya mali senkronizasyon hipotezi adını almaktadır. Bu hipoteze göre kamu gelirleri ve kamu harcamaları eş zamanlı hareket etmektedir ve kamu gelirleri ve kamu harcamaları arasında karşılıklı nedensellik ilişkisi bulunmaktadır

(Aksu, Bozma ve Künü, 2017:314).

Dördüncü hipotezimiz Baghestani ve McNown tarafından savunulan kurumsal farklılık hipotezidir. Bu hipotez kamu gelirleri ve kamu harcamaları kararlarının farklı kurumlar tarafından alındığını ifade etmektedir (Dökmen, 2012). Kurumsal farklılık hipotezine göre kamu gelirleri ve kamu harcamaları arasında nedensellik ilişkisi bulunmamaktadır.

LİTERATÜR

Kamu gelirleri ile kamu harcamaları arasındaki ilişki artan bütçe açıkları, uygulanan maliye politikalarının sürdürülebilirliği ve şeffaflığı açısından önem arzetmektedir. Bu ilişkinin araştırılmasında genellikle nedensellik, eşbütünleşme ve panel veri analizleri tercih edilmektedir. Çalışmalarda kullanılan yöntemlerin ve veri setlerinin değişiklik göstermesi çalışma sonuçlarında farklılıkların oluşmasına yol açmaktadır. Bu çalışma, kamu gelirleri ile kamu harcamaları arasındaki nedensellik ilişkisini ele almaktadır. Literatür taraması kapsamında, benzer sonuçlara ulaşan araştırmalara yer verilerek, çalışmanın bulgularının doğruluğunun teyit edilmesi ve ilgili literatürle karşılaştırmalı bir analiz sunulması hedeflenmiştir.

Fues, Hou ve Millea (2003), 1955-2001 ve 1967-2001 dönemleri Tayvan harcama ve gelir verilerine GSYİH verileri kontrol değişken olarak eklediği çalışmada cari harcamalar ve gelirleri verilerini measure linear feedback yöntemi ile analiz etmişlerdir. Analiz sonuçları 1955-2001 yılları verileri için gelirlerden harcamalara tek yönlü nedensellik ilişkisi olduğu 1967-2001 yılları verileri için ise harcamalardan gelirlere doğru tek yönlü nedensellik ilişkisi olduğunu göstermektedir. Çalışma hem vergi-harcama hemde harcama- vergi hipotezinin geçerli olduğunu savunmaktadır.

Narayan ve Narayan (2006) 12 ülkenin 1950-2000 dönemi verilerine ilişkin kamu harcamaları, kamu gelirleri ve GSYİH verileri Toda-Yamamoto nedensellik testi ile analiz etmiştir. Analiz sonuçlarına göre; Guatemala, Guayana ve Uruguay için GSYİH ile kamu gelirleri arasında çift yönlü, El Salvador, Haiti, Peru ve Uruguay için GSYİH'den kamu harcamalarına doğru tek yönlü, Ekvador ve Haiti için GSYİH'den kamu gelirlerine doğru tek yönlü nedensellik ilişkisi bulunmaktadır. Ayrıca, El salvador, Haiti, Morityus, Şili ve Venezuela için kamu gelirlerinden kamu harcamalarına doğru, Haiti için kamu harcamalarından kamu gelirlerine doğru tek yönlü nedensellik ilişkisi bulunmaktadır. Ancak, Ekvador, Guatemala, Güney Afrika, Peru ve Uruguay ülkeleri kamu gelirleri ve kamu harcamaları verileri arasında nedensellik ilişkisi bulunmamaktadır.

Günaydın (2004), 1950-1999 dönemi Türkiye için kamu harcamaları ve vergi gelirleri verileri Granger Nedensellik testi, Hsiao ve ECM testleri ile analiz edilmiştir. Analiz sonuçlarına göre kamu harcamalarından kamu gelirlerine doğru tek yönlü nedensellik ilişkisi bulunmaktadır.

Maynard ve Guy (2009), 1985:1-2008:4 dönemine ait Barbados GSYIH, faiz oranı, toplam kamu harcamaları ve vergi gelirleri verilerini ikili ve çok değişkenli koentegrasyon ve granger nedensellik testleri ve çok değişkenli hata düzeltme modeli (MECM) ile analiz edilmiştir. Ancak ikili değişkenli koentegrasyon testi değişken eksikliğinden yeterli görülmemiş ve çok değişkenli koentegrasyon testi kabul görmüştür. Analiz sonuçları hem kısa hem uzun dönemde harcamalardan vergi gelirlerine doğru tek yönlü nedensellik ilişkisini göstermektedir.

Akçağlayan ve Kayıran (2010), Türkiye için 1987:1-2005:4 dönemi verilerine ilişkin Toda-Yamamoto nedensellik testi ile analiz edilmiştir. Analiz sonuçlarına göre değişkenler arasında nedensellik ilişkisi yoktur ancak uzun dönemde harcama ve gelirler arasında eşbütünleşme ilişkisi bulunmaktadır.

Barış (2012), 1980-2005 dönemine ait Türkiye için kamu harcamaları ve gelir alt kalemleri verileri uzun dönemde Engle-Granger, ikili ko-entegrasyon testi, kısa dönemde Granger nedensellik testi ile analiz edilmiştir. Analiz sonuçları; uzun dönemde vergi gelirleri ile cari harcamalar ve toplam harcamalar ile toplam gelir alt kalemleri ile arasında ilişki bulunmamaktadır ancak harcama ve diğer gelir alt kalemleri ile ilişki bulunmaktadır. Kısa dönemde cari ve yatırım harcamalarından vergi gelirlerine, cari harcamalardan vergi dışı gelirlere doğru tek yönlü nedensellik ilişkisi bulunmaktadır ancak kısa dönemde toplam harcamalar ile toplam gelir kalemleri arasında nedensellik ilişkisi bulunmamaktadır. Çalışma harcama- vergi ve vergi-harcama hipotezlerini destekler veriler sunmaktadır.

VERİ SETİ VE EKONOMİK YÖNTEM

Çalışmada, kamu harcamaları ve gelirleri arasındaki ilişkiyi değerlendirmek amacıyla Granger nedensellik analizi yapılmıştır. Analizde Türkiye 2006-2024 dönemleri vergi gelirleri ve sermaye-personel-faiz ve faiz hariç bütçe giderleri verilerinin nominal değişkenler enflasyondan arındırılarak elde edilen reel değişkenler kullanılmıştır. Reel değişkenler Logaritmik değişkenlere dönüştürülerek ADF birim kök testi ile durağanlıkları sınanmıştır. Değişkenler LOGVERG, LOGPDG, LOGSERG, LOGFAG ve LOGFAHG olarak kısaltılmıştır. Çalışmada yer alan değişkenler kısaltılmış tanımlamalar ve kaynakları ile birlikte Tablo 1. de yer almaktadır.

Tablo 1. Uygulamada Kullanılan Değişkenler ve Kaynakları

Bağımlı Değişken	Vergi Gelirleri	LOGVERG	TCMB-EVDS
Bağımsız Değişken	Personel Giderleri	LOGPDG	TCMB-EVDS
Bağımsız Değişken	Sermaye Giderleri	LOGSERG	TCMB-EVDS
Bağımsız Değişken	Faiz Giderleri	LOGFAG	TCMB-EVDS
Bağımsız Değişken	Faiz Hariç Bütçe Giderleri	LOGFAHG	TCMB-EVDS

Kaynak: Tablo tarafımızca oluşturulmuştur.

Tablo 1'de Bağımlı değişken Vergi gelirleri, LOGVERG kısaltılması ile ifade edilmektedir. Bağımsız değişkenlerim personel giderleri, sermaye giderleri, faiz giderleri ve faiz hariç bütçe giderleri; LOGPDG, LOGSERG, LOGFAG ve LOGFAHG şeklinde ifade edilmektedir. Verilerimizin kaynağı Türkiye Cumhuriyeti Merkez Bankası ve Elektronik Veri Dağıtım Sisteminden elde edilmiştir.

Tablo 2. ADF Birim Kök Test Sonuçları

	SABİTLİ	**SABİTLİ-TRENDLİ**	**SABİTSİZ-TRENDSİZ**
LOGVERG	-3.062256	-4.116324	-1.517177
LOGPDG	-2.896931	-3.301218	-2.217724
LOGSERG	-10.13992	-10.45947	-10.02308
LOGFAG	-24.67324	-8.574426	-24.71568
LOGFAHG	-12.46667	-12.73179	-6.262387

LOGVERG, LOGPDG, LOGSERG, LOGFAG VE LOGFAHG değişkenleri serilerinin birinci farkı alınarak ADF birim kök testi uygulanmıştır. Değişkenlerin %5 anlamlılık düzeyinde durağan hale geldikleri düzey, tabloda belirtilmiştir. Schwarz Bilgi Kriteri (SBC) kullanılarak seçilen uygun gecikme uzunluğu, modelin optimum yapısını belirlemeye yönelik olarak değerlendirilmiştir. Bu çerçevede, maksimum gecikme uzunluğu 14 olarak belirlenmiş ve analizlerde kullanılmıştır.

Granger Nedensellik Testi

Değişkenlere Granger (1969) tarafından geliştirilen ekonomik zaman serileri ilişkilerini incelemek amacıyla geliştirdiği Granger Nedensellik testi uygulanmıştır. Vergi Gelirleri, Personel Giderleri, Faiz Giderleri, Sermaye Giderleri ve Faiz Hariç Bütçe giderleri arasındaki nedensellik ilişkisi incelenmiştir. Test sonuçları Tablo 3'de sunulmuştur.

Tablo 3. Granger Nedensellik Testi Analiz Sonuçları

	H0 hipotezi	Prob.	H1 hipotezi	Prob.	ALL
LOGVERG	FAG	0.3694	SERG	0.0000	
			PGD	0.0000	
			FAHG	0.0463	0.0000
LOGSERG	FAG	0.5632	VERG	0.0020	
			PGD	0.0000	
			FAHG	0.0000	0.0000
LOGPGD	SERG	0.8399	VERG	0.0000	
	FAG	0.1054	FAHG	0.0000	0.0000
LAGFAHG	SERG	0.3644	VERG	0.0000	
			PGD	0.0068	

			FAH	0.0002	0.0000
LOGFAG	SERG	0.7087	VERG	0.0280	
	FAGH	0.3023	PGD	0.0633	0.0021

Değişkenler arasındaki ilişkinin yönünü belirlemek amacıyla uygulanan Granger Nedensellik testimiz,

H0 nedeni değildir ve H1 nedenidir hipotezlerini sınamaktadır.

Analiz sonuçlarına göre, faiz giderlerinin vergi gelirleri üzerinde anlamlı bir etkisi bulunmamaktadır. Buna karşın, sermaye giderleri, personel giderleri ve faiz hariç giderlerin vergi gelirlerini anlamlı bir şekilde etkilediği tespit edilmiştir. Tüm değişkenler birlikte değerlendirildiğinde, sermaye giderleri, personel giderleri ve faiz hariç giderlerin vergi gelirleri üzerinde belirleyici bir etkisi olduğu sonucuna ulaşılmıştır.

Sermaye giderleri üzerinde faiz giderlerinin bir etkisi bulunmamaktadır. Ancak vergi gelirleri, personel giderleri ve faiz hariç giderler sermaye giderlerini anlamlı şekilde etkilemektedir. Özellikle personel ve faiz hariç giderlerin etkisi öne çıkmaktadır. Tüm değişkenler birlikte değerlendirildiğinde, sermaye giderleri üzerinde güçlü bir nedensellik ilişkisi olduğu görülmüştür.

Personel giderleri, sermaye giderleri ve faiz giderleri ile anlamlı bir ilişki göstermemektedir. Ancak, vergi gelirleri ve faiz hariç giderler personel giderlerini anlamlı şekilde etkilemektedir. Tüm değişkenler birlikte değerlendirildiğinde, personel giderleri üzerinde topluca etkili faktörlerin olduğu görülmüştür.

Faiz hariç giderler üzerinde sermaye giderlerinin bir etkisi yoktur. Ancak, vergi gelirleri, personel giderleri ve faiz giderleri faiz hariç giderleri anlamlı şekilde etkilemektedir. Tüm değişkenler birlikte değerlendirildiğinde, faiz hariç giderler üzerinde güçlü bir nedensellik etkisi olduğu görülmüştür.

Faiz giderleri ile sermaye giderleri, faiz hariç giderler ve personel giderleri arasında bir nedensellik ilişkisi bulunmamaktadır. Ancak, vergi gelirlerinin faiz giderleri üzerinde anlamlı bir etkisi vardır. Tüm değişkenler birlikte değerlendirildiğinde, faiz giderlerinin diğer değişkenler üzerinde belirgin bir nedensellik etkisi olduğu görülmüştür.

SONUÇ

Kamu harcamalarının, kamu gelirlerinden fazla olduğu durumlarda ortaya çıkan bütçe açıkları, günümüzde küresel bir sorun haline gelmiştir. Bu açıkların giderilmesi için çeşitli mali politikalar uygulanarak ekonomik istikrar sağlanmaya çalışılmaktadır. Harcama ve vergilendirme arasındaki ilişkiden çıkacak kararlar, ülkenin ekonomik, sosyal ve siyasi yapısına göre değişiklik gösterebilir. Bu nedenle, her ülkenin kendi özel koşullarını dikkate alarak politika geliştirmesi büyük önem taşımaktadır.

Çalışmada, Türkiye'de 2006: 01-2024: 09 dönemi vergi gelirleri ile personel giderleri, sermaye giderleri, yatırım harcamaları, faiz harcamaları ve faiz hariç harcama giderleri arasındaki ilişkiler Granger Nedensellik testi ile incelenmiştir. Analiz sonuçlarına göre, faiz giderlerinin vergi gelirleri, sermaye giderleri, personel giderleri ve faiz hariç giderlerle anlamlı bir nedensellik ilişkisi bulunmamaktadır. Ancak, sermaye giderleri, personel giderleri ve faiz hariç giderler vergi gelirleri üzerinde güçlü bir etkiye sahiptir. Aynı şekilde, vergi gelirleri, personel giderleri ve faiz hariç giderler de sermaye giderlerini anlamlı şekilde etkilemektedir. Faiz hariç giderler üzerinde de benzer şekilde vergi gelirleri, personel giderleri ve faiz giderlerinin belirleyici etkisi görülmektedir. Ayrıca, vergi gelirleri ile faiz giderleri arasında ve faiz giderleri ile faiz hariç harcama giderleri arasında tek yönlü bir ilişki olduğu tespit edilmiştir. Tüm değişkenlerin birlikte değerlendirilmesi, değişkenlerin kendi aralarında güçlü bir nedensellik ilişkisi oluşturduğunu ortaya koymuştur. Harca- Vergi hipotezine göre kamu harcamalarının daha etkin bir şekilde planlanması ve önceliklendirilmesi gerektiği, verimlilik düzeylerinin artırılabileceği ve özel sektör teşvikiyle harcamaların yönlendirilebileceği vurgulanabilmektedir.

Çalışma sonuçları, harca- vergi arasındaki nedensellik hipotezini desteklemektedir. Çalışma tercih edilen değişkenler açısından Barış (2012) ile benzerlik göstermektedir ancak Çavuşoğlu'nun (2008) kullandığı değişkenler faiz oranı ve GSYİH değişkenleri açısından farklılık göstermektedir. Nedensellik ilişkisi ve ilişki yönü açısından değerlendirildiğinde Çavuşoğlu (2008), Günaydın (2000), Terzi ve Otlular (2006), Çağlar ve Yavuz (2022), Zortuk ve Uzgören (2008) ve Wahid (2008) ile benzerlik göstermektedir. Ancak çalışma sonuçları Akçağlayan ve Kayıran (2010) çalışma sonuçları ile farklılık göstermektedir. Literatür incelendiğinde Akçağlayan

ve Kayıran (2010) ve Terzi ve Otluların (2006) çalışmaları ile harcama ve gelirler arasında uzun dönemde eşbütünleşme ilişkisi tespit edilmiştir.

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TÜRKİYE'DE GIBSON PARADAOKSUNUN GEÇERLİLİĞİ: KONUT SEKTÖRÜ ÜZERİNE BİR ANALİZ

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Özet

Fiyatlar genel düzeyi ve nominal faiz oranları arasındaki ilişki, parasal iktisadın gelişim gösterdiği yıllardan bu yana ekonomi ve finans alanındaki önemli tartışma konularından biri olagelmiştir. Bu çalışmada söz konusu ilişki, Türkiye ekonomisinde ve konut sektöründe olmak üzere Gibson Paradoksu (fiyatlar genel seviyesi ve nominal faiz oranları arasındaki pozitif ilişki) bağlamında incelenmiştir. 2010:M1-2023:M9 dönemi aylık verilerinin kullanıldığı çalışmada, konut kredisi faiz oranı ile konut birim fiyatları, yeni konutlar fiyat endeksi, yeni olmayan konutlar fiyat endeksi ve konut fiyat endeksi arasındaki ilişki Fourier Kantil Nedensellik Testi ile sınanmıştır. Analiz sonuçlarına göre birim konut fiyat endeksinde hiçbir kantilde Gibson Paradoksunun geçerli olmadığı, yeni olmayan konut fiyat endeksinde 3 kantilde geçerli, 6 kantilde geçersiz olduğu, yeni konutlar fiyat endeksinde yalnızca 1 kantilde geçerli, 8 kantilde geçersiz olduğu, genel konut fiyat endeksinde ise 4 kantilde geçerli, 5 kantilde geçersiz olduğu görülmüştür. Elde edilen ampirik bulgular bu bağlamda, Türkiye ekonomisinde ve konut sektöründe Gibson Paradoksunun geçerli olmadığına dair kanıtların varlığını göstermiştir.

Anahtar Kelimeler: Gibson Paradoksu, Fiyatlar genel düzeyi, Nominal faiz oranı, Fourier Kantil Nedensellik Testi, Konut fiyat endeksi.

THE VALIDITY OF GIBSON PARADOX IN TÜRKİYE: AN ANALYSIS ON THE HOUSING SECTOR

Abstract

The relationship between the general level of prices and nominal interest rates has long been one of the most significant debates in economics and finance since the development of monetary theory. This study examines this relationship within the context of the Gibson Paradox—which suggests a positive relationship between price levels and nominal interest rates—focusing on the Turkish economy and housing sector. Using monthly data from the period 2010:M1 to 2023M9, the relationship between mortgage interest rates and housing unit prices, new housing price index, non-new housing price index, and overall house price index is analyzed through the Fourier Quantile Causality Test. According to the analysis results, the Gibson Paradox does not hold in any quantile for the unit house price index, is valid in 3 quantiles and invalid in 6 for the non-new house price index, holds in only 1 quantile and does not hold in 8 for the new house price index, and is valid in 4 quantiles and invalid in 5 for the overall house price index. In this context, the empirical findings provide evidence that the Gibson Paradox does not hold in the Turkish economy and housing sector.

Keywords: Gibson Paradox, General level of prices, Nominal interest rate, Fourier Quantile Causality Test, House price index.

GİRİŞ

İktisat biliminde sermaye faktörünün kullanım bedeli olarak ifade edilen faiz, parasal iktisada bağlı makroekonominin temel değişkenleri arasında yer almaktadır. Bu bağlamda faiz oranları ve özellikle kısa dönemli nominal faiz oranları bir ekonomide çıktı düzeyi, enflasyon, yatırım, tüketim ve borçlanma gibi birçok makro iktisadi büyüklüğü etkilemektedir. Bu sebeple faiz oranlarının para piyasaları tarafından nasıl tayin edildiğinin ve iktisat politikası amaçlarına etkilerinin nasıl ortaya çıktığının belirlenmesi önemli olmaktadır. Bu açıdan faiz oranlarına yönelik teorik yaklaşımlar ve faiz oranları ile fiyatlar genel düzeyi arasındaki ilişkiler, modern anlamda paranın ve finansal sistemin ilk izlerinin ortaya çıktığı zamanlardan bu yana iktisat yazınında önemli bir yere sahip olagelmiştir.

Klasik iktisadi ekolün faiz oranları bağlamındaki görüşlerinin çatısını paranın nötrlüğü (yansızlığı) fikri oluşturmaktadır. Buna göre, para arzı miktarı, miktar kuramından hareketle fiyat düzeyinin belirlenmesinde etkilidir fakat genel olarak para reel değişkenler üzerinde bir tesire sahip değildir. Faiz oranları, tasarruf ve

yatırımlar başta olmak üzere reel makro iktisadi değişkenler tarafından belirlenmektedir. Genel görünümü ifade edildiği gibi olan Klasik iktisadi yaklaşımda görüldüğü üzere, uzun dönemde nominal faiz oranları ile fiyat düzeyi arasındaki olası ilişkiye dair herhangi bir teorik varsayım ya da çıkarım söz konusu değildir (Özdemir & Yıldırım, 2018, s. 27). Keynesyen iktisadi ekole göre faiz, likidite tercihi teorisi bağlamında parayı elde tutmanın fırsat maliyeti olarak tanımlanmaktadır. Keynesyen teoriye göre faiz oranları para talebime bağlı olarak dalgalanmalar gösterdiğinden dolayı politika önerileri faiz oranlarının kontrol edilmesi odağında şekillenmiştir. Monetarist iktisatçıların faiz görüşleri ise reel faiz oranı tanımı itibariyle şekillenmiş ve ödünç verilebilir fonlar piyasasındaki arz ve talep işleyişinin bir parçası olarak görülmüştür (Aklan vd., 2014, s. 2).

Nominal faiz oranları ile fiyatlar genel düzeyi arasındaki iktisadi ilişkiye dair ilk teorik ve pratik temelli akademik katkılar ise sırasıyla Tooke (1844) ve Gibson'ın (1923) çalışmaları ile yazına dahil olmuştur. Tooke "An Inquiry Into the Currency Principle" başlıklı ilgili çalışmasında, İngiltere ekonomisinde nominal faiz oranlarındaki düşüşün mal ve hizmet piyasalarında fiyatları düşürdüğünü ortaya koymuştur. Ayrıca Tooke'a göre, faiz teknik olarak üretimin bir maliyetidir. Firmalar satışa sundukları ürünlerinin fiyatlarını tayin ederken maliyet yapılarını da dikkate aldıklarından daha yüksek faiz haddinin tüketicilere yansıması daha yüksek fiyatlar şeklinde olacaktır (Bakkal, 2021, s. 227). Özellikle Gibson'ın çalışmasıyla da nominal faiz oranları ve fiyatlar genel düzeyi arasındaki pozitif yönlü ilişkiye dair ilk ampirik kanıtlar sunulmuştur. Gibson "the future course of high class investment values" başlıklı çalışmasında İngiliz tahvil getirisi (faiz oranı) ile toptan eşya fiyat endeksi arasında pozitif yönlü ve faiz oranlarından enflasyona doğru olmak üzere ekonometrik sonuçlar elde etmiştir.

Gibson'ın nominal faiz oranları ile enflasyon arasındaki pozitif yönlü ilişki olarak anılan çalışmasını 'Paradoks' olarak ilk kez J.M Keynes (1930) ifade etmiştir ve o günden bu yana da söz konusu ilişki «Gibson Paradoksu» olarak bilinegelmiştir. Keynes'in bu ilişkiyi 'paradoks' olarak ifade etmesinin sebebi ise Gibson'ın çalışmasında elde edilen bulguların Klasik Para Teorisi ile çelişmesidir. Klasik görüşe göre faiz oranı, yatırım ve tasarruf kararları doğrultusunda belirlenmektedir. Para ise uzun dönemde reel değişkenlerden bağımsızdır. Bu nedenle faiz oranı ile fiyatlar düzeyi arasında uzun dönemde herhangi bir ilişki bulunmamaktadır. Ayrıca Keynesyen görüş, faiz oranının para arzı ve para talebince belirlendiğini ortaya koymakta, para arzı veri iken likidite saikiyle para talebi doğrultusunda faiz oranının şekillendiğini kabul etmektedir. Buna göre faiz oranında bir artış ekonomik faaliyetleri azaltmak suretiyle enflasyon oranlarında bir düşme yönünde baskı oluşturmaktadır. Görüldüğü üzere Klasik ve Keynesyen iktisadi ekol başta olmak üzere, iktisat yazınındaki hâkim görüş Gibson'ın (1923) ulaştığı sonucun yalnızca ampirik bir olgu olduğunu, teorik olarak temellendirilmesinin ise güç olduğunu belirtmektedir.

Gibson'ın çalışması her ne kadar teorik olarak beklenenin tersine bir sonuç içerse de ilgili çalışmadan sonra ve özellikle parasal iktisat disiplininin 1970'li yıllardan itibaren gelişim göstermesiyle faiz oranları ile fiyatlar arasındaki ilişkinin tespit edilmesi uygulanacak iktisat politikalarının belirlenmesinde önemli bir role sahip olmuştur. Bu çalışma da söz konusu teorik ve ampirik gerekliliklerden hareketle yapılmıştır. Buna göre çalışma "Türkiye konut piyasasında nominal faiz oranları ile fiyatlar genel seviyesi arasında faiz oranlarından fiyatlara doğru bir nedensellik ilişkisi var mı?" temel sorusu etrafında şekillenmiş ve bu bağlamda Türkiye'de konut sektöründe Gibson Paradoksunun geçerli olup olmadığının sınanması amacıyla yapılmıştır.

Çalışmada ampirik analiz aşamasına geçilmeden önce Türkiye ekonomisinde Gibson paradoksunun geçerliliğine dair yapılan çalışmaların özetine Tablo 1'de yer verilmiştir.

Tablo 1. Literatür Özeti/Türkiye Ekonomisi Üzerine Yapılan Çalışmalar

Yazar/lar	Zaman Aralığı	Yöntem	Sonuç
Aklan vd. (2014)	1982-2013	Johansen Eşbütünleşme Testi	Gibson paradoksu geçerli.
Tanrıöver ve Yamak (2015)	1990:I-2014:II	ARDL Sınır Testi	Genel fiyat düzeyinden nominal faiz oranına doğru tek yönlü eşbütünleşme.
Koçyiğit vd. (2015)	2003:1-2015:5	Toda-Yamamoto, Hatemi nedensellik testi	Gibson paradoksu geçerli.
Özdemir ve Yıldırım (2018)	2002:I-2017:IV	Johansen Eşbütünleşme Testi	Gibson paradoksu geçerli.
Altunöz (2020)	1995-2019	ARDL Sınır Testi	Gibson paradoksu geçerli.
Bakkal (2021)	1982-2020	Engle-Granger ve Maki çoklu yapısal kırılmalı eşbütünleşme testleri	Gibson paradoksu geçerli.
Erer (2023)	Ocak 2004-Ağustos 2021	Fourier ADL	Gibson paradoksu geçerli.

Tablo 1 incelendiğinde Türkiye ekonomisi üzerine yapılan ve Gibson paradoksunun geçerliliğini sınayan çalışmalarda büyük çoğunlukla nominal faiz oranları le fiyatlar genel düzeyi arasında pozitif ve anlamlı bir istatistiki ilişkinin söz konusu olduğu görülmektedir.

ÇALIŞMANIN VERİLERİ VE MODEL

Türkiye'de Gibson paradoksunun geçerliliğini sınamak amacıyla yapılan çalışmaların çoğunlukla sektörel olmadığı ve genel faiz oranları ve fiyatlar genel seviyesindeki arasındaki ilişkiye dayandığı görülmektedir (Tablo 1'e bakınız). Bu çalışma Gibson paradoksunda öngörülen nedensellik ilişkisini konut sektörü itibariyle sınayarak literatüre bir katkı sağlama ve boşluk doldurma motivasyonu taşımaktadır. Bilindiği üzere yakın dönem iktisadi analizler makro iktisadin mikro iktisadi temellerine dayanmaktadır. Bu çalışmada faiz oranları ve fiyatlar arasındaki ilişkinin sektörel olarak araştırılması bu açıdan da önem arz etmektedir.

Çalışmada yukarıda ifade edilen amaç doğrultusunda toplamda beş değişkenin kullanıldığı dört ayrı model kurulmuştur. Buna göre çalışmada kullanılan ve aylık frekansta elde edilen verilere dair öz bilgiler Tablo 2'de yer almaktadır.

Tablo 2. Çalışmanın Verileri

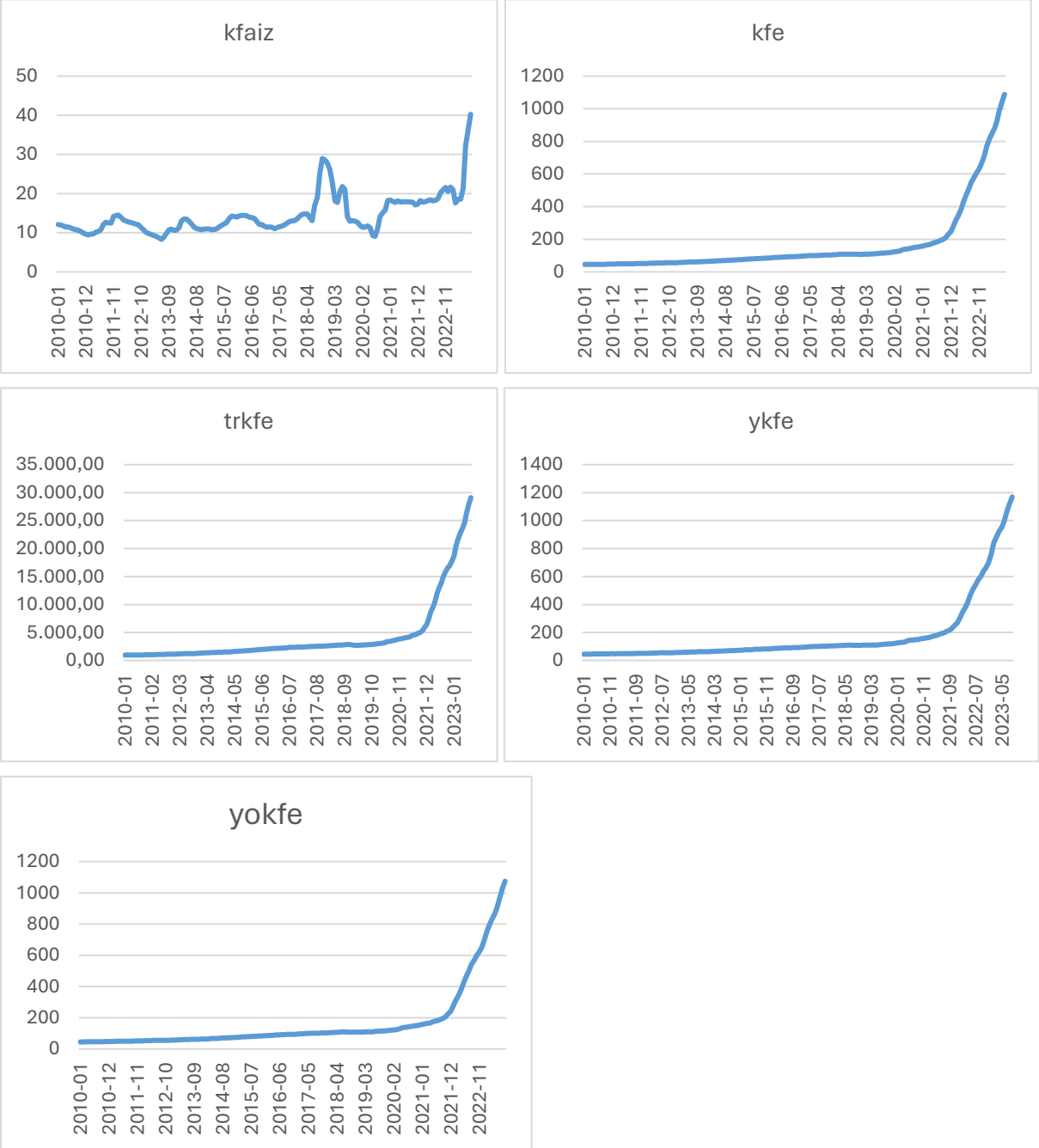
Değişken	Kısaltma	Periyod
Konut Kredisi Faiz Oranı	KFAIZ	Ocak 2010 – Eylül 2023
Konut Fiyat Endeksi	KFE	Ocak 2010 – Eylül 2023
Konut Birim Fiyatları (TL/metrekare)	TRKFE	Ocak 2010 – Eylül 2023
Yeni Konutlar Fiyat Endeksi	YKFE	Ocak 2010 – Eylül 2023
Yeni Olmayan Konutlar Fiyat Endeksi	YOKFE	Ocak 2010 – Eylül 2023

Tablo 2'de yer alan verilerin tamamı Türkiye Cumhuriyet Merkez Bankası (TCMB) veri tabanından elde edilmiştir. Söz konusu veriler kullanılarak her modelde konut kredisi faiz oranının bağımsız değişken olduğu dört ayrı model kurulmuştur. Bu sayede Türkiye'de konut sektörüne ait dört ayrı fiyat endeksi itibariyle Gibson paradoksunun geçerli olup olmadığına dair güçlü kanıtların elde edilmesi amaçlanmıştır. Endeks, oran veya mutlak değer cinsinden olan seriler arasında tekdüzelik sağlanması için tüm serilerin logaritması alınmış ve analize dahil edilmiştir. Buna göre kurulan dört modelin denklemleri Tablo 3'te yer almaktadır.

Tablo 3. Model Denklemleri

Model	Model Denklemi
Birinci model	$LnKFE = \alpha_0 + \alpha_1 LnKFAIZ_t + \epsilon_t$
İkinci model	$LnTRKFE = \alpha_0 + \alpha_1 LnKFAIZ_t + \epsilon_t$
Üçüncü model	$LnYKFE = \alpha_0 + \alpha_1 LnKFAIZ_t + \epsilon_t$
Dördüncü model	$LnYOKKFE = \alpha_0 + \alpha_1 LnKFAIZ_t + \epsilon_t$

Analizlerde kullanılan değişkenlerin zaman serisi grafikleri ise Şekil 1'de yer almaktadır.



Şekil 1. Değişkenlerin Zaman Serisi Grafikleri

AMPİRİK BULGULAR

Çalışmanın bu aşamasında sırasıyla analize dahil edilen değişkenlerin açıklayıcı istatistikleri, değişkenlerin birim kök testi sonuçları ve nihayet kurulan dört modele ayrı ayrı uygulanan nedensellik testi sonuçları verilmiştir.

Buna göre analize dahil edilen ve temel bilgileri Tablo 2'de, zaman serisi grafikleri ise Şekil 1'de verilen değişkenlere dair tanımlayıcı istatistikler Tablo 4'te yer almaktadır.

Tablo 4. Açıklayıcı İstatistikler

	KFAIZ	KFE	TRKFE	YKFE	YOKFE
Mean	1.141925	2.03286	3.418234	2.038177	2.031593
Median	1.112739	1.973128	3.377416	1.96895	1.97359
Maximum	1.604723	3.036669	4.464048	3.067963	3.031368
Minimum	0.918947	1.657056	2.978454	1.652246	1.656098
Std. Dev.	0.127199	0.339946	0.366343	0.352391	0.33762
Skewness	1.002487	1.382584	1.239383	1.370406	1.385379
Kurtosis	3.998142	4.300351	4.0097	4.215574	4.319118
Jarque-Bera	34.48645	64.19233	49.25096	61.80395	64.74308
Probability	0	0	0	0	0
Sum	188.4177	335.4218	564.0087	336.2993	335.2129
Sum Sq. Dev.	2.653444	18.95238	22.01001	20.36541	18.69395
Observation	165	165	165	165	165

Tablo 4'te yer alan bilgilere göre bu çalışmada kullanılan değişkenler içeresinde en yüksek oynaklığa sahip seri TRKFE iken en düşük oynaklık sahip seri KFAIZ değişkenidir. Ek olarak analize dahil edilen tüm seriler pozitif çarpıklığa sahiptir (sağa çarpıktır). Ayrıca tüm seriler %10 anlamlılık düzeyinde normal olarak dağılmıştır ve her değişken için 165 gözlem değeri mevcuttur.

Değişkenlere dair tanımlayıcı istatistiklerin verilmesinin ardından birim kök testi analizine geçilir. Birim kök testleri ekonometrik analizlerin başlangıç noktası olagelmiştir. Bu çalışmada serilerin aylık frekansta olması, gözlem değerinin göreli yüksek olması ve makro iktisadi değişkenlerin doğası gereği yapısal kırılmalara sahip olması ihtimali nedeniyle yapısal kırılmaları dikkate alan Zivot-Andrews Birim Kök Testi (1992) kullanılmıştır. İlgili birim kök testine dair elde edilen ampirik sonuçlar Tablo 5'te gösterilmiştir.

Tablo 5. Zivot-Andrews Birim Kök Testi Sonuçları

Değişken	ZA Stat.	Prob
KFAIZ	-4.61382***	0.00043
KFE	-6.05202***	0.000897
TRKFE	-5.37681**	0.011611
YKFE	-5.76992***	0.00505
YOKFE	-6.03621***	0.000718

Not: *, **, *** işaretleri sırasıyla %10, %5 ve %1 seviyelerinde anlamlılık düzeyini göstermektedir.

Tablo 5'te yer alan sonuçlar incelendiğinde Türkiye'de konut sektöründe Gibson paradoksunun geçerli olup olmadığının sınanması amacıyla kurulan dört modele dahil edilen tüm değişkenlerin düzey değerinde ve %1 ve/veya %5 istatistiki anlamlılık düzeyinde durağan olduğu görülmektedir.

Birim kök testi sonuçlarının tespit edilmesinin ardından nedensellik analizine geçilir. Bu çalışmada tercih edilen Fouriner Kantil Nedensellik Testi, Cheng vd. (2021) «Urbanization, Coal Consumption and CO2 Emissions Nexus in China Using Bootstrap Fourier Granger Causality Test in Quantiles» başlıklı çalışmasından hareketle geliştirilmiştir. Bu test ile araştırmada kullanılan veriler 9 kantile bölünerek incelenmekte ve bu sayede nedensellik ilişkilerini daha güçlü ve dikkatli analiz edilebilmektedir. Ayrıca doğrusal olmayan nedensellik ilişkileri de bu test yardımıyla modelde içselleştirilmektedir. Tüm bu katkıları ile Fourier Kantil Nedensellik Testi en güncel ve güvenilir nedensellik testi aracı olarak görülmektedir (Akyol vd., 2021).

Çalışmada kurulan ve konut kredisi faiz oranı ve konut fiyat endeksi değişkenleri arasındaki ilişkiye dayanan birinci model için uygulanan Fourier Kantil Nedensellik Testi sonuçları Tablo 6'da yer almaktadır.

Tablo 6. Birinci Model İçin Fourier Kantil Nedensellik Testi Sonuçları

Quantile	Wald Stat.	CV 10%.	CV 5%.	CV 1%.	Sonuç
1. Quantile	27.517	65.95868	70.18319	77.34147	Geçersiz
2. Quantile	42.5537	44.18741	46.35614	53.8118	Geçersiz
3. Quantile	31.12695	33.57023	41.09909	46.55752	Geçersiz
4. Quantile	**25.78181***	**23.18347**	**27.61338**	**40.74664**	**Geçerli**
5. Quantile	**31.98537****	**20.23715**	**23.06712**	**42.56297**	**Geçerli**
6. Quantile	**27.44747***	**22.91709**	**27.70287**	**40.99924**	**Geçerli**
7. Quantile	**46.11018*****	**25.11772**	**34.37654**	**41.1613**	**Geçerli**
8. Quantile	13.01912	47.80037	52.85043	55.95582	Geçersiz
9. Quantile	83.33137	99.3006	126.7653	181.868	Geçersiz

Not: *, **, *** işaretleri sırasıyla %10, %5 ve %1 seviyelerinde anlamlılık düzeyini göstermektedir.

Tablo 6'da yer alan sonuçlar incelendiğinde, bu çalışmada kurulan birinci model için nominal faiz oranları ve konut fiyatları arasında, faiz oranlarından fiyatlara doğru olmak üzere dört kantilde nedensellik ilişkisi mevcut iken beş kantilde herhangi bir nedensellik ilişkisi söz konusu değildir.

Çalışmada kurulan ve konut kredisi faiz oranı ve konut birim fiyatları (TL/metrekare) değişkenleri arasındaki ilişkiye dayanan ikinci model için uygulanan Fourier Kantil Nedensellik Testi sonuçları Tablo 7'de yer almaktadır.

Tablo 7. İkinci Model İçin Fourier Kantil Nedensellik Testi Sonuçları

Quantile	Wald Stat.	CV 10%.	CV 5%.	CV 1%.	Sonuç
1. Quantile	7.007359	23.10721	26.12042	36.83321	Geçersiz
2. Quantile	2.935369	15.16558	19.75303	25.52033	Geçersiz
3. Quantile	4.507182	7.36074	11.89297	17.91903	Geçersiz
4. Quantile	3.313348	9.091049	10.20877	22.19138	Geçersiz
5. Quantile	1.37728	6.966471	8.238869	17.56866	Geçersiz
6. Quantile	1.334249	7.974944	8.603207	16.00298	Geçersiz
7. Quantile	2.137084	5.65817	6.440998	7.761964	Geçersiz
8. Quantile	3.887298	8.275147	8.92934	11.6133	Geçersiz
9. Quantile	11.21003	11.97594	18.46483	20.15447	Geçersiz

Not: *, **, *** işaretleri sırasıyla %10, %5 ve %1 seviyelerinde anlamlılık düzeyini göstermektedir.

Tablo 7'de yer alan sonuçlara göre KFAIZ ve TRKFE değişkenleri ile kurulan modelde hiçbir kantilde nedensellik ilişkisini olmadığı görülmektedir. Bu bağlamda Türkiye ekonomisinde, konut sektöründe, analizin gerçekleştirildiği dönemde konut kredisi faiz oranlarındaki değişimler birim konut fiyatlarındaki değişimlerin bir nedeni değildir. Bu sebeple Gibson paradoksu ikinci model için geçerli değildir.

Çalışmada kurulan ve konut kredisi faiz oranı ve yeni konutlar fiyat endeksi değişkenleri arasındaki ilişkiye dayanan üçüncü model için uygulanan Fourier Kantil Nedensellik Testi sonuçları Tablo 8'de yer almaktadır.

Tablo 8. Üçüncü Model İçin Fourier Kantil Nedensellik Testi Sonuçları

Quantile	Wald Stat.	CV 10%.	CV 5%.	CV 1%.	Result
1. Quantile	27.67394	61.83096	70.43035	79.90209	Geçersiz
2. Quantile	11.87422	43.82366	50.63875	57.76082	Geçersiz
3. Quantile	14.82456	29.46632	40.90066	56.3762	Geçersiz
4. Quantile	12.13378	24.71002	30.2155	43.9357	Geçersiz
5. Quantile	16.80584	22.60193	30.84336	40.04872	Geçersiz
6. Quantile	23.94892	26.99184	33.3597	36.47517	Geçersiz
7. Quantile	**29.17546***	**28.79672**	**32.24678**	**43.55727**	**Geçerli**
8. Quantile	21.3749	33.59875	37.88424	65.39779	Geçersiz
9. Quantile	41.9112	45.60158	79.91413	118.6351	Geçersiz

Not: *, **, *** işaretleri sırasıyla %10, %5 ve %1 seviyelerinde anlamlılık düzeyini göstermektedir.

Tablo 8'de yer alan sonuçlara göre KFAIZ ve YKFE değişkenleri ile kurulan modelde yalnızca 7. kantilde konut kredisi faiz oranı ile yeni konutlar fiyat endeksi arasında istatistiki olarak anlamlı bir nedensellik ilişkisi tespit edilirden diğer 8 kantilde nedensellik ilişkisinin söz konusu olmadığı görülmektedir. Buna göre çalışmada kurulan üçüncü modele göre de Türkiye konut sektöründe Gibson paradoksu geçerli değildir.

Çalışmada kurulan ve konut kredisi faiz oranı ve yeni olmayan konutlar fiyat endeksi değişkenleri arasındaki ilişkiye dayanan dördüncü model için uygulanan Fourier Kantil Nedensellik Testi sonuçları Tablo 9'da yer almaktadır.

Tablo 9. Dördüncü Model İçin Fourier Kantil Nedensellik Testi Sonuçları

Quantile	Wald Stat.	CV 10%.	CV 5%.	CV 1%.	Result
1. Quantile	10.39141	49.66573	56.38544	71.10908	Geçersiz
2. Quantile	21.30367	37.99226	39.89695	41.96361	Geçersiz
3. Quantile	**26.55986***	**26.3337**	**31.95425**	**37.85679**	**Geçerli**
4. Quantile	16.56106	20.19239	21.37894	34.80476	Geçersiz
5. Quantile	18.13561	20.5876	21.27504	22.97963	Geçersiz
6. Quantile	**26.71058****	**18.44077**	**20.03646**	**28.22885**	**Geçerli**
7. Quantile	**37.00522*****	**28.5212**	**32.51925**	**36.88055**	**Geçerli**
8. Quantile	36.62339	37.44872	39.77448	41.51951	Geçersiz
9. Quantile	12.02072	82.99111	85.26541	130.3615	Geçersiz

Not: *, **, *** işaretleri sırasıyla %10, %5 ve %1 seviyelerinde anlamlılık düzeyini göstermektedir.

Tablo 9'da yer alan sonuçlara göre KFAIZ ve YOKFE değişkenleri ile kurulan modelde 3., 6. ve 7. kantilde konut kredisi faiz oranları ile yeni olmayan konutlar fiyat endeksi arasında istatistiki olarak anlamlı ve faizden fiyatlara doğru bir nedensellik ilişkisi söz konusu iken diğer 6 kantilde bir nedenselik ilişkisi söz konusu değildir. Yalnızca 3 kantilde nedenselliğin varlığı ise Fourier Kantil Nedensellik Testi bağlamında nedensellik ilişkisinin topyekûn varlığı için yeterli olmamaktadır. Bu sebeple çalışmada kurulan dördüncü model için de Gibson paradoksunun geçerli olmadığını söylemek mümkündür.

SONUÇ VE TARTIŞMA

Bu çalışmada Ocak 2010-Eylül 2023 dönemi aylık verileri kullanılarak Türkiye'de ve konut sektöründe Gibson paradoksunun geçerli olup olmadığı sınanmıştır. Bu amaca yönelik olarak her modelde değişkenlerden biri konut kredisi faiz oranı olacak şekilde sırasıyla konut fiyat endeksi, birim konut fiyatları, yeni konutlar fiyat endeksi ve yeni olmayan konutlar fiyat endeksi için dört ayrı model kurulmuştur. Kurulan modellerde konut kredisi faiz oranından ilgili konut fiyat endeksi değişkenleri doğru bir nedensellik ilişkisinin olup olmadığının testi ise Fourier Kantil Nedensellik Testi aracılığıyla gerçekleştirilmiştir. Analiz sonuçlarına göre birim konut fiyat endeksinde hiçbir kantilde Gibson Paradoksunun geçerli olmadığı, yeni olmayan konut fiyat endeksinde 3 kantilde geçerli, 6 kantilde geçersiz olduğu, yeni konutlar fiyat endeksinde yalnızca 1 kantilde geçerli, 8 kantilde geçersiz olduğu, genel konut fiyat endeksinde ise 4 kantilde geçerli, 5 kantilde geçersiz olduğu görülmüştür. Elde edilen bulgular, Türkiye ekonomisinde, konut sektöründe faiz ve enflasyon değişkenlerinin birbiriyle yakından ilişkili olmadığını ve konut kredisi faiz oranlarında meydana gelen bir değişime fiyat düzeyini temsil eden diğer değişkenin çok sınırlı kantillerde (süreçlerde) aynı yönde eşlik ettiğini göstermektedir.

Bu çalışma neticesinde elde edilen ampirik bulgular teorik olarak beklenendir. Buna göre bu çalışmada ortaya çıkan sonuç; Türkiye ekonomisi nominal faiz oranlarının araç olarak kullanıldığı para politikası uygulamalarının ara hedef ve hedef bağlamında konut sektöründe etkili ve arzu edilen sonuçlar vermesi ihtimalini güçlendirmektedir.

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TİCARET SEKTÖRÜNDE GIBSON PARADOKSUNUN GEÇERLİLİĞİ: TÜRKİYE ÜZERİNE BİR ANALİZ

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Özet

Genel fiyat düzeyi ve nominal faiz oranları arasındaki pozitif yönlü ilişkinin ilk ampirik kanıtları Tooke (1844) ve Gibson'ın (1923) çalışmaları ile akademik literatüre dahil olmuştur. Keynes'in (1930) söz konusu ilişkiyi "Gibson Paradoksu" olarak adlandırmasından bu yana da genel fiyat düzeyi ile nominal faiz oranı arasındaki ilişkinin yönü üzerine yapılan tartışmalar iktisat yazınında önemli bir yer tutmuştur. Bu çalışmada, Türkiye ticaret sektörü özelinde Gibson paradoksunun geçerliliğinin sınanması amaçlanmıştır. Bu amaca yönelik olarak 2010:M1-2013:M10 dönemi aylık verileri kullanılmak üzere Gibson paradoksunu test etmek için sermaye malı fiyat endeksi, Türk Lirası ticari kredi faiz oranı, Euro ticari kredi faiz oranı ve Dolar ticari kredi faiz oranı değişkenleri kullanılmıştır. Analize dahil edilen değişkenler arasındaki nedensellik ilişkisi ise Fourier Kantil Nedensellik Testi ile sınanmıştır. Ampirik analiz neticesinde elde edilen sonuçlara göre Türkiye'de ticari sektörlerde Gibson paradoksunun geçerli olduğuna dair sermaye malı fiyat endeksi ile Türk Lirası ticari kredi faiz oranı arasında kurulan modelde zayıf kanıtlar (yalnızca ilk 4 kantilde) bulunurken, sermaye malı fiyat endeksi ile Euro ve Dolar ticari kredi faiz oranları arasında kurulan modellerde ise Gibson paradoksunun geçersiz olduğu sonucuna ulaşılmıştır.

Anahtar Kelimeler: Gibson Paradoksu, Sermaye malı fiyat endeksi, Türk Lirası ticari kredi faiz oranı, Euro ticari kredi faiz oranı, Dolar ticari kredi faiz oranı Fourier Kantil Nedensellik Testi.

THE VALIDITY OF GIBSON PARADOX IN THE TRADE SECTOR: AN ANALYSIS ON TÜRKİYE

Abstract

The initial empirical evidence supporting a positive relationship between the general price level and nominal interest rates was first presented by Tooke (1844) and later by Gibson (1923). Following Keynes's (1930) designation of this relationship as the "Gibson Paradox," the question of the directional relationship between general price levels and nominal interest rates has remained a significant topic within economic literature. This study investigates the validity of the Gibson Paradox within the Turkish trade sector. For this purpose, monthly data from January 2010 to October 2013 is analyzed, utilizing the capital goods price index, and commercial loan interest rates denominated in Turkish Lira, Euro, and U.S. Dollar. The Fourier Quantile Causality Test is employed to examine the causality relationships among these variables. The empirical analysis provides limited evidence supporting the Gibson Paradox within Türkiye's commercial sectors, as it holds only in the first four quantiles in the model relating the capital goods price index to the Turkish Lira commercial loan interest rate. In contrast, the Gibson Paradox does not hold in the models linking the capital goods price index with Euro and Dollar commercial loan interest rates.

Keywords: Gibson Paradox, Capital goods price index, Turkish Lira commercial loan interest rate, Euro commercial loan interest rate, Dollar commercial loan interest rate Fourier Quantile Causality Test.

GİRİŞ

Nominal faiz oranları ve fiyatlar genel seviyesi arasındaki pozitif ilişkiye dair literatürünün göreli uzun bir geçmişi vardır. Bilinen yazında bu bahiste göze çarpan ilk çalışma Tooke'a (1844) aittir. Tooke ilgili çalışmasında İngiltere ekonomisinden hareketle para arzındaki bir artışın faiz oranlarında sebep olacağı düşüşün her zaman fiyatlarda bir yükselişe sebep olmayacağını ifade etmiştir. Bu süreci de reel bono doktrini üzerinden tanımlamıştır (Serletis & Zestos, 1999, s. 117). Uzun vadeli nominal faiz oranları ve fiyatlar genel seviyesi arasındaki pozitif korelasyonun ampirik kanıtları ise önce Gibson (1923), devamında kısa vadeli nominal faiz oranları ve fiyatlar genel seviyesi arasındaki pozitif korelasyonun bulguları da Kitcihn (1923) ve Peake (1928) tarafından iktisadi literatüre dahil olmuştur.

Yukarıda ifade edilen çalışmalarda elde edilen bulgunun Gibson Paradoksu olarak anılması ise Keynes sayesinde olmuştur Keynes'e fiyatlar ve faiz oranları arasındaki pozitif yönlü ilişki geçici, kısa dönemli ve konjonktürel dalgalanmaların yalnızca genişleme döneminde gözlenebilecek bir olgudur. Para arzındaki artışlara dayalı bir genişleme faizleri düşürür. Fakat aynı zamanda parasal aktarım mekanizması ve özellikle kredi kanalıyla yaşanan konjonktürel genişleme iktisadi karar birimlerinin beklenen enflasyon oranını da artırdığı için faizleri yükseltme yönünden de bir baskı oluşturmaktadır. Yalnız bu baskı Keynes'e göre geçici olmaktadır (Künü vd., 2017, s. 213).

Keynes'in Gibson'un çalışmasında elde ettiği çıktıları, "paradoks" olarak tanımlamasının bir diğer sebebi de Klasik İktisadi Ekolün faiz teorisi bağlamındaki görüşleridir. Bilindiği üzere Klasik Ekole göre para ve faiz özellikle uzun dönemde reel iktisadi değişkenleri etkileme gücüne sahip değildir. Ayrıca faiz oranı, tasarruf ve yatırımlar başta olmak üzere reel iktisadi değişkenler tarafından belirlenmektedir. Genel fiyatlar düzeyi ise para arzının bir fonksiyonu olarak tanımlanmaktadır. Son tahlilde Klasik İktisadi Ekolün fikirleri uzun dönemde nominal fiyat düzeyi ve fiyatlar genel seviyesi arasındaki bir ilişkinin varlığına teorik bir temel oluşturmamaktadır.

Klasik İktisadi Ekol ve Keynesyen İktisada dayalı olan yazında Gibson paradoksunun geçerliliğine dair bir teorik temel mevcut olmamakla birlikte Gibson paradoksunun çokça atıf alan açıklamalarından biri Irving Fisher'a (1930) aittir. Buna göre Fisher Denklemine göre nominal faiz oranları ile beklenen enflasyon oranı arasında pozitif yönlü bir ilişki vardır.

Teorik tartışmalar süregelmekle beraber faiz oranları ve fiyatlar arasındaki korelasyonun ve korelasyon varsa yönünün belirlenmesi ülke ekonomileri için önem düzeyini korumaktadır. Söz konusu ilişki modern para teorisinin geliştirilmesinde belirleyici faktörlerden biridir. Çünkü özellikle parasal iktisat disiplinin gelişim gösterdiği ve finansal sistemin derinlik kazanmaya başladığı 1970'li yıllardan itibaren para politikanın ara hedef ve amaçlara nasıl ulaşacağı meselesi faiz oranları ve fiyatlar arasındaki ilişkinin mahiyetine bağlı olabilmektedir. Çünkü ekonomik istikrar temelde iki sacayağı üzerine kuruludur. Bu sacayaklarından biri tam istihdam iken diğeri fiyat istikrarıdır. Bu sebeple iktisadi anlamda sermayenin gelirden aldığı pay olarak da ifade edilebilen faiz oranları ile fiyatlar arasındaki ilişkinin bilinmesi politika yapıcılar açısından önemlidir.

Bu çalışma da yukarıda ifade edilen motivasyonla yapılmış ve Türkiye özelinde olmak üzere ticari sektörlerde Gibson paradoksunun geçerli olup olmadığının sınanması amacını taşımıştır. Bu amaca yönelik çalışmanın bu aşamasında sırasıyla literatür taraması, çalışmanın verileri ve model, elde edilen ampirik bulguların sunulması ve ortaya çıkan sonuçları tartışılması silsilesi takip edilmiştir.

LİTERATÜR TARAMASI

Çalışmada ampirik analiz aşamasına geçilmeden önce Gibson paradoksunun geçerliliğine dair yapılan çalışmaların özetine uluslararası çalışmalar ve Türkiye üzerine yapılan çalışmalar ayrımıyla Tablo 1'de yer verilmiştir.

Tablo 1. Literatür Özeti/Türkiye Ekonomisi Üzerine Yapılan Çalışmalar

Yazar/lar	Zaman Aralığı	Yöntem	Sonuç
ULUSLARASI ÇALIŞMALAR			
Atkins ve Serletis (2003)	1880-1986	ARDL Sınır Testi	Gibson paradoksu geçerli değil.
Chadha and Perlman (2014)	1700-1913	VAR	Gibson paradoksu geçerli.
Maria Caporale ve Skare(2018)	1800-2012	SSA ve MSSA	Para politikası rejimlerindeki değişikliklerin veya altın fiyatındaki oynaklığın tek başına hükümet tahvili getirilerinin ve fiyatlarının son 200 yıldaki davranışını açıklayamayacağı gösteriliyor.
Benati ve Benigno (2023)	-	-	Gibson paradoksunun altın standardı ile bir ilgisinin olmadığını tespit etmişlerdir.
Chowdhury (2024)	1960:q1-2022q4 200:q1-2022q4	ARDL Sınır Testi	Gelişmiş ve gelişmekte olan ülkelerde Gibson paradoksunun geçerli olduğuna dair çok sınırlı sayıda kanıta ulaşılmıştır.

Yazar/lar	Zaman Aralığı	Yöntem	Sonuç
TÜRKİYE ÜZERİNE YAPILAN ÇALIŞMALAR			
Aklan vd. (2014)	1982-2013	Johansen Eşbütünleşme Testi	Gibson paradoksu geçerli.
Tanrıöver ve Yamak (2015)	1990:I-2014:II	ARDL Sınır Testi	Genel fiyat düzeyinden nominal faiz oranına doğru tek yönlü eşbütünleşme.
Koçyiğit vd. (2015)	2003:1-2015:5	Toda-Yamamoto, Hatemi nedensellik testi	Gibson paradoksu geçerli.
Kofoğlu (2018)	1965-2017	VAR, ARDL, Johansen eşbütünleşme ve TY nedensellik	Gibson paradoksu geçerli.
Özdemir ve Yıldırım (2018)	2002:I-2017:IV	Johansen Eşbütünleşme Testi	Gibson paradoksu geçerli.
Altunöz (2020)	1995-2019	ARDL Sınır Testi	Gibson paradoksu geçerli.
Bakkal (2021)	1982-2020	Engle-Granger ve Maki çoklu yapısal kırılmalı eşbütünleşme testleri	Gibson paradoksu geçerli.
Erer (2023)	Ocak 2004-Ağustos 2021	Fourier ADL	Gibson paradoksu geçerli.

Tablo 1 incelendiğinde Türkiye ekonomisi üzerine yapılan ve Gibson paradoksunun geçerliliğini sınayan çalışmalarda büyük çoğunlukla nominal faiz oranları le fiyatlar genel düzeyi arasında pozitif ve anlamlı bir istatistiki ilişkinin söz konusu olduğu görülmektedir. Fakat uluslararası çalışmalar içerisinde farklı yönde sonuçlar ağırlıktadır. Ampirik çalışmaların doğası gereği analize dahi edilen ülke ve/veya ülkeler grubu, gözlem değerleri ve kullanılan yöntemler elde edilen sonuçları doğrudan etkilemekte farklı sonuçlar elde edilmektedir.

ÇALIŞMANIN VERİLERİ VE MODEL

Türkiye'de Gibson paradoksunun geçerliliğini sınamak amacıyla yapılan çalışmaların çoğunlukla sektörel olmadığı ve genel faiz oranları ve fiyatlar genel seviyesindeki arasındaki ilişkiye dayandığı görülmektedir (Tablo 1'e bakınız). Bu çalışma Gibson paradoksunda öngörülen nedensellik ilişkisini ticaret sektörü itibariyle sınayarak literatüre bir katkı sağlama ve boşluk doldurma motivasyonu taşımaktadır. Bilindiği üzere yakın dönem iktisadi analizler makro iktisadin mikro iktisadi temellerine dayanmaktadır. Bu çalışmada faiz oranları ve fiyatlar arasındaki ilişkinin sektörel olarak araştırılması bu açıdan da önem arz etmektedir.

Çalışmada yukarıda ifade edilen amaç doğrultusunda toplamda dört değişkenin kullanıldığı üç ayrı model kurulmuştur. Buna göre çalışmada kullanılan ve aylık frekansta elde edilen verilere dair öz bilgiler Tablo 2'de yer almaktadır.

Tablo 2. Çalışmanın Verileri

Değişken	Kısaltma	Periyod
Sermaye Malı Fiyat Endeksi	FIYAT	Ocak 2010 – Ekim 2023
Türk Lirası Ticari Kredi Faiz Oranı	TLFAIZ	Ocak 2010 – Ekim 2023
Euro Ticari Kredi Faiz Oranı	EUROFAIZ	Ocak 2010 – Ekim 2023
Dolar Ticari Kredi Faiz Oranı	DOLARFAIZ	Ocak 2010 – Ekim 2023

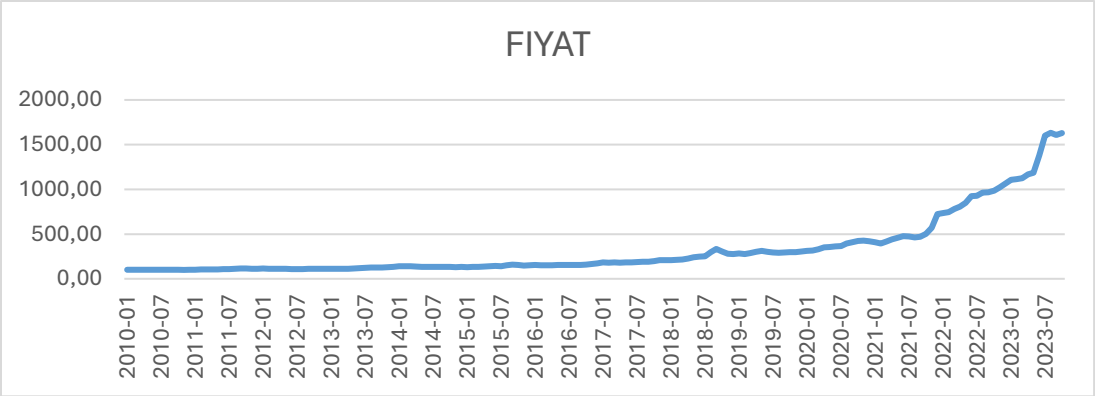
Tablo 2'de yer alan verilerden Türk Lirası Ticari Kredi Faiz Oranı, Euro Ticari ve Dolar Ticari Kredi Faiz Oranı değişkenlerine dair veriler Türkiye Cumhuriyet Merkez Bankası (TCMB) veri tabanından, Sermaye Malı Fiyat Endeksi değişkenine dair veriler ise Türkiye İstatistik Kurumu (TÜİK) veri tabanından elde edilmiştir.

Söz konusu veriler kullanılarak her modelde sermaye malı fiyat endeksi (FIYAT) bağımlı değişken olduğu üç ayrı model kurulmuştur. Bu sayede Türkiye'de ticaret sektörüne ait üç ayrı faiz oranı itibariyle Gibson paradoksunun geçerli olup olmadığına dair güçlü kanıtların elde edilmesi amaçlanmıştır. Endeks, oran veya mutlak değer cinsinden olan seriler arasında tekdüzelik sağlanması için tüm serilerin logaritması alınmış ve analize dahil edilmiştir. Buna göre kurulan üç modelin denklemleri Tablo 3'te yer almaktadır.

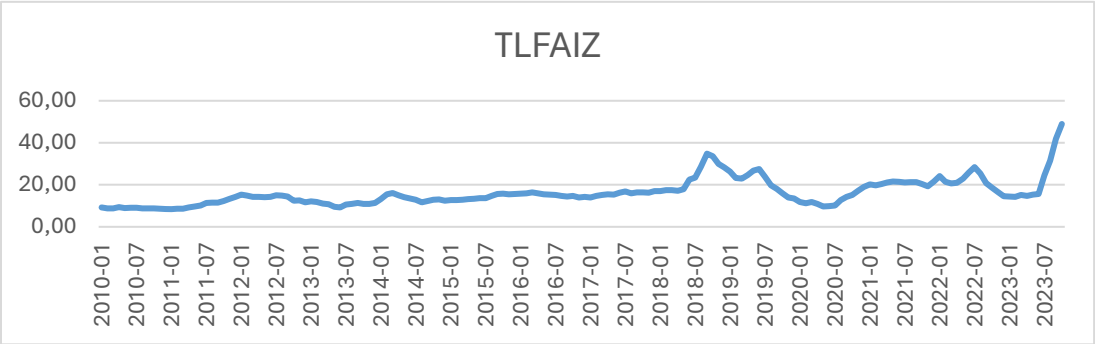
Tablo 3. Model Denklemleri

Model	Model Denklemi
Birinci model	$LnFIYAT = \alpha_0 + \alpha_1 LnTLFAIZ_t + \epsilon_t$
İkinci model	$LnFIYAT = \alpha_0 + \alpha_1 LnEUROFAIZ_t + \epsilon_t$
Üçüncü model	$LnFIYAT = \alpha_0 + \alpha_1 LnDOLARFAIZ_t + \epsilon_t$

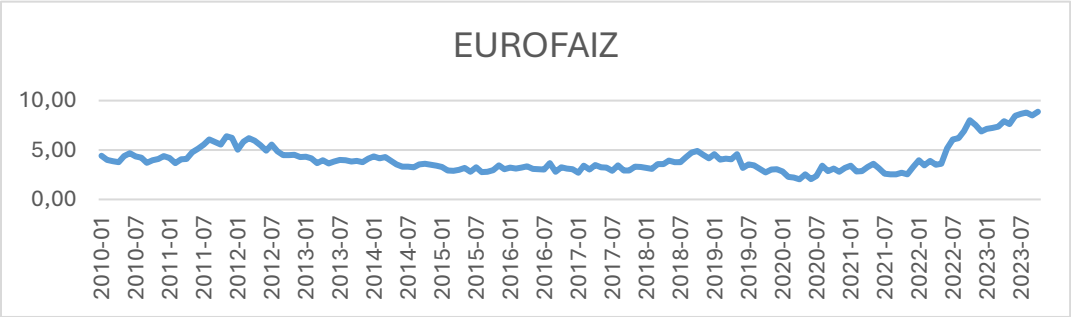
Analizlerde kullanılan değişkenlerin zaman serisi grafikleri ise Şekil 1-4'te yer almaktadır.



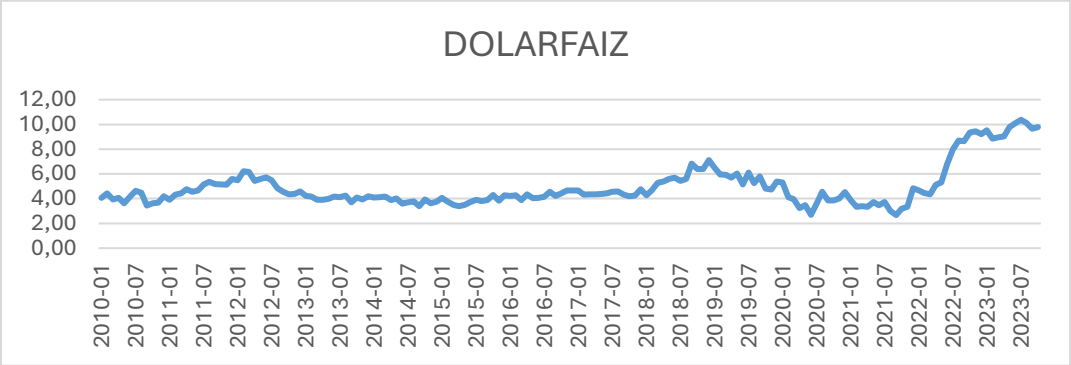
Şekil 1. Değişkenlerin Zaman Serisi Grafikleri/Sermaye Malı Fiyat Endeksi



Şekil 2. Değişkenlerin Zaman Serisi Grafikleri/Türk Lirası Ticari Kredi Faiz Oranı



Şekil 3. Değişkenlerin Zaman Serisi Grafikleri/EURO Ticari Kredi Faiz Oranı



Şekil 4. Değişkenlerin Zaman Serisi Grafikleri/DOLAR Ticari Kredi Faiz Oranı

Bir finansal sistemin birincil işlevi tasarruf fonksiyonudur. Tasarruf fonksiyonunu etkin şekilde yerine getiren bir finansal sistemde fon fazlası olan iktisadi karar birimleri ile fona ihtiyaç duyan birimler en düşük işlem maliyeti ile ve en hızlı şekilde bir araya gelirler. Banka temelli finansal sistemlerde tasarruf fonksiyonunu en çok üstlenen kurumlar ise ticari bankalardır. Türkiye de bilindiği üzere banka temelli bir finansal sisteme sahiptir ve bankaların kullandırdığı krediler ticaret ve üretimin gelişimi için kritik öneme sahip olmaktadır. Bu çalışmada bankacılık sektörünce (katılım bankaları hariç) TL, USD ve EURO cinsinden kullandırılan ticari kredilere uygulanan ağırlıklı ortalama faiz oranlarının tercih edilmesi bu sebepledir.

AMPİRİK BULGULAR

Çalışmanın bu aşamasında sırasıyla analize dahil edilen değişkenlerin açıklayıcı istatistikleri, değişkenlerin birim kök testi sonuçları ve nihayet kurulan dört modele ayrı ayrı uygulanan nedensellik testi sonuçları verilmiştir.

Buna göre analize dahil edilen ve temel bilgileri Tablo 2'de, zaman serisi grafikleri ise Şekil 1'de verilen değişkenlere dair tanımlayıcı istatistikler Tablo 4'te yer almaktadır.

Tablo 4. Açıklayıcı İstatistikler

	FIYAT	TLFAIZ	EUROFAIZ	DOLARFAIZ
Mean	5.425765	16.1595	4.098338	4.939269
Median	5.125355	14.82375	3.66375	4.35625
Maximum	7.397813	48.9525	8.8725	10.3725
Minimum	4.597037	8.415	2.0375	2.6725
Std. Dev.	0.775101	6.309376	1.461036	1.66878
Skewness	0.956125	1.830101	1.51565	1.759203
Kurtosis	2.864961	8.197047	4.90148	5.487985
Jarque-Bera	25.41832	279.4774	88.56382	128.4374
Probability	0.000003	0	0	0
Sum	900.677	2682.477	680.3242	819.9187
Sum Sq. Dev.	99.129	6568.357	352.2132	459.4966
Observation	166	166	166	166

Tablo 4'te yer alan bilgilere göre bu çalışmada kullanılan değişkenler içeresinde en yüksek oynaklığa sahip seri TLFAIZ iken en düşük oynaklık sahip seri FIYAT değişkenidir. Ayrıca DOLARFAIZ ve EUROFAIZ değişkenlerin oynaklığının TLFAIZ değişkeninden düşük olması bankacılık sektörü bağlamında yabancı para cinsinden kredi piyasasında volatilitenin daha düşük olduğunu da göstermektedir. Ek olarak analize dahil edilen tüm seriler pozitif çarpıklığa sahiptir (sağa çarpıktır). Ayrıca tüm seriler %10 anlamlılık düzeyinde normal olarak dağılmıştır ve her değişken için 166 gözlem değeri mevcuttur.

Değişkenlere dair tanımlayıcı istatistiklerin verilmesinin ardından birim kök testi analizine geçilir. Birim kök testleri ekonometrik analizlerin başlangıç noktası olagelmiştir. Bu çalışmada serilerin aylık frekansta olması, gözlem değerinin göreli yüksek olması ve makro iktisadi değişkenlerin doğası gereği yapısal kırılmalara sahip olması ihtimali nedeniyle yapısal kırılmaları dikkate alan Zivot-Andrews Birim Kök Testi (1992) kullanılmıştır. İlgili birim kök testine dair elde edilen ampirik sonuçlar Tablo 5'te gösterilmiştir.

Tablo 5. Zivot-Andrews Birim Kök Testi Sonuçları

Değişken	ZA Stat.	Prob
FIYAT	-2.62406***	0.000254
TLFAIZ	-3.78569**	0.022739
EUROFAIZ	-2.25147***	0.001469
DOLARFAIZ	-2.91578***	0.000988

Not: *, **, *** işaretleri sırasıyla %10, %5 ve %1 seviyelerinde anlamlılık düzeyini göstermektedir.

Tablo 5'te yer alan sonuçlar incelendiğinde Türkiye'de ticaret sektöründe Gibson paradoksunun geçerli olup olmadığının sınanması amacıyla kurulan üç modele dahil edilen tüm değişkenlerin düzey değerinde ve %1 ve/veya %5 istatistiki anlamlılık düzeyinde durağan olduğu görülmektedir.

Birim kök testi sonuçlarının tespit edilmesinin ardından nedensellik analizine geçilir. Bu çalışmada tercih edilen Fouriner Kantil Nedensellik Testi, Cheng vd. (2021) «Urbanization, Coal Consumption and CO2 Emissions Nexus in China Using Bootstrap Fourier Granger Causality Test in Quantiles» başlıklı çalışmasından hareketle geliştirilmiştir. Bu test ile araştırmada kullanılan veriler 9 kantile bölünerek incelenmekte ve bu sayede nedensellik ilişkilerini daha güçlü ve dikkatli analiz edilebilmektedir. Ayrıca doğrusal olmayan nedensellik ilişkileri de bu test yardımıyla modelde içselleştirilmektedir. Tüm bu katkıları ile Fourier Kantil Nedensellik Testi en güncel ve güvenilir nedensellik testi aracı olarak görülmektedir (Akyol vd., 2021).

Çalışmada kurulan ve Türk lirası ticari kredi faiz oranı ve sermaye malı fiyat endeksi değişkenleri arasındaki ilişkiye dayanan birinci model için uygulanan Fourier Kantil Nedensellik Testi sonuçları Tablo 6'da yer almaktadır.

Tablo 6. Birinci Model İçin Fourier Kantil Nedensellik Testi Sonuçları

Quantile	Wald Stat.	CV 10%.	CV 5%.	CV 1%.	Sonuç
1. Quantile	**47.47992*** **	**36.72897**	**38.85114**	**42.12513**	**Geçerli**
2. Quantile	**30.61074** **	**25.74809**	**26.57686**	**36.71322**	**Geçerli**
3. Quantile	**27.26579* **	**23.7604**	**28.20488**	**36.23056**	**Geçerli**
4. Quantile	**23.28457* **	**21.33943**	**23.39357**	**35.22859**	**Geçerli**
5. Quantile	2.269219	20.71328	23.01575	42.02515	Geçersiz
6. Quantile	1.28067	19.7515	28.85846	34.03968	Geçersiz
7. Quantile	0.482306	19.25714	29.85813	30.46941	Geçersiz
8. Quantile	1.048461	17.28343	31.41867	56.79563	Geçersiz
9. Quantile	5.508024	28.77291	35.52767	42.72833	Geçersiz

Not: *, **, *** işaretleri sırasıyla %10, %5 ve %1 seviyelerinde anlamlılık düzeyini göstermektedir.

Tablo 6'da yer alan sonuçlar incelendiğinde, bu çalışmada kurulan birinci model için nominal faiz oranları ve sermaye malı fiyatları arasında, faiz oranlarından fiyatlara doğru olmak üzere dört kantilde nedensellik ilişkisi mevcut iken diğer beş kantilde herhangi bir nedensellik ilişkisi söz konusu değildir.

Çalışmada kurulan ve Euro ticari kredi faiz oranı ve sermaye malı fiyat endeksi değişkenleri arasındaki ilişkiye dayanan ikinci model için uygulanan Fourier Kantil Nedensellik Testi sonuçları Tablo 7'de yer almaktadır.

Tablo 7. İkinci Model İçin Fourier Kantil Nedensellik Testi Sonuçları

Quantile	Wald Stat.	CV 10%.	CV 5%.	CV 1%.	Sonuç
1. Quantile	2.583849	7.42649	9.296799	10.40044	Geçersiz
2. Quantile	3.03663	5.012763	5.491957	6.542443	Geçersiz
3. Quantile	**4.65287***	**4.23003**	**4.709847**	**7.581889**	**Geçerli**
4. Quantile	**5.821013*****	**3.597499**	**3.968662**	**5.614209**	**Geçerli**
5. Quantile	1.270152	3.04638	3.547787	4.440862	Geçersiz
6. Quantile	0.983337	3.179274	3.902862	6.670344	Geçersiz
7. Quantile	0.239062	2.803266	3.573446	5.159746	Geçersiz
8. Quantile	0.261237	4.106002	4.362726	8.038285	Geçersiz
9. Quantile	0.89563	5.131569	8.168929	11.32378	Geçersiz

Not: *, **, *** işaretleri sırasıyla %10, %5 ve %1 seviyelerinde anlamlılık düzeyini göstermektedir.

Tablo 7'de yer alan sonuçlara göre EUROFAIZ ve FIYAT değişkenleri ile kurulan modelde yalnızca üçüncü ve dördüncü kantilde nedensellik ilişkisinin varlığı görülürken diğer yedi kantilde nedenselliğin söz konusu olmadığı görülmektedir. Sadece iki kantildeki nedenselliğin varlığı yeterli değildir. Bu bağlamda Türkiye ekonomisinde, ticaret sektöründe, analizin gerçekleştirildiği dönemde Euro ticari kredi faiz oranlarındaki değişimler sermaye malı fiyatlarındaki değişimlerin bir nedeni değildir. Bu sebeple Gibson paradoksu ikinci model için geçerli değildir.

Çalışmada kurulan ve Dolar ticari kredi faiz oranı ve sermaye malı fiyat endeksi değişkenleri arasındaki ilişkiye dayanan üçüncü model için uygulanan Fourier Kantil Nedensellik Testi sonuçları Tablo 8'de yer almaktadır.

Tablo 8. Üçüncü Model İçin Fourier Kantil Nedensellik Testi Sonuçları

Quantile	Wald Stat.	CV 10%.	CV 5%.	CV 1%.	Sonuç
1. Quantile	9.375238	12.32096	17.39143	36.45458	Geçersiz
2. Quantile	6.106539	13.22687	19.10078	24.68971	Geçersiz
3. Quantile	3.982956	12.33516	13.58965	21.43555	Geçersiz
4. Quantile	3.455119	10.93619	13.365	20.11562	Geçersiz
5. Quantile	7.126578	12.49057	13.16867	16.70155	Geçersiz
6. Quantile	7.675174	11.88583	13.12523	19.99886	Geçersiz
7. Quantile	9.036223	10.34983	17.71073	18.29285	Geçersiz
8. Quantile	**12.52695***	**9.913731**	**13.62451**	**14.94376**	**Geçerli**
9. Quantile	7.188301	19.39482	21.73469	30.95834	Geçersiz

Not: *, **, *** işaretleri sırasıyla %10, %5 ve %1 seviyelerinde anlamlılık düzeyini göstermektedir.

Tablo 8'de yer alan sonuçlara göre EUROFAIZ ve FIYAT değişkenleri ile kurulan modelde yalnızca 8. kantilde Euro ticari kredi faiz oranı ile sermaye malı fiyat endeksi arasında istatistiki olarak anlamlı bir nedensellik ilişkisi tespit edilirden diğer 8 kantilde nedensellik ilişkisinin söz konusu olmadığı görülmektedir. Buna göre çalışmada kurulan üçüncü modele göre de Türkiye ticaret sektöründe Gibson paradoksu geçerli değildir.

SONUÇ VE TARTIŞMA

Bu çalışmada Ocak 2010-Ekim 2023 dönemi aylık verileri kullanılarak Türkiye'de ve ticaret sektöründe Gibson paradoksunun geçerli olup olmadığı sınanmıştır. Bu amaca yönelik olarak her modelde değişkenlerden biri sermaye malı fiyat endeksi olacak şekilde sırasıyla Türk Lirası ticari kredi faiz oranı, Euro ticari kredi faiz oranı ve Dolar ticari kredi faiz oranı için dört ayrı model kurulmuştur. Kurulan modellerde ilgili faiz oranından sermaye malı fiyat endeksi değişkenine doğru bir nedensellik ilişkisinin olup olmadığının testi ise Fourier Kantil Nedensellik Testi aracılığıyla gerçekleştirilmiştir. Ampirik analiz neticesinde elde edilen sonuçlara göre Türkiye'de ticari sektörlerde Gibson paradoksunun geçerli olduğuna dair sermaye malı fiyat endeksi ile Türk Lirası ticari kredi faiz oranı arasında kurulan modelde zayıf kanıtlar (yalnızca ilk 4 kantilde) bulunurken, sermaye malı fiyat endeksi ile Euro ve Dolar ticari kredi faiz oranları arasında kurulan modellerde ise Gibson paradoksunun geçersiz olduğu sonucuna ulaşılmıştır. Elde edilen bulgular, Türkiye ekonomisinde, ticaret sektöründe faiz ve enflasyon değişkenlerinin birbiriyle yakından ilişkili olmadığını ve ticari kredi faiz oranlarında meydana gelen bir değişime fiyat düzeyini temsil eden diğer değişkenin çok sınırlı kantillerde (süreçlerde) aynı yönde eşlik ettiğini göstermektedir.

Bu çalışma neticesinde elde edilen ampirik bulgular teorik olarak beklenendir. Fakat Türkiye ekonomisi üzerine yapılan ve Gibson paradoksunu sınayan ekseri çalışmada elde edilen sonuçların zıttı bir görümü de sahiptir. Bu durum, bu çalışmanın sektörel ve mikro temelli olması ile ilgili olabilir. Buna göre bu çalışmada ortaya çıkan sonuç; Türkiye ekonomisi nominal faiz oranlarının araç olarak kullanıldığı para politikası uygulamalarının ara hedef ve hedef bağlamında ticaret sektöründe etkili ve arzu edilen sonuçlar vermesi ihtimalini güçlendirmektedir.

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VERGİ AFFININ VERGİ UYUMUNA ETKİSİNİN İNCELENMESİ[1]

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Abstract

Tax compliance plays a crucial role in ensuring the payment of taxes, which in turn facilitates public expenditures and serves society. Tax amnesties, frequently utilized for various reasons, significantly impact tax compliance. While some argue that tax amnesties yield positive outcomes, the prevailing opinion suggests they have negative effects. To explore this debated issue, our study investigates the impact of tax amnesties on tax compliance through interviews conducted in the province of Bilecik. The absence of prior research on this topic in Bilecik highlights the contribution of our study to the existing literature.

Keywords: Tax Law, Tax compliance, Tax Amnesties.

GIRIŞ

Vergiler, devletlerin kendi sınırları içerisinde yaşamakta olan gerçek ve tüzel kişilerden karşılıksız olarak nakdi ve cebri olarak tahsil ettikleri ödemelerdir. Devlet kamu harcamalarının finansmanını sağlamak amacıyla vergileri toplamaktadır. Kamu harcamalarını karşılamak üzere vergileri toplarken bu durum mükelleflerin üzerine maddi ve psikolojik olarak bir yük oluşturabilmektedir. Oluşan bu durum vergi uyumunda sorunlara yol açabilmekle birlikte mükellefleri vergiden kaçınma, vergi kaçırma gibi davranışlara itebilmektedir. Vergi borcunu sona erdiren en olağan yöntem vergi borcunun tahsil edilmesidir. Ancak ödenmeyen vergi borçları gecikme faiziyle birlikte artmaktadır. Devletler bazı dönemlere bu borçlardan vazgeçerek vergi affı uygulamasına başvurabilmektedir. Ancak vergi affı, mükellefler yüklerini hafifletmek ve piyasayı canlandırmak gibi olumlu etkileriyle birlikte, vergisini zamanında ve eksiksiz ödeyen mükellefler için adaletsizlik duygusu oluşturabilmektedir (Göde, 2021: 825).

Ülkemizde sıklıkla vergi aflarına başvurulması toplumda vergisini ödemeyen mükelleflere ödül gibi algılanırken, zamanında ödeyen mükellefler açısından ise ceza olarak algılanmasına neden olabilmektedir. Bu durum vergi adaletini zedelemesinin yanında mükelleflerin psikolojisini ve vergi uyumlarını da olumsuz şekilde etkilemektedir (Ayrangöl, 2013: 251).

Vergi aflarının, vergisini ödemek istememesinden kaynaklı olmamakla birlikte birtakım mali gerekçelerle ödeyemeyen mükellefler açısından vergi uyumunu artırdığı görüşü olmakla birlikte, aynı şartlarda olan fakat toplumsal yararı gözetmesi gerekçesiyle vergisini zamanında ödeyen mükellefler açısından vergi uyumunu olumsuz etkilediği gibi vergi aflarının vergi uyumuna etkisi hususunda karşıt görüşler bulunmaktadır. Çalışmamızın konusunu tartışmalı olan vergi aflarının vergi uyumuna etkisi hususunun aydınlatılması oluşturmaktadır.

Vergi ve Vergi Uyumunun Teorik Çerçevesi

Vergi, en temel ve basit bir ifadeyle, gerçek ve tüzel kişilerin devlete karşı olan mali yükümlülüklerini ifade etmektedir. Vatandaşların sorumlu oldukları bu mali yükümlülüğün en önemli ve temel amaçlarından biri, kamu harcamalarını finanse edebilmektir (Tuay ve Güvenç, 2007: 15).

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1982 Anayasası'nın 73. maddesi, vergilendirmeye dair temel ilkeleri belirlemektedir. İlgili maddeye göre: *"Herkes, kamu giderlerini karşılamak üzere, malî gücüne göre, vergi ödemekle yükümlüdür. Vergi yükünün adaletli ve dengeli dağılımı, maliye politikasının sosyal amacıdır. Vergi, resim, harç ve benzeri mali yükümlülükler kanunla konulur, değiştirilir veya kaldırılır. Vergi, resim, harç ve benzeri mali yükümlülüklerin muaflık, istisnalar ve indirim oranlarına ilişkin hükümlerinde kanunun belirttiği yukarı ve aşağı sınırlar içinde değişiklik yapma yetkisi Cumhurbaşkanına verilebilir."* İlgili maddeyle Türkiye Cumhuriyeti Anayasası'nın vergiye ilişkin temel ilkelerini belirlemiştir.

Devletin kamu hizmetleri için gerekli vergi gelirlerini düzenli olarak toplaması gerekmektedir. Vergilerin düzenli olarak toplanması ekonomik istikrarın güçlenmesine de katkı sağlamaktadır. Aynı zamanda, adil bir vergi sistemi toplumda güveni artırır ve vergi yükünün dengeli bir şekilde dağıtılmasına yardımcı olmaktadır. Diğer yandan vergi kaçakçılığının azalması haksız rekabetin engellenmesini sağlamakla birlikte daha adil bir ekonomik ortam yaratmaktadır. Bu nedenle, vergi uyumunun sağlanması hem devletin mali yapısı hem de toplumun genel refahı açısından büyük önem taşımaktadır (Saruç, 2015: 30-31).

Vergileme sürecinin karmaşıklığı, vergi kanunlarının anlaşılmasındaki zorluklar, vergi idarelerinin sınırlı denetim olanakları ve yüksek vergi toplama maliyetleri, mükelleflerin en basit, en düşük maliyetli ve en doğru şekilde vergileme sürecine katılımını son derece önemli hale getirmektedir. Vergi uyumu mükellefin herhangi bir baskı olmadan kendi istekleriyle vergi ödemesini ifade etmektedir (Saygın, 2013: 3).

Diğer birçok alanda olduğu gibi mali alanda da insan unsurunu göz ardı etmek doğru olmayacaktır. Bu sebepledir ki mali olaylarda da başarılı sonuçlar yakalamak için mükelleflerin davranışlarının iyi bir şekilde analiz edilmesi ve dikkate alınması gerekmektedir. Örneğin yasama organının tutumu ve vergi dairelerinin davranışlarına karşı mükellef tepkileri bunun yansımasının sonucudur. Dolayısıyla vergilendirme sürecinin psikolojik boyutunu dikkate almak gerekmektedir (Aktaşlıoğlu, 1981: 39).

Vergi Uyumunda Toplumun Rolü

Mükelleflerin vergiye karşı tutum ve davranışlarına etki eden unsurlar arasında sadece kendi psikolojileri değil aynı zamanda içinde bulundukları toplumunda etkisi bulunmaktadır. Düşük vergi uyumu olan toplumlarda mükellefler, çevrelerindeki olumsuz tutumlar nedeniyle güvensizlik hissi geliştirerek vergi uyumsuzluğu gösterebilir. Vergi ödemenin olumsuz algılandığı toplumlarda, dışlanma korkusuyla vergi ödemekten kaçınabilir. Ayrıca, caydırıcı olmayan cezalar, vergi ahlakı yüksek mükellefleri de etkileyerek onların da vergi kaçırmasına yol açabilir (Pak, 2024: 34).

Mükelleflerin Vergiye Bakışı ve Davranışları

Vergileme karşısında mükellefler davranışlarının altında yatan psikolojik davranışlarının incelenmesi, davranışlarına yön vermesi sebebiyle oldukça önem taşımaktadır. Genel bir ifadeyle, insanların yaşadıkları olaylar karşısında "algı-tutum-davranış" üçlüsü çerçevesinde tepki verdikleri söylenebilir. Mükelleflerin motivasyonları ve bu motivasyonların yol açacağı davranışlar göz önünde bulundurulmadan yapılacak vergi planlamaları yeterli olmayacaktır. Bu sebepledir ki etkili bir vergi politikası oluşturmak için mükelleflerin motivasyonlarını etkileyen faktörlerin doğru bir şekilde belirlenmesi gerekmektedir (Uyanık, 2019:356). Diğer yandan mükellefler yeni vergiler ve mevcut vergi oranlarının artırılması, mükellefler için ek bir yük oluşturmaktadır. Gelirinin bir kısmını devlete veren mükellefler, ek vergi veya artan oranlar karşısında genellikle olumsuz tepki göstermektedir. Bu tepkiler, aktif ve pasif olarak iki şekilde sınıflandırılmaktadır (Keskin, 2018:68).

Aktif Tepki

Mükelleflerin vergiye karşı isteksizlikten ziyade öfke duyduğu görülmektedir. Bu tepkiler, yasal olarak suç teşkil etmekle birlikte, başlangıçta bireysel olan bu tavırlar toplumsal bir boyuta ulaşıp devletin otoritesini sarsabilir. Aktif tepkilere Vergi Kaçakçılığı, Vergi Reddi ve Vergi İsyanları örnek olarak verilebilir (Aktan vd., 2002:10).

Pasif Tepki

Mükelleflerin vergiye doğrudan değil de dolaylı yollarla gösterdiği tepkiler pasif tepki olarak tanımlanabilir. Vergiden kaçınma, ikame tercihi, vergi cennetlerine göç, üretimin azaltılması, tüketimin ve tasarrufun kısılması ve yatırımlardan vazgeçme gibi tepkiler pasif tepkiye örnek olarak verilebilmektedir (Keskin, 2018: 68).

Demografik Faktörlerin Vergi Uyumundaki Rolü

Vergi mükelleflerinin vergiye karşı düşünce ve davranışlarına etki eden faktörler arasında demografik faktörler önemli bir yer tutmaktadır. Yapılmış olan birçok araştırma mükelleflerin vergiye uyumlarında demografik faktörlerin önemli bir faktör olduğunu ortaya koymaktadır. Literatür incelendiğinde demografik faktörlerin neleri kapsadığı hakkında bir netlik bulunmamaktadır (Sönmez, 2014: 23).

Vergi Affı ve Vergi Affına Başvurulma Nedenleri

Genel olarak vergi afları üç ana grupta incelenebilir (Kargı, 2011: 102).

Kapsam bakımından: Bu tür aflar, hangi vergilerin kapsama alındığını belirtmektedir. Gelir vergisi, kurumlar vergisi gibi vergi kanunlarına dayanan aflar bu grup içerisinde yer almaktadır. Ayrıca, afların vergi borcunun ana tutarını mı yoksa yalnızca gecikme faizlerini mi kapsadığı da bu grup içerisinde değerlendirilebilir.

Süresi bakımından: Af uygulamasının hangi dönemden başlayarak hangi döneme kadar sona ereceğini belirleyen bir ayrımdır. Ayrıca, afların süreli (genellikle 2-3 ay) veya süresiz olup olmadığı da bu grup içerisinde yer alır.

Mükellefi bakımından: Bu aflar, dar ve tam mükellef ayrımına göre vergi borçlularını kapsar. Yerliler veya yabancı mükellefler arasındaki farklar, hangi mükelleflerin aflardan yararlanıp yararlanamayacağını belirlemektedir.

Vergi af kanunlarının çıkarılmasının temel sebebi, hazineye ek kaynak yaratmak ve bütçe gelirlerini arttırmak olarak ifade edilebilmektedir. Ancak bu sebepler dışında da birden fazla sebep bulunmaktadır bunlar; ekonomik, mali, siyasi, sosyal, psikolojik, idari ve teknik olarak ifade edilebilir.

Türkiye' de 1960 Öncesinde Çıkarılan Vergi Afları

Ülkemizde Cumhuriyetin kuruluşundan itibaren birçok kez vergi affı uygulamasına başvurulmuştur. Çıkarılan bu af kanunları kapsam bakımından, mükellef türü bakımından ve uygulama süreleri gibi çeşitli yönlerle farklılık göstermektedir. Diğer yandan vergi aslına yönelik aflar veya vergi cezaları, zamlar ve faizlere ilişkin düzenlemeler gibi farklılıklar içermektedir (Kargı ve Yüksel, 2010: 34).

Türkiye'de 1960-1980 Arasında Çıkarılan Vergi Afları

Türkiye'de 1960 yılından 1980 yılına kadar sıklıkla vergi aflarına başvurulduğu görülmektedir. 1960 yılından sonra çıkarılan vergi aflarıyla ilgili düzenlemeler incelendiğinde bu afların bir kısmının genel af kanunları içerisinde yer aldığı, diğer bir kısmının ise özel olarak vergi affını düzenleyen kanunlarla çıkarıldığı görülmektedir. Diğer yandan bazı vergi kanunlarına detaylı olarak yapılan değişikliklerle birlikte geçici maddelerle af hükümlerine yer verilmiştir. Bununla birlikte af hükmünün bütçe kanununa eklenmesiyle yapılan vergi affı uygulamaları mevcuttur; bu durum ilk kez 1989 yılı Bütçe Kanunu ile birlikte başlamıştır (Dönmez, 1990: 221-222).

Türkiye'de 1980-2001 Arasında Çıkarılan Vergi Afları

Ülkemizde 1980 yılından sonra çıkarılan vergi afları incelendiğinde vergi tahsilatını arttırmaya yönelik ekonomik ve teknik nedenlere dayandığını söylemek yanlış olmayacaktır. Diğer yandan bu dönemde uygulanan vergi afları incelendiğinde, vergi aflarının sosyal bir amaçla çıkarılmasından ziyade hızlı bir gelir sağlama amacıyla vergi affı çıkarıldığı görülmektedir (Edizdoğan ve Gümüş, 2013: 104).

Türkiye'de 2001-2024 Arasında Çıkarılan Vergi Afları

Ülkemizde 2000 yılından önce ve sonra çıkarılmış olan af kanunlarına amaç ve nitelik bakımından birtakım farklılıklar bulunmaktadır. 2020 öncesi ve sonrasında oluşan bu farlılıkların ana sebebi 21. yüzyılın başlarında artan küreselleşme ve beraberindeki sermaye hareketliğinin hızlanmasıyla birlikte ülkelerin ekonomilerinin krizlere karşı daha hassas hale gelmiş olmasıdır. Dolayısıyla bu durum ülkelerin daha güçlü bir ekonomi oluşturma çabasıyla birlikte sermaye girişini arttırmayı amaçlamaları ve vergi rekabetine katılmalarına neden olmuştur (Martin, 2013: 63).

Vergi Affına İlişkin Görüşlerin Genel Değerlendirmesi

Geçmiş dönemlerden itibaren vergi aflarına başvurulma gerekçelerine baktığımız zaman genel olarak vergi mükellefi ile devlet arasındaki vergi barışı sağlayarak mükelleflerin uyumlarını arttırmak, ekonomik ve mali kriz dönemlerinde mükellefleri rahatlatarak ödeme kolaylığı sağlamakla birlikte vergi sistemindeki adaletsizlikleri gidermek gibi amaçlar nedeniyle başvurulmaktadır. Fakat ülkemizde sıklıkla vergi aflarına başvurulması amaçlanan hedeflere tam anlamıyla ulaşılmamasına ve vergi reformlarından ziyade hazineye kısa vadede hızlı bir gelir kaynağı olarak başvurulduğunu göstermektedir. Dolayısıyla vergi aflarına olağanüstü dönemlerde başvurulması gerekilen bir çözümden ziyade bir mali program haline gelmiştir (Eker, 2006; 23).

Vergi Affının Vergi Uyumundaki Etkisi

Vergi uyumu davranışı işlem maliyeti olarak değerlendirilebilmektedir. Bu açıdan bakıldığı zaman mükelleflerin herhangi bir baskı hissetmeden vergi yükümlülüklerini yerine getirdikleri zaman kamu ekonomisinin vergi uyumunun gerçekleşmesi için ayrılmış olan kaynaklar daha verimli ve etkin bir şekilde kullanılacaktır. Ayrılmış olan bu kaynaklar toplum refahını arttıracak mal ve hizmetlerin üretimine yönlendirilerek daha çok fayda sağlayabilecektir. Diğer yandan vergi etiği ve bilinci yüksek toplumlarda vergi denetimi ve benzeri alanlarda yapılan harcamaların azalması da mümkün hale gelecektir (Kitapçı, 2015: 73-74).

Araştırmanın Kapsamı

Çalışma kapsamında, geçmişten günümüze çıkarılan vergi aflarının vergi uyumuna ne yönde etki ettiğinin Bilecik ilinde tespit edilmesi oluşturmaktadır. Çalışma kapsamında, Bilecik ilindeki Serbest Muhasebeci Mali Müşavirler, vergi idaresi çalışanları ve vergi mükellefleriyle mülakat yapılmıştır.

Bu araştırma, Bilecik ilindeki vergi mükelleflerinin vergi afları karşısındaki tutumlarını ortaya koyarken, vergi aflarının mükellef davranışları üzerinde olumlu ya da olumsuz etkilerini belirlemeyi amaçlamaktadır.

Literatür incelendiğinde vergi aflarının vergi uyumuna etkisini inceleyen birçok çalışmaya rastlanmakta iken Bilecik ili özelinde yapılan bir çalışmaya rastlanmamıştır. Bu çalışma, Bilecik ilindeki mükelleflerin vergi afları sonrasında vergiye karşı uyum davranışlarının ne yönde şekillendiğine ilişkin bir kaynak oluşturulacaktır. Çalışmamızın literatüre katkısı bu yönde olmakla birlikte, literatürde vergi aflarının vergi uyumuna etkisi hususunda vergi idaresi çalışanları, serbest muhasebeci mali müşavirler ve vergi mükellefleriyle yapılan mülakat neticesinde sonuçlarını karşılaştıran bir çalışmaya da rastlanmaması çalışmamızın özgün yanlarından birisini oluşturmaktadır.

Sonuç ve Değerlendirme

Katılımcıların büyük çoğunluğu mevcut vergi oranlarının yüksek olduğunu diğer yandan dolaylı vergilerin mükellefin üzerinde baskı oluşturmuyormuş gibi görünmesi fakat oranların yüksek olması sebebiyle mükelleflerin gelirlerinde azalmaya neden olduğunu dolayısıyla bu durumun da mükelleflerin vergi uyumlarını olumsuz etkilediğini belirtmiştir.

Vergi aflarının vergi yasalarına uyumu bozduğunu ve mükelleflerin vergi ödemelerinin ertelenmesine aynı zamanda mükelleflerin gelecekte vergilerini ödememeyi adet edindiği bir ortam oluşturmasına zemin hazırladığını sonucu ortaya çıkmaktadır.

Vergi aflarının etkileri de benzer şekilde derinlemesine incelendiğinde, bu uygulamaların kısa vadede hazineye ek kaynak yaratmak gibi faydaları olsa da uzun vadede vergi ahlakını olumsuz etkileyebileceği anlaşılmaktadır. Araştırmaya katılan mükellefler, vergi aflarının sürekli hale gelmesinin, vergi yükümlülüklerini yerine getirme konusunda bir belirsizlik ve güven kaybına yol açtığını belirtmişlerdir. Bu durum, mükellefler arasında *"nasılsa af çıkar"* şeklinde bir beklenti yaratmakta ve vergi ödemelerini ertelenebilir bir seçenek gibi görmelerine neden olmaktadır. Böylece vergi afları, vergi uyumunu teşvik etmesi beklenirken, tam aksine mükelleflerin uyum davranışlarını zayıflatma potansiyeli taşımaktadır.

Bu bulgular, vergi politikalarının sadece kısa vadeli ekonomik hedeflere göre değil, mükelleflerin vergiye bakış açılarını güçlendirecek uzun vadeli bir perspektifle ele alınması gerektiğini göstermektedir. Vergi aflarının sıkça uygulanması, mükelleflerin vergi yükümlülüğüne olan bağlılığını zayıflatmakta ve vergi ödeme kültürünü olumsuz etkilemektedir.

Sonuç olarak, araştırmamız, vergi aflarının vergiye uyum üzerindeki etkilerini ortaya koyarak, vergi sisteminin toplumsal güveni artıracak, gönüllü uyumu teşvik edecek ve mükelleflerin vergiye bakışını iyileştirecek bir yapıya kavuşturulması gerektiğini vurgulamaktadır. Bu noktada, uzun vadeli planlama ve sürdürülebilir vergi politikaları, vergi ahlakını güçlendirerek toplumun vergiye olan güvenini yeniden inşa edebilir.

Daha adaletli bir vergilendirme sistemi ve afların kapsamının dikkatli şekilde belirlenmesi, vergi ödeme alışkanlıklarını iyileştirme konusunda etkili olabilecektir. Vergi sisteminin daha adaletli hale getirilebilmesi için geçmişten günümüze sürekli iyileştirmeler yapılmaktadır. Son dönemde vergiye ilişkin yapılan değişiklikler ise bu durumu destekler niteliktedir. Bu durum zamanla etkisini daha da hissettirecek ve dolayısıyla vergi sisteminin adalet ilkesine daha uygun hale gelmesiyle birlikte vergi aflarına olan ihtiyaçta azalarak vergi uyumu artma eğilimi gösterecektir**.**

KAYNAKÇA

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İNSAN KAYNAKLARI YÖNETİMİNDE CHATGPT KULLANIMI: POTANSİYELLER, ZORLUKLAR VE UYGULAMA ÖNERİLERİ

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Özet

Teknolojik ilerlemeler, çalışanların işlerinde başarılı olabilmeleri için yeni beceriler kazanmalarını gerektirmektedir ve insan-makine etkileşiminde çalışanları etkilemektedir. İnsan kaynakları yönetimi profesyonelleri hem teknolojik hem de kişilerarası beceriler dahil olmak üzere kapsamlı süreçleri yürütmek durumundadırlar. Üretken yapay zeka destekli çözümlerin insan kaynakları yönetimi ile entegrasyonu, veri odaklı stratejilere yönelik bir paradigma değişimini göstermektedir. Bu derleme çalışmasının amacı, insan kaynakları yönetiminde ChatGPT'nin kullanımına ilişkin kapsamlı bir analiz sunmaktır. Bu amaç çerçevesinde, ChatGPT'nin insan kaynakları süreçlerinde faydaları ve zorlukları değerlendirilmiştir ve gelecek yönelimlerine ilişkin uygulama önerilerinde bulunulmuştur. Makine öğrenimi ile ChatGPT, iş tanımları, özgeçmişler gibi insan kaynakları ile ilgili veriler üzerinde eğitilerek rutin faaliyetleri gerçekleştirmeye yardımcı olabilmektedir. ChatGPT, karmaşık veri setleriyle başa çıkma, çalışan eğitimi, performans değerlendirme, çalışan refahı, kişiselleştirilmiş geri bildirim ve çalışanlarla iletişim gibi alanlarda insan kaynakları süreçlerini destekleyerek yönetsel kararların kalitesini artırmaktadır. ChatGPT'nin insan yönetimindeki etkinliğinin sağlanmasında mevcut organizasyon kültürü ile stratejik hedeflerle uyumunun sağlanması ve veri gizliliği konularına dikkat edilmesi gerekmektedir. Çalışmanın mevcut ChatGPT ve İKY literatürünü genişleterek insan kaynakları profesyonellerine, yöneticilere ve araştırmacılara rehber olabilmesi umulmuştur.

Anahtar Kelimeler: Yapay Zeka, insan kaynakları yönetimi, chatGPT

USING CHATGPT IN HUMAN RESOURCES MANAGEMENT: POTENTIALS, CHALLENGES AND PRACTICE RECOMMENDATIONS

Abstract

Technological advancements require employees to acquire new skills to succeed in their jobs and impact employee experiences in human-machine interactions. Human resources management professionals are tasked with handling comprehensive processes, including both technological and interpersonal skills. The integration of generative AI-supported solutions in human resources management demonstrates a paradigm shift toward data-driven strategies. The purpose of this review study is to provide a comprehensive analysis of the use of ChatGPT in human resources management. In line with this objective, the benefits and challenges of ChatGPT in HR processes have been evaluated, and practice recommendations regarding future orientations have been provided. Through machine learning, ChatGPT can be trained on HR-related data, such as job descriptions and resumes, to assist with routine tasks. ChatGPT supports HR processes in areas such as handling complex data sets, employee training, performance evaluation, employee well-being, personalized feedback, and communication with employees, thereby enhancing the quality of managerial decisions. Ensuring the effectiveness of ChatGPT in human management requires alignment with the existing organizational culture and strategic goals, with careful attention to data privacy. It is hoped that this study will serve as a guide for HR professionals, managers, and researchers by expanding the current literature on ChatGPT and HRM.

Keywords: Artificial intelligence, human resource management, chatGPT

GİRİŞ

Yapay zekanın çalışanların yerini mi alacağı yoksa bir araç olarak mı hizmet edeceği konusunda tartışmalar bulunmaktadır (Colombo vd., 2019). Zarifhonarvar (2024), yapay zekanın özellikle yüksek vasıflı işlerde yeni iş fırsatları yaratabileceğini ve verimlilik ile genel ekonomik büyümeyi artırabileceğini savunmaktadır. Bunun nedeni, yapay zekanın tekrarlayan görevleri otomatikleştirebilmesi ve çalışanların daha karmaşık ve yaratıcı görevlere odaklanmasını sağlamasıdır. Örneğin, Acemoglu vd. (2022), yapay zekanın işgücü piyasaları üzerindeki

etkisini incelemişlerdir. Yazarlar, 2010'dan 2018'e kadar ABD'deki çevrimiçi iş ilanlarına ilişkin işletme düzeyinde verileri kullanmışlardır. Yapay zekâ ile uyumlu görevlerde yer alan işletmelerde, yapay zeka ile ilgili iş ilanlarının hızla arttığını tespit etmişlerdir. Yine bu işletmelerin, yapay zeka dışı pozisyonlarda işe alımları azaltmış ve kalan ilanlarda aranan beceri gereksinimlerinde değişiklikler olmuştur.

Yapay zekâ uygulamaları, işletmelere insan kaynakları yönetimi alanında çeşitli fırsatlar sunmaktadır (Varma vd., 2024). Yapay zekâ uygulamaları, insan kaynakları süreçlerinin çeşitli alanlarında dönüşüm sağlayarak bu süreçlerin etkinliğini artırmaktadır. Çalışan ödüllendirme, işe alım, yetenek yönetimi, çalışan gelişimi, performans değerlendirme ve insan kaynakları analitiği gibi fonksiyonlarda önemli iyileştirmeler sunan yapay zekâ, insan kaynakları profesyonellerine stratejik destek sağlamaktadır (Shahzad vd., 2023).

Yapay zekâ kavramının kökeni, Alan Turing'in İkinci Dünya Savaşı sırasında yayımladığı "Computing Machinery and Intelligence" adlı makalesine dayanmaktadır. Bu çalışmasında Turing, "Makineler düşünebilir mi?" sorusunu gündeme getirerek yapay zekânın temelini oluşturan düşünsel tartışmaları başlatmıştır. Daha sonra, 1958 yılında John McCarthy, "yapay zekâ" terimini kullanarak bu alanda önemli bir yenilik başlatmıştır. Günümüzde yapay zekâ, insan zekâsını taklit eden yazılım ve robotik sistemler olarak tanımlanmaktadır (Hmoud ve Laszlo, 2019). Singh ve Shaurya (2021), yapay zekâyı, "bir sistemin çevresel verileri doğru bir şekilde algılama, bu verilerden öğrenme ve esnek bir adaptasyon süreciyle belirli hedef ve görevleri yerine getirme yeteneği" olarak tanımlamaktadır.

Üretken yapay zekâ, insan girdisinden içerik üretebilen bir tür yapay zekâ sistemini ifade etmektedir. Bu sistemler, mevcut verilerdeki kalıpları öğrenmek ve ardından bu verilere dayalı içerik oluşturmak için karmaşık algoritmalar ve makine öğrenimi teknikleri kullanmaktadır. Üretken yapay zekâ örnekleri, dil, görüntü, video ve ses üretebilen sistemleri içermektedir (Giordano vd., 2024). ChatGPT'deki son gelişmeler, yapay zekânın yeteneklerini ve erişilebilirliğini artırmaktadır. Bu model, doğal dilde insan benzeri yanıtlar üretmek ve anlamak amacıyla derin öğrenme tekniklerini kullanmaktadır (Lund vd., 2023). ChatGPT, sanal asistanlardan içerik oluşturmaya, kişiselleştirilmiş eğitime ve daha fazlasına kadar yeni nesil uygulama ve hizmetleri mümkün kılmaktadır (Sohail vd., 2023).

ChatGPT, Kasım 2022'de geliştirilen açık kaynaklı bir dil modelidir. Bu yapay zekâ sistemi, insan benzeri metin üretmek amacıyla özel olarak tasarlanmıştır ve geniş bir metin verisi külliyatı üzerinde eğitilmiştir. En ünlü üretken yapay zekâ modellerinden biri olan ChatGPT, büyük ve görevden bağımsız bir yapay zekâ modeli olan Generative Pre-trained Transformer 3 (GPT-3) üzerine inşa edilmiştir (Giordano vd., 2024). Son teknoloji bir sohbet robotu olan ChatGPT, metin tabanlı girişlere insan benzeri yanıtlar üretmek için derin öğrenme algoritmaları kullanmaktadır ve dil çevirisi, soru yanıtlama ve sohbet robotu geliştirme gibi çeşitli uygulamalarda yaygın olarak kullanılmaktadır (Lund & Wang, 2023). Bir sohbet diyaloğu sistemi sohbet robotu (chatbot), doğal dilde bir sohbet gerçekleştirebilen ve kullanıcıların sorularına otomatik cevap verebilen bir bilgisayar programıdır (Lin vd., 2023).

ChatGPT, kelimeler arası bağlılıkları yakalamak ve yüksek kaliteli cevaplar oluşturmak amacıyla mekanizmaları kullanan bir modele dayanmaktadır. Üretken sohbet yapay zekâsı alanında önemli bir gelişme sağlayan chatGPT, akıllı ve etkileşimli sohbet robotu sistemleri oluşturma yolunda bir araç haline gelmiştir (Khennouche vd., 2024). ChatGPT, metin üretimi, soru yanıtlama, beyin fırtınası, yeniden yazma, özetleme, sınıflandırma, çıkarım, sohbet ve henüz sınıflandırılmamış diğer görevler gibi farklı görevleri yerine getirebilmektedir (Ouyang vd., 2022).

İKY (insan kaynakları yönetimi) profesyonelleri hem teknolojik hem de kişilerarası beceriler dahil olmak üzere kapsamlı süreçleri yürütmek durumundadırlar (Aguinis vd., 2024). Bu derleme çalışmasının amacı, insan kaynakları yönetiminde ChatGPT'nin kullanımına ilişkin kapsamlı bir analiz sunmaktır. Bu amaç çerçevesinde, ChatGPT'nin insan kaynaklarında süreçlerinde faydaları ve zorlukları değerlendirilmiştir ve gelecek yönelimlerine ilişkin uygulama önerilerinde bulunulmuştur. Çalışmanın mevcut ChatGPT ve İKY literatürünü genişleterek insan kaynakları profesyonellerine, yöneticilere ve araştırmacılara rehber olabilmesi umulmuştur.

LİTERATÜR TARAMASI

ChatGPT ve İnsan Kaynakları Yönetimi

"ChatGPT bir oyun değiştirici, ancak oynamaya henüz hazır değiliz." (Patel vd., 2023).

ChatGPT, işletmelerde önemli teknolojik yenilikleri beraberinde getirmektedir ancak bu son teknolojik devrimden nasıl faydalanabileceğimizi ve aynı zamanda olası sonuçlarından nasıl kaçınabileceğimizi derinlemesine inceleme gerekliliği bulunmaktadır (Patel vd., 2023). İşyerindeki teknolojik gelişmeler hem işletmelerin üretkenliğini artırmaktadır hem de işleri dönüştürmektedir (Van Roy vd., 2018). Teknolojik ilerlemeler, çalışanların işlerinde başarılı olabilmesi için yeni beceriler kazanmasını gerektirmektedir ve insan-makine etkileşiminde çalışanları etkilemektedir (Chuang ve Graham, 2018). ChatGPT gibi üretken yapay zekâ modelleri işletmelerde stratejik, fonksiyonel ve yönetsel olmak üzere farklı düzeylerde uygulamalara destek olabilmektedir (Korzynski vd., 2023).

Table 1: ChatGPT'nin işletmelerde potansiyel uygulama alanları

Stratejik Düzey	Fonksiyonel Düzey	Yönetsel Düzey
Karar verme: Yöneticiler, belirli durumlarda öneriler kullanarak ChatGPT'yi stratejik karar verme süreçlerinde uygulayabilir. Bilgi yönetimi: İşletmeler, veriyi depolamak, dönüştürmek ve dağıtmak için ChatGPT'yi kullanabilir.	Müşteri hizmetleri: ChatGPT, müşteri hizmetleri etkileşimlerini otomatikleştirmek, sıkça sorulan soruları yanıtlamak ve bilgi sağlamak için kullanılabilir. İnsan Kaynakları Yönetimi: ChatGPT, özgeçmiş tarama, adaylara geri bildirim sağlama, yeni çalışanların işe alınması veya çalışan taleplerine yanıt verme gibi çeşitli insan kaynakları süreçlerini otomatikleştirmek ve düzene sokmak için kullanılabilir.	Tekrarlayan görevlerin otomasyonu: ChatGPT, randevuların planlanması, seyahat düzenlemeleri yapılması ve takvimlerin yönetilmesi gibi çeşitli idari görevlerde otomatikleştirme ve yardım sağlamak için kullanılabilir. Ayrıca raporlar, notlar ve e-postalar gibi standart iş belgeleri oluşturmak için de kullanılabilir. Ek olarak, ChatGPT veri girişi, kayıt tutma gibi işlemlerde de yardımcı olabilir.

Kaynak: (Korzynski vd., 2023)

İş ilanlarında, yapay zekâ ile ilgili görev tanımlarının anlamlı ölçüde arttığı görülmektedir (Acemoglu vd., 2022). Yapay zekâ sistemleri, son derece karmaşık görevleri yerine getirmekte, özellikle bilgi çalışanlarını yazma, problem çözme gibi işlerde desteklemektedir (Kim ve Kim, 2021). Makine öğrenimi ile ChatGPT, iş tanımları, özgeçmişler ve insan kaynakları yönergeleri gibi İK ile ilgili veriler üzerinde eğitilerek rutin faaliyetleri gerçekleştirmeye yardımcı olabilmektedir (Korzynski vd., 2023: 8). ChatGPT gibi üretken yapay zekâ araçları, adaylara mülakat hazırlığında yardımcı olarak mülakat senaryoları simüle edebilmekte ve yanıtları hakkında geri bildirim sağlayabilmektedir. Bu özellik, adayların cevaplarını geliştirmelerine yardımcı olmakta, özgüvenlerini artırmakta ve nihayetinde daha iyi mülakat performansları sergilemelerini sağlayabilmektedir (Rane, 2024: 16).

Giordano vd. (2024, ChatGPT'nin insan becerilerine etkisine ilişkin yaptıkları çalışmada, bu aracın e-posta oluşturma, teknik dokümantasyon hazırlama gibi alanlarda kullanılabileceği ortaya çıkmıştır. ChatGPT'nin ofis yazılım araçlarıyla (örneğin, Microsoft Office) etkin entegrasyonu, çalışanların verimliliğini önemli ölçüde artırmaktır ve daha yaratıcı görevlere zaman ayırmalarını sağlamaktadır. Çalışmada, üretken yapay zekâ içeriklerinin yetkin bir şekilde kullanabilme becerisinin işe alım gereksinimlerini etkileyeceği ileri sürülmüştür.

ChatGPT, stratejik ve operasyonel görevlerin tamamlanmasında, kaynakların daha verimli ve etkili bir şekilde kullanılmasında etkili bir araçtır. ChatGPT uygun şekilde kullanıldığında, İK profesyonelleri için İK alanlarında esnek, verimli ve uyum sağlayabilen bir asistan görevi görmektedir. Tekrarlayan görevleri otomatikleştirip kolaylaştırarak, örneğin çalışan oryantasyon sürecinde sıkça sorulan soruları yanıtlayarak ve yeni çalışanları ilgili kaynaklara yönlendirerek, şirket politikaları, faydalar ve takvimler için hızlı bir referans sağlayarak hem çalışanların hem de İK personelinin bilgi sahibi olmasına yardımcı olabilmektedir. Ancak, ChatGPT, yetkin ve iyi eğitim almış İK profesyonellerinin yerini doldurmamaktadır (Aguinis vd., 2024).

ChatGPT ve Bard gibi üretken yapay zekâ araçları, çalışanlara çevrimiçi eğitimler ve eğitim modülleri gibi insan sermayesi geliştirme kaynakları sunabilmektedir ve beceri gelişimi için kişiselleştirilmiş geri bildirim sağlayabilmektedir (Raman vd., 2024). Bhatt vd. (2023) yaptıkları çalışmada, eğitim programlarında üretken yapay zekâyı inceleyerek, doğal dil işleme ile etkileşimli ses yanıtı aracılığıyla teknoloji destekli öğrenmenin öğrenme verimliliğini artırabileceğini savunmuşlardır.

Performans yönetimi işlevinde, ChatGPT gibi yapay zekâ araçları, bireylerin performansını organizasyonun hedefleriyle eşleştirmekte, karmaşık verileri daha kısa sürede işlemekte ve değerlendirmeler yazmaktadır (Raman vd., 2024).

Fitzpatrick vd., (2017), çalışanların refahı için zihinsel sağlık desteği sağlamak amacıyla bir sohbet robotu kullanmış ve tedavi grubundaki katılımcılarda depresyon belirtilerinin önemli ölçüde azaldığını sonucuna varmışlardır.

ChatGPT, çalışanların sorularını sorup zamanında yanıt alabilecekleri bir platform sunarak çalışanlar ve İK departmanları arasındaki iletişimi geliştirmek için kullanılabilmektedir. ChatGPT ile oluşturulan bu iletişim, olumlu ilişkileri destekleyebilmekte ve iş memnuniyetini artırabilmektedir (Korzynski vd., 2023: 8).

Table 1: Yapay Zekâ Destekli İnsan Kaynakları Yönetimi Asistanı Kullanmaya İlişkin Öneriler

1.İK Yönetimi Konusunu veya Sorunu Netleştirme	Sorduğunuz İK yönetimi alanını belirtin (örneğin, işe alım, çeşitlilik, performans yönetimi). Soruyu veya problemi açıkça ifade edin. Örneğin, "Teknoloji girişimleri için işe alımda en iyi uygulamalar nelerdir?" ifadesi, "Bana işe alım hakkında bilgi ver." ifadesinden daha spesifiktir.
2.İlgili Kurumsal Bağlamı Sağlama	Sektör, şirket büyüklüğü, bölge veya geçerli olabilecek belirli politikalar hakkında detaylar ekleyin. Herhangi bir benzersiz kurumsal kültür veya kısıtlamalardan bahsedin. Örneğin, “Orta ölçekli bir yazılım şirketi olarak, çeşitli bir iş gücüne sahibiz; çeşitlilik ve kapsayıcılık girişimlerimizi nasıl yapılandırmalıyız?” veya “Eğitim programlarımızı Z kuşağı çalışanlarımıza nasıl uyarlayabiliriz?”
3.İstenilen Sonucu veya Eylemi Belirtme	Ulaşmayı umduğunuz hedefi veya almak istediğiniz öneriyi açıklayın. Stratejik bir genel bakış mı yoksa taktiksel adımlar mı gerektiğini belirtin. Örneğin, “Önümüzdeki yıl çalışan devrini %10 azaltmak için hangi stratejileri uygulayabiliriz?”.
4.Gerekirse Kanıta Dayalı Öneriler Talep Etme	Destekleyici kanıt, araştırma veya alıntı istiyorsanız, somut bilgiler için talepte bulunun. Belirli stratejilerin pratik uygulamasını anlamak için vaka çalışmaları veya örnekler isteyin. Örneğin, “Performans yönetim sistemini başarıyla yenileyen bir şirketi tanımlayan bir vaka çalışması, araştırma çalışması veya makale, uzman görüşü veya otoriter bir kaynaktan alıntı sağlayabilir misiniz?” diye sorabilirsiniz.
5. Belirlenmiş En İyi Uygulamalara Uymaya Çalışma	En iyi uygulamalara uymak, maliyetli ve zaman alıcı düzeltici önlemlere olan ihtiyacı hızlı bir şekilde azaltarak operasyonel verimliliği ve kaynak tahsisini optimize eder. ChatGPT'den, belirli bir alan veya konuda belirlenmiş en iyi uygulamalara dayanan ayrıntılı içgörüler ve öneriler sağlamasını isteyin ve optimal bir sonuca ulaşmak için kritik stratejileri ve prensipleri vurgulayın.
6. Takip İletişimi Kurma	Açıklama veya ek bilgi için takip soruları sorun. İlk yanıtın yeniden düzenlenmesi gerekiyorsa geri bildirimde bulunun. Çok adımlı sorular sorarak etkileşimli bir yaklaşımı benimseyin (ChatGPT ile konuşurken, bir iş arkadaşınıza yaklaşır gibi yaklaşın.

Kaynak: (Aguinis vd., 2024).

ChatGPT, büyük miktarda veriyi yapılandırılmış ve mantıklı bir şekilde sunarak bireylerin çeşitli seçenekleri filtrelemesine ve düzenlemesine olanak tanımaktadır. Doğal dil arama yetenekleri sunarak karar vericilerin ihtiyaç duydukları bilgilere kolayca ulaşmalarını sağlamaktadır (Korzynski vd., 2023).

ChatGPT, çalışanlara koçluk ve mentorluk sağlamak için de kullanılabilmektedir. Bireyin öğrenme tarzını, ilgi alanlarını ve beceri seviyesini anlayarak ChatGPT, çalışanların örtük bilgilerini geliştirmelerine yardımcı olacak özel koçluk veya mentorluk fırsatlarını önerebilmektedir (Sumbal vd., 2024: 2741).

TARTIŞMA VE SONUÇ

Üretken yapay zekâ, insanların bilgi edinme yöntemlerini ve bu bilgileri özel ve profesyonel yaşamlarında kullanma şekillerini önemli ölçüde dönüştürmeye başlamıştır. Kuruluşların ve yöneticilerin etkinliğini artırmayı hedefleyen sayısız üretken yapay zekâ tabanlı çözüm giderek daha fazla sunulmaktadır (Korzynski vd., 2023). Bu derleme çalışmasının amacı, insan kaynakları yönetiminde ChatGPT'nin kullanımına ilişkin kapsamlı bir analiz sunmaktır. Çalışmada işe alım, çalışan eğitimi, performans değerlendirme gibi İK fonksiyonlarının yanında operasyonel İK süreçlerindeki ChatGPT uygulamaları açıklanmıştır.

Üretken yapay zekâ ile ilgili eğitim alan İK profesyonelleri ChatGPT'den İK asistanı olarak kullanarak verimliliklerini artırabilmektedirler. Sonuç olarak, iyi eğitim almış İK profesyonelleri, üretken yapay zekâdan faydalanarak iş yükü ve tükenmişlik düzeylerini azaltabilmektedirler. İK profesyonellerinin üretken yapay zekâyı bir İK asistanı olarak kullanmaları, stratejik ve uzun vadeli konulara daha fazla zaman ayırmalarına olanak tanımaktadır (Aguinis vd., 2024). ChatGPT, işlemsel İK rollerinin gerçekleştirilmesinde robotik bir danışman olarak hizmet verebilmektedir (Raman, 2024: 17).

ChatGPT, İK profesyonelleri ile çalışanlar arasındaki iletişimi desteklemektedir ancak bu durum üretken yapay zekânın insan etkileşiminin yerini alması gerektiği anlamına gelmemektedir. ChatGPT, iletişim sürecini daha verimli hale getirerek faydalı bir araç olarak hizmet edebilmektedir. Bununla birlikte, insan ilişkilerini desteklemek için üretken yapay zekânın başarılı bir şekilde uygulanması, insanların yapay zekâya olan güvenini geliştirmeyi gerektirmektedir (Korzynski vd., 2023: 8).

İşletmelerin, çalışanlarının kendi departmanlarında üretken yapay zekâ gibi ileri teknolojilerin benimsenmesine yönelik endişelerini ele almaları ve çalışanları, yapay zekâ araçlarını işlerindeki görevlerinde verimli bir şekilde kullanabilmeleri için gerekli becerilerle donatacak eğitim programlarına kaynak ayırmaları önemlidir. Ayrıca, bu tür teknolojilerin benimsenmesi, çalışanların işyerindeki kullanımına duyduğu güveni etkileyebilmektedir. Bu durum da üretken yapay zekâ araçlarının ve platformlarının kullanımını düzenleyen açık kuralların oluşturulmasını gerektirmektedir. Bu, çalışanların yüksek teknoloji çözümlerini günlük iş rutinlerine dahil ederken kendilerini rahat ve güven duyan bir şekilde hissetmelerini sağlayabilmektedir (Manresa vd., 2024).

Üretken yapay zekâ destekli çözümlerin İK yönetimi ile entegrasyonu, veri odaklı stratejilere yönelik bir paradigma değişimini göstermektedir. ChatGPT, karmaşık veri setleriyle başa çıkma, çalışan devri ve devamlılığı gibi alanlarda ilişkiler belirleyerek yönetsel kararların kalitesini artırmaktadır. ChatGPT'nin insan yönetimindeki etkinliği, mevcut organizasyon kültürü ve stratejik hedeflerle uyumu sağlamak için ek bir dikkat gerektirmektedir (Raman, 2024: 15).

ChatGPT uygulamasının çeşitli olumsuz yanları da bulunmaktadır. ChatGPT gibi üretken yapay zekâ modelleri, kullanıcıların sorduğu sorulara her zaman doğru yanıt verememektedir. Bu durum, bilgi doğruluğu açısından yanıltıcı olabilmektedir ve aynı zamanda veri gizliliği açısından da riskler taşımaktadır (Özparlak ve Çetin, 2023: 1025). ChatGPT de dahil olmak üzere yapay zekâ modelleri genellikle hassas çalışan bilgilerini içeren geniş veri setlerine dayanmaktadır. Bu verilerin gizliliğini ve güvenliğini sağlamak, yetkisiz erişim ve kötüye kullanımın önlenmesi için çok önemlidir. Ayrıca, yapay zekâ tarafından üretilen içeriklerle ilgili etik ikilemler de ortaya çıkabilmektedir. Bu durum, insan ve makine tarafından üretilen iletişim arasındaki sınırları bulanıklaştırarak, yanıltıcı bilgi veya yanlış temsil edilmesine yol açabilmektedir (Rane, 2024: 18).

Bir diğer olumsuz yan yapay zekâ modellerinin empatiden yoksun olmasına ilişkindir. Yapay zekâ modelleri, kullanıcı davranışlarına uyum sağlama ve doğal dil anlama gibi alanlarda ilerleme kaydetmiş olsa da insanın sahip olduğu derin bağlamsal anlayış, empati ve sezgiye dayalı tepkileri anlamada sınırlıdır (Durach ve Gutierrez, 2024: 239). Bir diğer önemli zorluk, yapay zekâ modellerindeki doğuştan gelen önyargılardan kaynaklanmaktadır.

ChatGPT, eğitim aldığı verilerden öğrenmektedir. Eğer bu verilerde önyargılar varsa, model bunları sürdürebilmekte ve güçlendirebilmektedir. İK yönetimi verilerindeki cinsiyet, ırk, etnik köken ve diğer demografik faktörlere ilişkin önyargılar, karar verme süreçlerini etkileyebilmektedir. Bu önyargıların pekiştirilmesini önlemek ve ayrımcılık uygulamalarını engellemek için yapay zekâ tarafından üretilen içeriğin dikkatli bir şekilde izlenmesi ve düzenlenmesi gerekmektedir (Rane, 2024: 19).

Bu modellerin, çalışan sağlığı ve refahı üzerindeki etkisi devam eden bir tartışma konusudur. Bazı çalışanlar, iş güvencesi, artan üretkenlik baskısı ve yeni süreçlere uyum sağlama zorlukları nedeniyle anksiyete yaşayabilmektedir. Bu duygular, motivasyonsuzluk, hayal kırıklığı ve güvensizlik hissine yol açabilmektedir (Budhwar vd., 2023). Ancak bu modellerin çalışanları destekleyerek güçlendirme, yaratıcı keşif, verimlilik artışı ve tatmin sağlama gibi olumlu roller de oynayabileceği unutulmamalıdır (Budhwar vd., 2023; Malik vd., 2022). Manresa vd. (2024)'in yaptıkları çalışmada bu ifadeyi destekler biçimde, çalışanların üretken yapay zekâ ile tanıştıkça ve bunun iş görevlerini destekleme potansiyelini fark ettikçe performanslarının iyileştiği ortaya çıkmıştır.

Bu çalışmanın kısıtı, mevcut çalışmalara dayalı olarak uygulamaların incelenmesidir. Gelecekteki çalışmalar için İKY alanında uygulamalara ve profesyonellerin deneyimlerine ilişkin daha fazla çalışma yapılması önerilmektedir. ChatGPT desteğinin daha iyi çalışan performansına yol açıp açmayacağını belirlemek için akademik çalışmalara ihtiyaç vardır.

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DOES THE FIRM SIZE MATTER FOR FINANCIAL PERFORMANCE? — EVIDENCE FROM THE FINANCIAL SECTOR OF A SOUTH ASIAN EMERGING ECONOMY

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Abstract
The study aims to evaluate the influence of bank size on the financial performance of Bangladeshi commercial banks. The analysis of the panel data using pooled ordinary least square, fixed effects, and random effect regression models from 25 listed banks between 2012 and 2023, results indicate that larger banks exhibit inferior financial performance, challenging the Theory of Economies of Scale and Scope, which posits that larger enterprises gain from cost efficiencies and benefits. The findings corroborate the Agency Cost Hypothesis, which posits that as banks expand, they become increasingly complex and encounter inefficiencies, resulting in diminished profitability. Furthermore, we have also found that bank age adversely affects financial performance, while, leverage enhances profitability, and liquidity does not substantially affect financial performance. These findings indicate that bank managers and policymakers should emphasize operational efficiency in larger banks to alleviate the adverse impacts associated with growth. Policymakers could also contemplate fostering competition among smaller financial institutions. Established banks must prioritize innovation to sustain profitability, but they should judiciously employ leverage to enhance performance without incurring undue risk.

Keywords: Bank size, financial performance, profitability, commercial banks, emerging economy

INTRODUCTION

Financial institutions are pivotal in driving economic development and financial stability, as banks are key intermediaries in channeling funds between savers and borrowers. Banks' performance is decisive for their shareholders, and the broader economy and functioning banks ensure efficient capital allocation, risk management, and financial innovation. Financial performance in the banking sector has attracted considerable attention from policymakers, economists, and researchers, given its far-reaching implications for economic stability and growth. Some studies have found that larger banks enjoy economies of scale and scope, leading to better financial performance (Berger et al., 2003). In contrast, other studies suggest that smaller banks may be more agile, innovative, and focused on serving specific customer segments, potentially outperforming their larger counterparts (Lorenc & Zhang, 2020). The relationship between bank size and financial performance is particularly relevant in the context of emerging economies, where the banking sector plays a crucial role in economic development, and the overall financial system is often less developed compared to advanced economies. One of the critical aspects of bank performance is its relationship with bank size, typically measured by total assets (Barth & Wihlborg, 2017). The size of a bank, commonly defined by total assets, deposits, or market capitalization, is often assumed to have significant implications for its financial performance (Karim et al., 2023a; Karim et al., 2023b; Lorenc & Zhang, 2020). Larger banks are generally perceived to have more diverse portfolios, greater access to capital markets, and superior risk management capabilities compared to smaller banks. However, the relationship between bank size and financial performance is complex and has been debated in academic and policy-making circles. Understanding the effects of bank size on financial performance is particularly relevant in the context of changing regulatory

environments, economic uncertainty, and technological disruptions in the financial services sector (Ahmad et al., 2024; Karim et al., 2024).

The primary reason for the interest in bank size as a determinant of financial performance is that larger banks are expected to benefit from economies of scale and scope, better access to capital markets, and diversified product offerings, which may enhance profitability and stability (Restrepo-Tobón et al., 2015). On the other hand, smaller banks, which are more locally focused, may have better knowledge of their clients and exhibit more robust relationships, potentially leading to superior credit risk management (Karim, 2020; A. Khan et al., 2020; Miah et al., 2019; Sedunov, 2020). Consequently, the relationship between bank size and financial performance is multifaceted and subject to contextual factors such as market structure, regulatory environment, and economic conditions.

In the last two decades, numerous empirical studies have examined the relationship between bank size and financial performance, but the findings have been mixed. Some studies argue that larger banks tend to outperform smaller ones due to their ability to capitalize on economies of scale, negotiate lower funding costs, and diversify their income streams (Hughes et al., 2019; Onour et al., 2019). These advantages are expected to lead to higher profitability, measured through indicators like return on assets (ROA) and return on equity (ROE), as well as lower operating costs. However, others suggest that beyond a certain size threshold, banks may encounter diseconomies of scale, such as increased complexity in management, higher operational risks, and bureaucratic inefficiencies, which can negatively affect performance (Biswas et al., 2017; Goddard et al., 2014; Hughes et al., 2019). These conflicting findings highlight the need for a more nuanced understanding of how bank size influences financial outcomes.

Several theoretical frameworks offer insights into how bank size may influence financial performance. First, the *Theory of Economies of Scale* suggests that as banks grow larger, they can spread their fixed costs over a larger base, leading to cost advantages and higher profitability (Restrepo-Tobón et al., 2015; Wheelock & Wilson, 2017). Larger banks may also benefit from increased bargaining power with suppliers and customers and better access to low-cost funding, particularly from the wholesale market (Hughes et al., 2019). The *Economies of Scope Theory* complements this view by arguing that larger banks, with diversified product and service offerings, can achieve higher efficiency by cross-selling products across a broad customer base (A. Khan et al., 2020; Milbourn et al., 1999).

In contrast, the *Too Big to Fail Hypothesis* postulates that very large banks may enjoy an implicit government guarantee, which allows them to take on excessive risks, knowing that they will likely be bailed out in the event of failure (Acharya & Yorulmazer, 2005; Hughes & Mester, 2013). This may result in moral hazard and financial instability, as well as regulatory costs, which could diminish profitability. Similarly, the *Agency Cost Hypothesis* suggests that as banks grow larger, their managerial structures become more complex, leading to increased agency costs and inefficiencies that can erode financial performance (Avramidis et al., 2018; Chai et al., 2022; Jensen & Meckling, 1976).

Despite these theoretical insights, empirical research has yet to reach a consensus on the nature of the relationship between bank size and financial performance. Studies such as those by Alzugaiby et al. (2021) and Hamid et al. (2020) have found positive associations between bank size and financial performance, particularly in terms of profitability and cost efficiency. However, other researchers, including Pasiouras et al. (2009) and Wang (2015), have reported diminishing returns to scale for larger banks, suggesting that beyond a certain size, the benefits of growth may be outweighed by higher costs and risks.

Although substantial research has been conducted on the relationship between bank size and financial performance, significant gaps remain. Much of the existing literature focuses on large, developed economies, particularly the United States and Europe (Avramidis et al., 2018; Biswas et al., 2017; Wheelock & Wilson, 2017). Evidence on performance, strategy, and market discipline. Many studies employ static models that do not account for the dynamic nature of the banking environment or the potential endogeneity between bank size and performance (Adams & Mehran, 2011). As banks grow, their performance may improve, but superior performance may also enable banks to grow, leading to a two-way relationship that is difficult to capture using traditional econometric

techniques. Advanced econometric methods, such as dynamic panel data models or instrumental variable approaches, are needed to address this issue and provide more robust insights into the size-performance relationship.

To understand how bank size affects performance in emerging markets and smaller economies, where banking structures, regulatory environments, and market dynamics may differ substantially. Banks in emerging economies may be more vulnerable to external shocks, and the competitive landscape might be more constrained, influencing the size-performance relationship in ways not observed in advanced economies (Doong & Doan, 2022; Tanchangya et al., 2024). The rise of digital-only banks and the increasing importance of technology in delivering financial services call for a reassessment of the relationship between bank size and financial performance in the post-pandemic era.

The influence of bank size on financial performance, however, remains a matter of debate among researchers and practitioners. The relationship between bank size and financial performance remains a complex and debated issue. While larger banks may benefit from economies of scale, scope, and enhanced access to capital, they also face potential challenges, including diseconomies of scale, increased risk-taking, and managerial inefficiencies. The mixed findings in the existing literature, particularly in underexplored contexts such as emerging markets, and the post-pandemic environment. By addressing these research gaps, this paper provides a more comprehensive understanding of how bank size influences the financial performance of Bangladeshi commercial banks and offers valuable insights for policymakers, regulators, and stakeholders of the finance industry.

LITERATURE REVIEW

Over time, different studies have presented conflicting views on whether larger banks perform better than smaller ones. This literature review aims to explore the impact of bank size on financial performance by synthesizing findings from recent and critical studies in the field The relationship between bank size and financial performance has been a topic of extensive academic inquiry. Larger banks tend to benefit from economies of scale, which enhance their profitability, while smaller banks may have greater flexibility and customer focus.

Several studies emphasize that large banks benefit from economies of scale, allowing them to spread operational costs over a larger asset base. Kwan (2003), Hughes et al. (2019b), Konara et al. (2019), and Rahman et al. (2015) found that banks with larger asset bases tend to have higher ROA and ROE, as they are able to optimize operational efficiency, reduce marginal costs, and enhance profit margins. They analyzed banks from different perspectives in terms of the economic status of markets, including emerging economies, where large banks were found to achieve cost advantages and higher net profits due to their capacity to spread fixed costs over more significant operations. However, other researchers have argued that smaller banks may be better positioned to cater to the specific needs of small and medium-sized enterprises and thus exhibit superior financial performance (Akhigbe & McNulty, 2003; Laeven et al., 2016).

The theoretical foundation for analyzing bank size and financial performance is often rooted in economies of scale, agency theory, and the structure-conduct-performance (SCP) paradigm. Economies of scale suggest that larger banks can operate more efficiently because they can spread fixed costs over a broader base of operations (Berger et al., 2003; Hughes & Mester, 2013). Meanwhile, agency theory posits that as banks grow, the complexity of operations may lead to inefficiencies due to agency costs, where management interests may not always align with those of shareholders (Jensen & Meckling, 1976). The SCP paradigm argues that larger banks, given their market power, may engage in anti-competitive behavior that boosts their profitability (Goddard et al., 2004).

Additionally, Bos & Kolari (2005) analyzed European banks and confirmed that large banks enjoy cost efficiency and higher market share, which boosts profitability. However, their study noted diminishing returns when bank size exceeds a certain threshold, suggesting that excessive size can lead to managerial inefficiencies and complexities that hurt performance.

Large banks often exhibit riskier behavior due to the "too-big-to-fail" perception. Goddard et al. (2014) explored the relationship between bank size, risk-taking, and financial performance in the context of global financial crises. Their research indicated that larger banks tend to take on more risk, which can either enhance profitability in stable economic environments or lead to significant losses during periods of financial stress. Their findings suggest that

while bank size positively correlates with profitability in times of economic stability, the risk-adjusted performance of larger banks declines during crises.

Larger banks typically have a broader range of products and services, enabling them to diversify their income streams. Rossi et al. (2009) and Asif & Akhter (2019) investigated how diversification affects financial performance across banks of varying sizes. Their study concluded that large banks are better positioned to benefit from diversification, which reduces their income volatility and increases their return on assets. However, they also warned that over-diversification could lead to management inefficiencies, which could erode profitability.

While larger banks benefit from scale, smaller banks tend to focus on niche markets and local communities. Azmi et al. (2019) and Khan et al. (2021) examined small and medium-sized banks in Southeast Asia, highlighting how smaller institutions can outperform larger ones in specific market segments by offering personalized services and fostering close relationships with customers. Their research found that smaller banks often exhibit higher net interest margins, as they tend to have closer ties with local businesses, leading to higher loan and deposit rates.

Many studies have explored the effect of bank size on profitability, with mixed results. Larger banks tend to benefit from economies of scale, which can lower operating costs and increase profitability. For instance, Dietrich & Wanzenried (2011) found that larger banks in Switzerland were more profitable due to their ability to diversify and reduce costs compared to smaller banks. This finding is supported by other studies, including those by Athanasoglou et al. (2008), who showed that bank size positively affects profitability through cost efficiency in the European banking sector.

However, other researchers have questioned this positive relationship. (Demirgüç-Kunt & Huizinga, 2013) examined global banks and found that while larger banks enjoy lower costs due to economies of scale, they also face diminishing returns to scale, which limits the marginal profitability gains from further increases in size. According to their research, beyond a certain threshold, further increases in bank size do not lead to proportional increases in profitability and may even lead to lower returns due to managerial inefficiencies.

There has been a lot of research on the effects of firm size, both positively and negatively, since it is a key factor in a company's performance. Companies with larger sizes typically have more leverage in the market, easier access to capital, and economies of scale, all of which contribute to better performance. Almomani et al. (2023) state that bigger companies can improve their overall performance by investing in technology, better-managing risks, and utilizing their considerable resources for strategic planning. From a South Asian viewpoint, including Bangladesh, larger enterprises in India and Sri Lanka frequently benefit from stronger government assistance, better access to foreign markets, and more solid financial networks, all of which contribute to increased performance (Akhtar et al., 2024; Tabash et al., 2024). For example, in Bangladesh, huge enterprises in the textile and industrial industries have been able to utilize their size to negotiate favorable global trade terms, resulting in economic growth and competitiveness (Tabash et al., 2024). A larger company's competitive edge and financial stability are further enhanced by its capacity to recruit talented workers and its varied portfolio (Lu et al., 2022). This is in line with the resource-based view (RBV) theory's emphasis on the importance of firms' possession and use of scarce, valued, unique, and non-replaceable resources in determining their performance.

However, the drawbacks of a large company are not to be ignored. Bureaucratic inefficiencies, higher agency expenses, and operational complexity are all factors that could reduce a company's performance as it expands. According to Cheng (2008) and Mubeen et al. (2022), large enterprises could have trouble keeping up with the ever-changing market. This can be problematic in contexts where there is a lot of change. The diluting of core competencies and the mismatch of the firm's strategy and operational skills can also result from overexpansion and the pursuit of big for size's sake. However, the challenges of firm size in these places are also significant. Larger enterprises in Nepal and Bhutan may face bureaucratic red tape, inadequate regulatory frameworks, and the difficulty of operating in fragmented marketplaces (Silwal, 2022). While larger enterprises in Bangladesh benefit from economies of scale, they may also confront difficulties such as corruption and operational inefficiency, which can undermine their potential benefits, particularly in quickly expanding areas (Akhtar et al., 2024) proposed the rule of diminishing returns to explain this phenomenon, which states that, at a certain point, the incremental benefits of growing the size of a firm begin to reduce. Regardless of these obstacles, the current belief in the

literature is that bigger organizations do better than smaller ones because the beneficial effects of company size on performance exceed the negative ones.

Ultimately, the relationship between firm size and financial performance is a complex one. While larger firms may benefit from economies of scale, diversification, and access to capital, they may also face challenges such as bureaucratic inefficiencies and agency costs. The evidence from the financial sector of South Asian emerging economies suggests that firm size can have both positive and negative impacts on financial performance, and the overall effect may depend on factors such as the regulatory environment, market structure, and strategic management of the firm.

Despite the wealth of research on the relationship between bank size and financial performance, several gaps remain and there is significant scope to work on. Banking firms in emerging markets encounter both economic and policy-related factors, which make the bank's operations more challenging. This paper includes post-COVID-19 data, which will enable us to reveal the after-shock impact on the financial performance of banks and how size affects firms' performance. By focusing on the financial sector in Bangladesh, this study contributes to a growing body of research on the firm's size and financial performance in assuring sustainable growth.

METHODS

Sample Banks and the Data Sources

The population consists of all listed banks in Bangladesh. From the 33 banks on the Dhaka Stock Exchange (DSE), 25 commercial banks have been selected for this study. This study's panel data include financial statements from the bank's annual reports, obtained from each bank's website and the DSE library. This study examines 12 fiscal years, from 2012 to 2023, resulting in a total of 300 observations for each variable.

After constructing the panel data of 25 banks, we meticulously analyzed and excluded the banks with incomplete data for the research period from 2012 to 2023. The sample banks were chosen based on data accessibility, capitalization, and their role in the national economy.

Variables

Prior research concerning firm size has employed a range of variables as metrics for assessing this characteristic; we have incorporated several critical factors that typically signify the roles of size on performance. The identified explanatory variables, along with the control variables in this study, include indicators of firm size, financial performance metrics, and specific firm-related factors that can significantly influence the financial performance of banks. Table 1 delineates the variables of the study, accompanied by their respective measurements and sources:

Table 1: The list of variables with their definition and measurement

Type	Variable	Symbol	Measurement	Source
Dependent Variables	Return on assets	ROA	Earnings before interest and taxes/total asset	(Afreen, 2020; Agustina et al., 2021; Ahmad et al., 2021; Buallay et al., 2017; Goel, 2018; Habib, 2016; Karim et al., 2022; Karim et al., 2023; Koji et al., 2020)
	Return on equity	ROE	Earnings before interest and taxes/shareholders' equity	(Al-Homaidi et al., 2018; Alshatti, 2015; Karim et al., 2023; Karim et al., 2023; Samo & Murad, 2019; Ullah et al., 2020; Widana et al., 2021)
Independent	Firm Size	SIZE	Natural logarithm of total assets	(Hermuningsih et al., 2020; Karim et al., 2023; Mishra & Mohanty, 2014; Puni & Anlesinya, 2020; Saini & Singhania, 2018; Sheikh et al., 2013; Valenti et al., 2011)
Control Variables	Firm age	SIZE	Number of years since the firm was incorporated	(Hermuningsih et al., 2020; Saini & Singhania, 2018) (Karim et al., 2022; Karim et al., 2023)
	Firm leverage	LEV	Debt-equity ratio	(Huynh et al., 2022; Khatib & Nour, 2021; Mohan & Chandramohan, 2018; Saini & Singhania, 2018; Sheikh et al., 2013)
	Firm Liquidity	LIQ	Liquid asset to total asset	(Al-Homaidi et al., 2018; Badar & Javid, 2013; Gazi et al., 2024; Karim et al., 2017; Owoputi, 2014)

Econometric Estimation Model

To ascertain the influence of the firm size determining the bank's performance, we have estimated two different multiple regression models, as per the following regression equation:

$$FP_{it} = \alpha_i + \beta_1 Size_{it} + \beta_3 Control_{it} + \varepsilon_{it} \quad (1)$$

In this context, α represents the intercept, β denotes the slope, and ε signifies the error term. FP denotes the financial performance, which serves as the dependent variable, while ROA and ROE have been employed as proxies for the bank's financial performance. The bank size has been employed as explanatory variables, while certain firm-specific metrics—such as age, leverage, and liquidity—have been designated as control variables. *i* denotes the identifiers for cross-sectional entities (firms), while *t* signifies the temporal units (years).

In order to evaluate the influence of firm size on performance, we undertook a panel regression analysis utilizing the statistical software STATA 16. Based on the variables employed in this study, the preceding equation (equation 1) is expressed in the econometric forms outlined below (equations 2 and 3). The research adheres to the analytical methodologies established by numerous prior scholars in the relevant field (Anas et al., 2023; Karim et al., 2022; Karim et al., 2023; Mishra & Mohanty, 2014; Yilmaz et al., 2023). The econometric equations are represented as follows:

$$ROA_{it} = \alpha + SIZE_{it} + FA_{it} + LEV_{it} + LIQ_{it} + e_{it} \quad (2)$$

$$ROE_{it} = \alpha + SIZE_{it} + FA_{it} + LEV_{it} + LIQ_{it} + e_{it} \quad (3)$$

Two primary categories of study exist when considering the temporal horizon: cross-sectional and longitudinal. Cross-sectional research is conducted at a single point in time to offer a comprehensive snapshot of a particular moment. Longitudinal studies are conducted repeatedly over extended durations to monitor changes over time (Gazi et al., 2024; Karim et al., 2018, 2022, 2023a, 2023b).

The fundamental characteristics of the study encompass the temporal dimensions concerning both the scale and the performance of banks in Bangladesh. Nonetheless, cross-section and time series data may face challenges related to heterogeneity and stationarity (Gujarati, 2003). The greater variation in samples afforded by longitudinal data, as opposed to cross-sectional data, facilitates more precise estimations. Furthermore, scholars may enhance their management of cross-section heterogeneity—a potential origin of endogeneity—by employing longitudinal data, thereby increasing the efficiency of estimates. In contrast to OLS estimates, panel estimation affords us the ability to manage the influence of omitted variables as well as unobserved firm-specific and time-specific factors that impact the endogenous variable. We also run the basic requirements as the conditions to be fulfilled for the panel data regression models to be estimated, the results of diagnostic checking are also included in Tables.

RESULTS

Descriptive Statistics

Table 2 represents descriptive statistics which provide an overview of the key variables of this research, giving insights into their distribution across 300 observations. The mean of ROA is 0.0133, indicating that on average, the firms in the study earn 1.33% profit on their total assets with a standard deviation (SD) of 0.021, suggesting moderate variability in ROA among the firms. In the case of ROE, the mean value of 0.260, shows that on average, firms earn a 26% return on equity, and the SD of 0.024, shows relatively low variability in the ROE among firms. The mean of the firm's size is 25.986, indicating the average size of firms measured by the natural logarithm of total assets, with the SD of 0.816, suggesting moderate variation in firm size among sample banks. Table 2 also shows insights into some of the firm-specific characteristics as the control variables of the study. The mean of the firm's age is 23.58 years, with a maximum value of 62 and a minimum of 12 years, which indicates that the sample firms have diverse experiences in terms of operations over years in the financial market of Bangladesh with an SD of 10.478, showing a relatively high variation in the value of firm age among the firms. The leverage shows that its mean value is 11.728, suggesting that, on average, firms use a debt ratio of about 11.7 times to total assets with an SD of 6.84, reflecting significant variability in leverage levels among the sample firms. The maximum value of the leverage is 68.912 indicating that some firms are highly leveraged, with debt far exceeding equity. Another measure of the bank's liquidity is the liquidity (LIQ), for which the data shows that the sample firms have a mean LIQ of 15.079, indicating that, on average, firms have liquid assets sufficiently exceeding their liabilities (a liquidity ratio above 1 suggests that firms can cover their short-term obligations). The SD of 1.408, indicates a moderate variation in liquidity across firms.

Table 2: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
ROA	300	0.0133	0.021	- 0.083	0.0631
ROE	300	0.260	0.024	-0.099	0.494
SIZE	300	25.986	0.816	23.134	28.124
FA	300	23.580	10.478	12.000	62.000
LEV	300	11.728	6.840	0.156	68.912
LIQ	300	15.079	1.408	0.129	76.185

Correlation Matrix and Multicollinearity

Table 3 displays the pairwise correlation coefficients between the variables. These coefficients show the strength and direction of the linear relationship between two variables. The results show that there is a weak negative correlation (-0.084 and -0.030) of the firm size with both the performance metrics—ROA and ROE. The results indicate that the larger firms seem to have a slightly lower financial performance. The control variables of the study firm age and the firm liquidity also have a negative correlation with both the profitability indicators. However, the firm's level of leverage, the ratio of the liabilities to total assets, has a positive relationship with the metrics of financial performance.

Table 3 also shows the results of VIFs and Tolerances of the variables used in the correlation and regression analysis to check the multicollinearity. Multicollinearity occurs when independent variables are highly correlated, which can inflate standard errors and make it difficult to assess the individual impact of each variable (Karim et al., 2022; Karim et al., 2023; Karim et al., 2023). Multicollinearity is not a concern in this dataset, as indicated by the VIF values, all of which are well below 5, and the corresponding tolerance values, all of which are above 0.1. The average VIF is 1.257, further confirming that multicollinearity is not an issue. Therefore, the model's independent variables are sufficiently independent, and the results of any regression analysis based on these variables are likely to be reliable.

Table 3: Matrix of correlations

Variables	ROA	ROE	SIZE	FA	LEV	LIQ	VIF	1/VIF
ROA	1.000							
ROE	0.223	1.000						
SIZE	-0.084	-0.030	1.000				1.46	0.685
FA	-0.128	-0.158	0.285	1.000			1.296	0.771
LEV	0.494	0.123	0.399	-0.112	1.000		1.198	0.835
LIQ	-0.046	-0.005	0.184	-0.075	-0.013	1.000	1.074	0.931
Mean VIF							1.257	

Regression Results

To assess the effect of bank size on financial performance, three regression models have been estimated using the techniques of panel estimation: pooled OLS**,** fixed effects (FE)**,** and random effects (RE). Employing the SIZE as the independent variable and FA, LEV, and LIQ as the control variables to assess their impact on the bank's financial performance—using ROA and ROE as the dependent variables. Regarding/ regression model 1, as the results show, SIZE has a negative and significant effect on ROA throughout all of the Pooled, FE, and RE models with a coefficient from -0.093 to 0.122 and a p-value of of less than 0.05 in all of the used models. Among the control variables, firm age (FA) has a significant negative impact on ROA, while the LEV and LIQ have a positive impact on the financial performance indicator ROA. FA is not consistently important for profitability, though, in the FE model, higher levels of firm age are associated with lower profitability, possibly reflecting capital-intensive but less profitable operations in specific banks. The effect of LEV is statistically significant, while it is insignificant for LIQ. Leverage consistently has a positive impact on ROA across all models, indicating that banks that utilize higher levels of debt tend to have higher profitability. This could be because of tax advantages or a more efficient use of borrowed capital. In general, larger banks may have lower ROA due to diminishing returns to scale or increased complexity in operations. Liquidity does not appear to have a significant impact on bank profitability (ROA) in any of the models. This may suggest that liquidity is not a critical determinant of performance in the sampled banks, possibly because of sufficient baseline liquidity across the sample. The constant represents the

baseline ROA when all independent variables are set to zero. The differences in constants across models reflect variations in model assumptions and the role of unobserved heterogeneity. The Adjusted R-squared values indicate that around 32-34% of the variance in ROA is explained by the independent variables. The values are fairly consistent across the three models, suggesting a moderate explanatory power. All models have highly significant F-statistics (P-value = 0.000), indicating that the models as a whole are statistically significant and the independent variables jointly explain the variation in ROA. The values of DW-stat are closer to 2 suggest no autocorrelation. The Fixed Effects and Random Effects models show better values, reducing concerns about autocorrelation. Although the significant Hausman test indicates that the Fixed Effects model is preferred over the Random Effects model, there is evidence that the unobserved effects are correlated with the independent variables.

For regression model 2, using ROE as the dependent variable, Table 4 presents the regression results. SIZE has also a negative and significant effect on ROE in all of the estimated models, with a coefficient of -0.001 to 0.061 and this estimation produces a p-value of 0.000 in the FE and RE model, while 0.034 in the pooled model. This indicates that, across all models, firm size negatively impacts ROE, with the strongest effect observed in the fixed-effects model. Larger firms may experience lower ROE due to diseconomies of scale, higher operational inefficiencies, or increasing costs that are not fully offset by equity returns. As a relationship with ROA, FA also has a negative, which is statistically significant and FA consistently shows a negative relationship with ROE across all models. This suggests that firms with higher age tend to have lower equity returns, possibly due to their inability to use business operational experience efficiently for productive purposes to generate higher revenues relative to equity. Leverage shows a weakly positive relationship with ROE, particularly in the pooled OLS model. This implies that firms using debt financing may achieve slightly higher returns on equity, but the relationship is not very strong. Leverage may increase ROE, but it likely depends on the efficient management of debt. Liquidity does not significantly impact ROE in any of the models. This suggests that liquidity levels do not play a substantial role in determining equity returns, possibly because firms generally maintain sufficient liquidity, and excess liquidity is not necessarily a driver of profitability.

The constant term represents the base level of ROE when all independent variables are set to zero. The substantial differences in the constant across models indicate that unobserved heterogeneity plays a role in determining ROE, which is particularly captured in the fixed and random effects models. The Adjusted R-squared values indicate that the independent variables explain between 38.6% to 46% of the variation in ROE, with the RE model explaining the highest proportion. This suggests that the Random Effects model fits the data better, capturing a larger portion of the variability in ROE. All models have significant F-statistics, with a p-value of 0.000, indicating that the models as a whole are statistically significant. This means that the independent variables collectively explain the variation in ROE. DW-stat values close to 2 suggest that there is no significant autocorrelation in the residuals of the models, meaning the models' error terms are uncorrelated. The significant Hausman test indicates that the FE model is preferred over the RE model. This suggests that the unobserved individual effects are correlated with the independent variables, and the Fixed Effects model provides more consistent and unbiased estimates.

Table 5: Pooled OLS, Fixed Effects, and Random Effects Regression Results

Variables	ROA						ROE					
	Pooled		Fixed		Random		Pooled		Fixed		Random	
	Coeff.	Prob.	Coeff.	Prob.	Coeff.	Prob.	Coeff.	Prob.	Coeff.	Prob.	Coeff.	Prob.
SIZE	-0.093	0.023**	-0.065	0.000***	-0.122	0.000***	-0.001	0.034**	-0.061	0.000***	-0.015	0.000**
FA	-0.001	0.344	-0.018	0.003***	-0.000	0.757	-0.000	0.009***	-0.006	0.000***	-0.000	0.051**
LEV	0.02	0.000***	0.025	0.000***	0.022	0.000***	0.000	0.018**	0.000	0.054*	0.000	0.064*
LIQ	0.017	0.512	0.024	0.405	0.020	0.454	-0.001	0.674	0.001	0.670	0.001	0.802
Constant	2.373	0.000***	2.020	0.031**	3.120	0.000***	-0.012	0.000***	1.460	0.000***	0.398	0.000***
Adj. R-Squared		0.341		0.325		0.345		0.386		0.460		0.4331
F statistic		38.091		27.786		28.298		39.870		36.316		37.340
Prob. > F		0.000		0.000		0.000		0.000		0.000		0.000
Durbin-Watson		1.55		1.76		1.88		1.89		1.76		1.97
Hausman Specification			62.511	0.000***					133.505	0.000***		

***Notes*: *** p<0.01, ** p<0.05, * p<0.10**

DISCUSSION AND IMPLICATION OF THE RESULTS

The results from the regression analyses indicate that bank size has a negative and significant effect on the firm financial performance. This suggests that larger banks tend to have lower financial performance. Our findings contradict the *theory of economies of scale and the theory of scope*, which suggests that as firms grow larger, they can spread their fixed costs over a larger base, leading to cost advantages and higher profitability. That means, the banks in Bangladesh fail to capitalize on the business size to make them useful in the operational and strategic decisions. Generally, large firms may also benefit from increased bargaining power with suppliers and customers, as well as better access to low-cost funding. The *Economies of Scope Theory* complements this view by arguing that larger banks, with diversified product and service offerings, can achieve higher efficiency by cross-selling products across a broad customer base.

In contrast, the *Too Big to Fail Hypothesis* postulates that very large banks may enjoy an implicit government guarantee, which allows them to take on excessive risks, knowing that they will likely be bailed out in the event of failure. This may result in moral hazard and financial instability, as well as regulatory costs, which could diminish profitability. Similarly, the *Agency Cost Hypothesis* suggests that as banks grow larger, their managerial structures become more complex, leading to increased agency costs and inefficiencies that can erode financial performance. Thus, our findings are supported by the agency cost theory, which indicates that large firms may be prone to be more aggressive in decision-making and relaxed in operations. Therefore, our results confirm that larger banks have profitability, potentially due to diseconomies of scale or operational inefficiencies that increase costs without a corresponding rise in returns. These findings are consistent with previous results (Gazi et al., 2024; Karim et al., 2022, 2023), this result also contradicts some results of the earlier studies (Husna & Satria, 2019).

We also found that firm age has a significant negative impact on financial performance. This might indicate that older banks are capital-intensive but less profitable compared to younger banks, which may have more agile or innovative business models. However, the level of leverage has a positive and statistically significant effect on firm financial performance, which indicates that banks with higher debt tend to achieve higher profitability. This could be explained by the tax advantages associated with debt or the more efficient use of borrowed capital. We also found that firm liquidity does not significantly affect banks' financial performance, which indicates that the level of liquidity does not play a crucial role in determining profitability, possibly because all banks in the sample maintain adequate liquidity levels.

The results of our study provide key insights for bank managers and policymakers of emerging economies like Bangladesh. The negative and significant impact of bank size on financial performance suggests that as banks grow larger, they face decreasing profitability. This implies that bank managers need to focus on improving operational efficiency and managing the complexities that come with larger sizes to avoid a decline in financial performance. Policymakers might consider encouraging competition among smaller banks or ensuring that large banks do not become too complex to manage effectively. The negative relationship between firm age and profitability indicators indicates that older banks may struggle with maintaining profitability, and the managerial teams should assess whether their business models are becoming outdated and consider adopting more innovative practices to remain competitive. Our results indicate that the leverage shows a positive relationship with the firm's financial performance, suggesting that banks can benefit from using debt to improve profitability. Banks should ensure they manage their debt efficiently to optimize financial performance while mitigating risks associated with high leverage. We found that liquidity does not affect financial performance, indicating that the sample banks maintain adequate liquidity levels. This suggests that, beyond a certain point, holding excess liquidity does not translate into higher profitability or equity returns. Banks might focus on other areas like operational efficiency or risk management to enhance financial performance. In summary, larger banks face challenges in maintaining profitability, and leveraging debt can improve financial performance if managed efficiently. However, liquidity levels alone do not drive profitability, and older banks may need to innovate to improve their returns.

CONCLUSION

The study was intended to assess the impact of bank size on the financial performance of Bangladeshi commercial banks. Analyzing the data of 25 listed banks from 2012 to 2023, the study reveals that larger banks in Bangladesh

tend to have lower financial performance, contradicting the Theory of Economies of Scale and Scope, which suggests that larger firms benefit from cost advantages and efficiency. Instead, the findings support the Agency Cost Hypothesis, which argues that as banks grow, they become more complex and face inefficiencies, leading to reduced profitability. The Too Big to Fail Hypothesis is also relevant, as larger banks may take excessive risks, leading to moral hazards and financial instability, further diminishing profits. Additionally, firm age negatively impacts financial performance, indicating that older banks may struggle with outdated models while younger banks benefit from more agile or innovative practices. Conversely, leverage positively affects profitability, as banks with higher debt tend to achieve better financial results due to tax advantages and efficient use of borrowed capital. However, liquidity does not significantly influence financial performance, likely because all banks in the sample maintain sufficient liquidity levels. For bank managers and policymakers, these findings suggest that larger banks should prioritize operational efficiency to mitigate the adverse effects of size. Policymakers may also consider promoting competition among smaller banks. Older banks should focus on innovation to maintain profitability, while banks should use leverage wisely to boost performance without taking on excessive risk.

LIMITATIONS AND FUTURE RESEARCH GUIDELINES

The study relies on secondary data collected from the financial statements of listed Bangladeshi commercial banks. Any errors or inconsistencies in the published financial reports could affect the accuracy of the results. Additionally, the unavailability of certain relevant data, such as detailed bank-specific risk factors or non-financial performance indicators, might limit the scope of analysis. The study focuses only on listed commercial banks in Bangladesh, which may limit the generalizability of the findings. Unlisted banks and other financial institutions, such as microfinance institutions or development banks, are excluded, which may provide different insights into how bank size impacts performance. This research employs data for a specific period and uses panel econometric techniques. However, external factors, such as economic policy changes, inflation rates, and interest rate fluctuations, are dynamic and could influence the performance of banks over time. The study may not fully capture the long-term impact of these factors on bank performance. Some key factors, such as corporate governance, management efficiency, regulatory environment, or market competition, might not be fully included in the model due to data unavailability. The study also does not fully account for broader macroeconomic variables (e.g., GDP growth, exchange rates, inflation) that may also influence the performance of banks. As these factors are external to the banks' control, their exclusion could create an incomplete picture of the determinants of bank performance.

Future research should aim to incorporate non-financial performance indicators such as customer satisfaction, operational efficiency, and service innovation. This will provide a more holistic understanding of how bank size impacts overall performance. Extending the research to include unlisted banks and other financial institutions in Bangladesh would improve the generalizability of the results. Additionally, a comparative study involving banks from other South Asian countries would provide cross-country insights into the effect of size on performance. Future research could address potential endogeneity issues by applying advanced econometric methods, which can provide more reliable estimates by correcting for reverse causality. Future research should integrate macroeconomic variables such as GDP growth, inflation rates, interest rates, and exchange rates to understand better the external factors affecting bank performance. This would provide a more comprehensive analysis of the determinants of the bank's financial performance.

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İÇ KONTROL SİSTEMİNİN KURUMSAL SOSYAL SORUMLULUK UYGULAMALARI ÜZERİNDEKİ ROLÜ NEDİR?

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Özet

Bu çalışma, iç kontrol sisteminin kurumsal sosyal sorumluluk uygulamaları üzerindeki rolünü araştırmayı amaçlamaktadır. Bu kapsamda literatürde bu konu üzerine yapılmış çalışmalar incelenerek, iç kontrol sistemi ile kurumsal sosyal sorumluluk uygulamaları arasındaki ilişki değerlendirilmiştir. COSO modeli, uluslararası alanda en çok kabul gören iç kontrol modellerinden biridir. COSO iç kontrol modeli, işletmelerin hedeflerine ulaşmasını sağlamak için tasarlanmış politika ve prosedürlerden oluşmaktadır. Bu sistem işletme faaliyetlerinin etkin ve verimli olmasını, finansal raporların güvenilirliğini, yürürlükteki mevzuata uyumu ve varlıkların korunmasını sağlamayı amaçlamaktadır. İç kontrol sistemi önceleri sadece işletmenin iç hedeflerine odaklanırken, günümüzde iş ortamının karmaşıklığı nedeniyle tüm paydaşların ihtiyaçlarına cevap verecek şekilde revize edilmektedir. COSO, kurumsal sosyal sorumluluk raporlamanın paydaşlar için önemli bir odak noktası haline gelmesi nedeniyle, 2023 yılında bu konuda iç kontrol bütünleşik çerçevenin nasıl kullanılacağını açıklayan bir rehber yayınlamıştır. İç kontrol sisteminin bu sürece entegre edilmesi, hem işletmelerin kurumsal sosyal sorumluluk hedeflerine ulaşmada karşı karşıya kaldıkları riskleri yönetmelerine yardımcı olmakta hem de finansal olmayan bilgilerin kalitesini, karşılaştırılabilirliğini ve güvenilirliğini artırarak paydaşların karar alma süreçlerini iyileştirmektedir. Ayrıca, iç kontrol sistemi kurumsal sosyal sorumluluk faaliyetlerinin ölçülmesi ve raporlamasında ortaya çıkabilecek hile risklerinin önlemesi ve tespit edilmesinde etkin rol oynamaktadır.

Anahtar Kelimeler: İç Kontrol, COSO, Kurumsal Sosyal Sorumluluk

Abstract

This study aims to investigate the role of internal control system on corporate social responsibility practices. In this context, the relationship between the internal control system and corporate social responsibility operations was assessed by reviewing literature on the subject. The COSO model, one of the most accepted internal control models in the international arena, consists of policies and procedures meant to help firms achieve their objectives. This system aims to enhance the efficiency and effectiveness of business operations, reinforce the trustworthiness of financial statements, ensure adherence to relevant regulations, and safeguard assets. The internal control system originally aimed at addressing only the internal goals of a business. Yet, with the growing intricacy of today's business environment, it has revised to meet the needs of all stakeholders. As stakeholders become increasingly interested in companies' corporate social responsibility reporting, COSO has published guidance on how to apply the internal control integrated framework to corporate social responsibility reporting in 2023. Integrating the internal control system into this process not only helps companies manage the risks they face in achieving their corporate social responsibility goals, but also improves stakeholders' decision-making processes by increasing the quality, comparability and reliability of non-financial information. In addition, the internal control system is active in preventing and detecting fraud risks that can occur during the measurement and reporting of corporate social responsibility activities.

Keywords: Internal Control, COSO, Corporate Social Responsibility

GİRİŞ

İç kontrol sistemi, şirketlerin yönetim yapısında ortaya çıkabilecek çıkar çatışmalarını azaltılmasını sağlayarak, faaliyetlerin etkinliği ve verimliliği, finansal raporların güvenilirliği ve geçerli yasalara uyum konusunda makul bir güvence sunmaktadır. Bu sistemin kurumsal sosyal sorumluluk (KSS) sürecine entegre edilmesi, KSS ile ilgili riskleri azaltarak paydaşların haklarını korunmasına ve ekonomik kayıplara yol açabilecek sosyal sorumluluk

sorunlarını önlenmesine yardımcı olmaktadır. İç kontrol sistemi, şirket içinde bir kontrol mekanizması olarak, şirket ile paydaşlar arasındaki güveni güçlendirerek sorunların çözümüne katkıda bulunmaktadır (Liu, 2018:4).

COSO, 2023 yılında, 2013'teki İç Kontrol- Bütünleşik Çerçeve'yi değiştirmeden, bu çerçevenin şirketlerin çevresel, sosyal, yönetişim ve sürdürülebilirlik sürecinde kullanılmasına dair bir rehber yayımlamıştır. Bu rehberde KSS faaliyetlerinin yürütülmesi, ölçülmesi ve raporlanmasında iç kontrol bileşenlerinin nasıl kullanılacağı açıklanmaktadır (ICSR,2023:7).

Çalışma, kurumsal sosyal sorumluluk uygulamaları üzerinde iç kontrol sisteminin rolünü araştırmayı amaçlamaktadır. Çalışmada öncelikle iç kontrol sistemi, KSS ele alınmış ve araştırmanın metodolojisi açıklanmıştır. Daha sonra, iç kontrol sisteminin kurumsal sosyal sorumluluk uygulamalarındaki rolünün ne olduğu araştırılmıştır. Bu kapsamda konuyla ilgili çalışmalardan ikincil veri kaynağı olarak yararlanılarak araştırma sorusu cevaplanmaya çalışılmıştır. Ayrıca, denetim firmalarının konu ile ilgili yayınladıkları raporlardan yararlanılmıştır. Son olarak sonuç ve tartışma kısmında, bulguların değerlendirilmesi yapılmıştır.

KAVRAMSAL ÇERÇEVE

İç Kontrol Sistemi

Uluslararası İç Denetçiler Enstitüsü (IIA) tarafından 1999 yılında yapılan iç kontrol tanımına göre; "*iç kontrol örgüt yönetiminin ayrılmaz bir parçası olup; faaliyetlerde etkinlik ve verimliliğin, mali tablolarda ve ilgili raporlarda güvenilirliğin sağlanması, yürürlükteki yasalara ve düzenlemelere uyulması, bütçenin uygulanması ve örgüt faaliyetlerinde devamlılığın sağlanması konularında makul güvence sağlayan örgüt yönetiminin önemli bir parçasıdır*" şeklinde ifade edilmiştir (Uyar, 2010 :39). İç kontrol, işletmedeki faaliyetleri yürütmek için tasarlanmıştır ve faaliyetleri yürütürken kılavuz olarak kullanılan bir dizi kurallar bütünüdür. İşletmeler, kaynakların kötüye kullanılmasını önlemek ve işletmeyle ilgili faaliyetleri kontrol etmek için iç kontrol sistemini kullanırlar (Türedi ve Celayir, 2021:4). İç kontrolün özelliklerini aşağıdaki gibi sıralayabiliriz (Selimoğlu ve Özbek, 2018:51):

- İç kontrol bir süreçtir: İç kontrol, yönetim faaliyetlerinin içerisine yerleştirilmiş, temel bir başlangıç ve sonuç noktası olmayan bir süreçtir.
- İç kontrol çalışanlar tarafından yürütülür. İç kontrol sadece belgelere ve formlara dayanan bir süreç değildir. İç kontrol, yönetim kurulu ve üst düzey yöneticiler dahil olmak üzere bütün kurum çalışanları tarafından yürütülen bir sistemdir.
- İç kontrol makul güvence sağlar. İç kontrol sistemi hiçbir zaman mutlak güvence sağlamaz, kabul edilebilir düzeyde makul güvence sağlamaktadır.
- İç kontrol amaçların başarılması için bir araçtır. İç kontrol kurum hedeflerine ulaşılması için gerekli altyapıyı sağlayan, işletme sistemi içerisinde bir alt sistemdir.

COSO iç kontrol modeli, uluslararası alanda geçerliliği en çok kabul edilen iç kontrol modeller arasında yer almaktadır. COSO (Committee of Sponsoring Organizations of the Treadway Commission), iç kontrolle ilişkin standartlar ve çerçeveler geliştirmekte ve gerektiğinde güncellemeler yapmaktadır. Komite iç kontrole ilişkin kapsamlı ilk çerçeveyi 1992 yılında yayınlamıştır. 2013 yılında ise COSO iç kontrol çerçevesi, iç kontrollerin tüm unsurları arasındaki ilişkinin diyagramını içerecek şekilde güncellenmiştir. COSO 2013 iç kontrol bütünleşik çerçevede finansal raporlama kategorisi, finansal olmayan ve iç raporlama gibi diğer önemli raporlama biçimlerini de içerecek şekilde genişletilmiştir. COSO iç kontrol bütünleşik çerçeve; kontrol ortamı, risk değerlendirmesi, kontrol faaliyetleri, bilgi & iletişim ve izleme olmak üzere beş bileşenden ve onyedi ilkeden oluşmaktadır. İç kontrol çerçevesi şirketin operasyonel, raporlama ve uyumluluk olmak üzere üç kategoride hedeflere ulaşmasını sağlamaktadır. Operasyonel hedefler, şirketin faaliyetlerinin verimli olmasını; raporlama hedefleri finansal ve finansal olmayan raporların güvenilir olmasını, zamanında ve şeffaf bir raporlama sisteminin sürdürülmesini; uyumluluk hedefleri şirketin yasalara, düzenlemelere uymasını sağlamaktadır (www. Coso.org; Çakırsoy ve Baral, 2022:271; Karaca ve Meriç, 2023:58-59).

COSO tarafından 2004 yılında yayınlanan "Kurumsal Risk Yönetimi Çerçevesi", yüksek rekabetin iş hayatını ve kurumsal yapıyı karmaşıklaştırması nedeniyle 2017 yılında revize edilmiştir. Bu çerçevede, kurumsal risk

yönetiminin operasyonlara nasıl entegre edilebileceği ve kurumsal performansın artırılmasına nasıl katkı sağlayabileceği açıklanmaktadır. (Yerekapan ve Eskin, 2020:63).

COSO son yıllarda KSS raporlamaya ilginin artması nedeniyle, şirketlerin çevresel, sosyal ve yönetişim konularına ilişkin raporlamalarda etkili iç kontrolün oluşturulmasına yardımcı olmak amacıyla 2023 yılında bir rehber yayımlanmıştır. Komite, bu çerçevenin, şirketler tarafından sürdürülebilirlik bilgilerinin toplanması, incelenmesi ve raporlanmasında kontrol ve yönetişim süreçlerinin iyileştirilmesine yönelik çeşitli aşamaların bulunması ve bu süreçte finans, muhasebe, risk yönetimi, hukuk ve iç denetim profesyonellerini bir araya getiren çok işlevli ekiplerin oluşturulması gerekçeleriyle hazırlandığını belirtmiştir (ICSR,2023:7). Diğer taraftan günümüzde piyasa ve düzenleyici kuruluşların etkisiyle KSS raporlamanın kapsamı ve sıklığının artması, örgütlerin KSS konularındaki raporlamanın doğruluğunu artırmak amacıyla COSO iç kontrol bütünleşik çerçeve ilkelerine yöneltmiştir. Bu kapsamda 2013'teki iç kontrol bütünleşik çerçeve değiştirilmeden, şirketlerin KSS raporlaması üzerinde etkili iç kontrol kurmalarını sağlayacak ek bir rehber hazırlanmıştır (www.ey.com; deloitte.com).

COSO iç kontrol çerçevesinin KSS konularında uygulanması aşağıdaki Tablo 1'de yer almaktadır. Tablo 1'de görüldüğü üzere, COSO çerçevesinin KSS sürecinde kullanılması, bu süreçte kontrol ortamının tasarımı, uygulanması ve denetlenmesi için güçlü bir temel oluşturacaktır. Kontrol ortamı bileşeni, KSS modelinin ve buna göre organizasyon şemasını oluşturulmasını, KSS programına yönelik standartların, prosedürlerin ve süreçlerin belirlenmesini kapsamaktadır. Risk değerlendirme, KSS konusunda riskleri tespit etme, analiz etme ve bu risklere yönelik önlemleri belirleme sürecidir. Kontrol faaliyetleri, KSS hedeflerine ulaşmak için oluşturulan politikaları, kuralları ve uygulamaları kapsamaktadır. Bilgi ve iletişim, hem kurum içinde KSS konularına yönelik eğitim programlarının hazırlanmasını hem de bu alanda paydaşlarla iletişim sürecini kapsamaktadır. İzleme, KSS ilgili performansın kalitesini değerlendirme sürecidir (www.ey.com).

Tablo 1:COSO İç Kontrol Bütünleşik Çerçevenin Kurumsal Sosyal Sorumluluk Konularına Uygulanması

Bileşenler	**Uygulama Örnekleri**
Kontrol Ortamı	Yönetim Kurulunun/ Yöneticilerin KSS konularını tüzük ve yönetmelikler ile gözetimi KSS modeli ve organizasyon şeması Tanımlanmış sürdürülebilirlik iş süreci/ sorumluklar ve personel gereksinimleri KSS programı için politika ve prosedürler KSS performans hedeflerine uyumlu teşvikler ve ödüller
Risk Değerlendirme	İklim riskleri ve fırsatları dahil olmak üzere KSS riskinin değerlendirilmesi Şirketin KSS konularında risk profili Finansal ve finansal olmayan bilginin işletme üzerindeki etkisinin sürekli değerlendirilmesi KSS risklerinin kurumsal risk yönetimi programına ve eylem planlarına entegrasyonu İnsan haklarıyla ilgili yeni yasa ve düzenlemelerin değerlendirilmesi Hile riskinin değerlendirilmesi
Kontrol faaliyetleri	KSS konularının operasyonel ve raporlama süreçlerindeki riskleri ele almak için kontrol çerçevesinin oluşturulması KSS verilerinin toplanması ve raporlanması için kullanılan sistemler üzerindeki BT kontrolleri KSS bilgilerini toplayan veya işleyen üçüncü taraf hizmet sağlayıcılarının denetimi
Bilgi ve İletişim	KSS konusunda iç ve dış paydaşlar için iletişim planı Çalışanların KSS konularında eğitimi KSS konularında veri toplama, raporlama süreçleri ve bu süreçlere yönelik prosedürler
İzleme	Kontrollerin tasarımı ve işleyişinin periyodik değerlendirilmesi Hedeflere ve amaçlara doğru ilerlemeyi izlemek için KSS puan kartları Yönetime ve yönetim kuruluna eksiklikleri bildirme protokolleri

Kaynak:https://www.ey.com/en_us/cro-risk/how-new-coso-guidance-will-help-with-internal-control-over-esg-reporting (29.09.2024)

Kurumsal Sosyal Sorumluluk

KSS kavramının akademik olarak kabul gören ilk tanımı, Howard Bowen tarafından 1953 yılında yazılan "Social Responsibilities of the Businessman" adlı kitapta yer almaktadır. Bowen çalışmasında KSS'yi " *toplumun hedefleri ve değerleri açısından arzu edilen politikaları takip etme, bu kararları alma veya bu eylemleri izleme yükümlülüğü*" olarak tanımlamış ve iş adamlarının sosyal sorumluluk faaliyetleriyle ilgilenmeleri gerektiğini vurgulamıştır. Bu yaklaşım, günümüzde KSS'nin birçok kavram ve yaklaşımla ele alınması nedeniyle değişmiştir (Nikolova ve Arsić, 2017:26). Birleşmiş Milletler Sanayi Geliştirme Organizasyonu'na göre kurumsal sosyal sorumluluk, şirketlerin sosyal ve çevresel kaygıları iş süreçlerine ve paydaşlarıyla olan ilişkilerine entegre ettikleri bir yönetim anlayışıdır. KSS, şirketlerin sadece kâr elde etmeyi değil, aynı zamanda sosyal ve çevresel sorunlara duyarlılık göstermeyi de amaçlayan bir stratejidir. Bu yaklaşım, sürdürülebilirlik hedeflerine ulaşmada önemli bir araçtır ve paydaşların beklentilerini karşılamada da etkili bir rol oynar (www.unido.org).

KSS işletmelerin hem yasal düzenlemelere uygun olarak sosyal sorumluluk bilinciyle hareket etmelerini hem de insan sermayesine, çevreye ve paydaşlarla ilişkilere daha fazla yatırım yapmaları gerekliliğini ifade etmektedir (Kızıltan ve Umut-Doğan, 2021:68).

Literatürde KSS konusu hissedar ve paydaş teorisi kapsamında değerlendirilmektedir. Hissedar görüşünde, yöneticilerin en temel sorumluluğunun kârı maksimize etmek olduğu, sosyal ve çevresel sorumlulukların piyasalar tarafından yerine getirilmesi gerektiği vurgulanmaktadır. Bu görüşte, KSS harcamaları şirket kaynaklarının israfı olarak görülmektedir. Paydaş görüşünde ise KSS ile ilgili faaliyetlerin paydaşların işletmelerin faaliyetlerine olan desteğini artırdığı ve dolayısıyla hissedarların da fayda sağladığı ifade edilmektedir (Koçyiğit ve Gök, 2019:26). Günümüzde KSS uygulamaları ile paydaşların her işletmede önemli rollerinin olduğu kabul edilmesiyle birlikte KSS yaklaşımı hissedarlara odaklanmaktan paydaşlara odaklanmaya doğru kaydığını ifade edebiliriz.

Birleşmiş Milletler'in 2015 yılında yayımladığı Sürdürülebilir Kalkınma Hedefleri dünya çapında en büyük kurumsal sürdürülebilirlik girişimi olarak kabul edilmektedir. Birleşmiş Milletler'e üye ülkeleri 2030 yılına kadar çevre koruma, işçi hakları ve insan haklarıyla ilgili ilkeleri uymayı ve bu doğrultuda politikalar geliştirmeyi kabul etmişlerdir (Halkos ve Nomikos, 2021:107).

Daha önceleri gönüllük esasına dayalı olarak yapılan KSS raporlama, günümüzde uluslararası düzenlemelerle birlikte şirketlerin KSS uygulamalarını hayata geçirmeleri ve bu uygulamalarını raporlamaları için bir zorunluluk haline gelmiştir. Şirketlerin KSS raporlama süreci uluslararası otoritelerin yasal düzenlemeleri ile şekillenmiştir. Avrupa Birliği'nin (AB) 2014 yılında AB'deki halka açık şirketlerin finansal olmayan bilgilerini raporlama yapma zorunluluğu getiren 2014/95 Direktifi (günümüzde AB Kurumsal Sürdürülebilirlik Raporlama Direktifi olarak ifade edilmektedir) ile şirketler ilk kez zorunlu KSS raporlarını 2018 yılında yayımlamaya başlamıştır. Şirketler zorunlu KSS raporlarında, çevresel, sosyal ve çalışanlarla ilgili konular ile insan haklarına saygı, yolsuzlukla mücadele, yönetim kurullarında çeşitlilikle ilgili uyguladıkları politikalar, riskler ve sonuçlar hakkında bilgi vermeleri gerekmektedir. Bu direktifle AB şirketleri tarafından sunulan KSS açıklamalarının şeffaflığını ve karşılaştırılabilirliğini artırması amaçlanmaktadır (Fiechter vd.,2022:1504). AB, Paris İklim Anlaşmasının gerektirdiği yeşil dönüşüm sürecine yönelik yol haritasını 2019 yılında Avrupa Yeşil Mutabakatı ile ortaya koymuştur. AB mutabakat ile Avrupa'da 2050 yılına kadar sera gazı emisyonlarının net olarak sıfırlandığı dünyanın ilk iklim-nötr kıtası haline getirmeyi hedefleyen büyüme stratejisi benimsemiştir. (www.ab.gov.tr).

İşletmelerin KSS politikalarının güvenilirliğini artırmak ve paydaşlar tarafından bu uygulamaların doğru bir şekilde değerlendirmesini sağlamak için, KSS uygulamalarını ayrıntılı olarak raporlamaları ve bu raporları geniş bir kitlelere paylaşmaları gerekmektedir Bu bağlamda, şirketlerin finansal olmayan bilgilerini sunmaları için dünya çapında birçok raporlama çerçevesi oluşturulmuştur. Bunlar arasında Birleşmiş Milletler Küresel İlkeler Sözleşmesi (UNGC) çerçevesi, Uluslararası Standartlar Örgütü (ISO 26000) Sosyal Sorumluluk Kılavuzu ve Küresel Raporlama Girişimi (GRI) Standartları yer almaktadır. UNGC, kurumsal sosyal sorumluluğu düzenleyen insan hakları, iş standartları, çevre ve yolsuzlukla mücadele konularında temel ilkeleri oluşturan on ilkeden oluşan gönüllü ilkeler bütünüdür. İşletmelerin UNGC ilkelerini benimsemeleri sürdürülebilir hedeflerine ulaşmalarında önemli bir etkendir. ISO tarafından 2010 yılında yayınlanan Sosyal Sorumluluk Rehberi (ISO 26000) KSS'yi kapsamlı bir şekilde açıklayan bir rehber olduğu için uluslararası olarak benimsenen bir araçtır (Halkos ve Nomikos, 2021:108-109). 1997 yılında kurulan GRI, sürdürülebilirlikle ilgili ilk raporlama kılavuzunu 2000 yılında yayınlamıştır. GRI, paydaşlara sağlanan finansal olmayan bilgilerin kalitesini iyileştirmeye yönelik kılavuz hazırlamaktadır. Sürdürülebilirlik konusunda raporlama yapan şirket sayısı arttıkça, GRI raporlamaya olan talep de artmış ve kılavuz zamanla genişletilmiştir. Sürdürülebilirlik raporlama ilgili son kılavuz 2020 yılında GRI

Standart olarak bilinen yeni bir yapı altında üç ana standart (GRI 101, GRI 102 ve GRI 103) ve sektör bazında birçok spesifik standardı içeren toplam 36 standarttan oluşmaktadır. (www.globalreporting.org). GRI, kurumsal düzeyde şeffaflık ve hesap verebilirlik sağladığı ve paydaş katılımını teşvik ettiği için küresel olarak kabul görmüş bir standarttır. Ayrıca, standardın herhangi bir sektör ve organizasyonda kullanılabilmesi ve farklı uygulama seviyelerinde nasıl raporlama yapılacağına dair normların olması, onu birçok organizasyonun sürdürülebilirlik raporlama ihtiyaçlarını en iyi karşılayan standart haline getirmiştir (Olanipekun vd, 2021:426).

İşletmeler, finansal bilgi kullanıcıları için finansal raporlar hazırlamakta, çevresel, sosyal ve yönetişim bilgisi talep edenlere ise kurumsal sosyal sorumluluk raporlar sunmaktadır. Ancak bu iki raporun içerik ve yapısındaki fark bazı eleştirilere yol açmıştır. Bu eleştiriler entegre raporlama kavramının ortaya çıkmasına neden olmuştur. Entegre raporlama hem finansal hem de çevresel, sosyal ve yönetişim bilgilerin entegre bir şekilde sunulmasını sağlayan raporlama türüdür (Zozik ve Doğan, 2021:84). Entegre raporlama yaklaşımı, bir kurumun stratejisini, yönetimini, performansını ve perspektifini içeren değer yaratma süreci ile doğrudan ilgili olmakla birlikte az ve öz bilgiler sunarak finansal raporlar ve diğer raporların birleşimi olarak sürdürülebilir sermaye piyasalarına sunduğu stratejik bir cevaptır. Bu raporlama faaliyet odaklılığın yerini stratejik odaklılık, kısa vadeli bakış açısının yerini daha uzun vadeli bakış açısı alınmasını, geriye dönük bir analize nazaran ileriye dönük bir süreç olduğu öngörülen ve niteliksel bir yorum ile niceliksel bilgi sağlayan ve bu özelliklerinden dolayı kurumsal yönetişimin önemli bir parçası haline geleceği düşünülen yaklaşımdır (Kızıltan ve Umut-Doğan, 2021:70-71). Entegre Raporlama Çerçevesi, ilk olarak Uluslararası Entegre Raporlama Konseyi (IIRC) tarafından 2013 yılında yayımlanmış olup son olarak 2021 yılında güncellenmiştir. Bu çerçevenin amacı, entegre raporun genel içeriğini düzenleyen ilkeleri ve içerik unsurlarını sunmak ve bunların altında yatan temel kavramları açıklamaktır (Entegre Raporlama Çerçevesi, 2021:1-25)

METOD

Araştırmada sistematik literatür araştırması yöntemi kullanılmıştır. Sistematik derleme, *"belli bir konuda hazırlanmış, araştırma sorusuna yanıt bulmak için, belirlenmiş ölçütlere uygun olarak aynı konuda yapılmış çalışmaların sistemli taranması, bulunan çalışmaların geçerliğinin değerlendirilmesi ve sentezlenerek birleştirilmesi*" olarak tanımlanmaktadır. Araştırmada sistematik literatür yönteminde belirlenen adımlar dikkate alınmıştır. Araştırma sorusunun belirlendiği birinci adımda, temel soru" iç kontrol sisteminin kurumsal sosyal sorumluluk uygulamaları üzerindeki rolü nedir?" sorusu olmuştur. İkinci adımda iç kontrol ile kurumsal sosyal sorumluluk ilişkisini inceleyen kaç yayın olduğu ve bu araştırmaların hangi konuları içerdiği belirlenmiştir. Bunun için araştırma için belirlenen kavramlar veri tabanında taranmış ve çalışma kriterleri belirlenmiştir (Yavuz, 2022:348-349). Literatür taraması Ekim 2024 tarihinde Web of Science (WOS) veri tabanında "internal control and corporate social responsibility" kelimeleri kullanılarak yapılmıştır. Son adımda tarama sonucunda elde edilen veriler detaylı şekilde incelenmiştir. Tablo 2'de araştırmanın kısıtları yer almaktadır. Tabloda görüldüğü üzere, araştırma konusu yeni olmasından dolayı konuyla ilgili tüm yayınlar çalışmaya dahil edilmiştir.

Tablo 2: Araştırmanın Kısıtları

Parametreler	Seçim
Kullanılan veri tabanı	Web of Science
Arama kelimesi	"internal control and corporate social responsibility"
Belgenin niteliği	Tüm yayınlar
Zaman aralığı	Kısıt yok
Dil	Tüm diller
Alan	Tüm alanlar
Yayın süreci	Yayında

BULGULAR

Araştırmanın amacı doğrultusunda WOS veri tabanında arama sonucunda tespit edilen yayınlar Tablo 3'te yer almaktadır. Tabloda görüldüğü üzere; yayınların 13'ü makale, 2'si bildiridir. Bu konuyla ilgili yayınların 2015 yılından itibaren yapılmaya başlandığı ve 2020 yılında yoğunlaştığı görülmektedir. Ayrıca Akisik ve Gal tarafından yazılan makalenin en yüksek atıf aldığı belirlenmiştir.

Tablo 3: **Araştırmaya Dahil Edilen Yayınlar**

Sıra	Yazarlar	Eser Bilgisi	Yayın Türü	WOS Atıf
1	Akisik, O.& Gal, G.	"The impact of corporate social responsibility and internal controls on stakeholders' view of the firm and financial performance" *Sustainability Accounting Management and Policy Journal*,2017, 8 (3), 246-280	Makale	50
2	Hao, DY; QI, GY and Wang, J.	"Corporate Social Responsibility, Internal Controls, and Stock Price Crash Risk: The Chinese Stock Market", *Sustainability*, 2018, 10 (25), 1-22.	Makale	37
3	Li,X.	"The effectiveness of internal control and innovation performance: An intermediary effect based on corporate social responsibility", *Plos One*,2020,15 (6),1-31.	Makale	33
4	Liu, J.Y.	"An Internal Control System that Includes Corporate Social Responsibility for Social Sustainability in the New Era" *Sustainability*, 2018, 10 (10),1-27.	Makale	18
5	Kim, Y.S; Kim, Y; Kim, H.D	"Corporate Social Responsibility and Internal Control Effectiveness", *Asia-Pacific Journal of Financial Studies*, 2017,46 (2), 341-372.	Makale	17
6	Li, X; Zheng, .C; Liu, Ç; Sial, M.S	"The Effectiveness of Internal Control and Corporate Social Responsibility: Evidence from Chinese Capital Market", *Sustainability*,2018, 10(11),1-18.	Makale	13
7	Zhang, L; Su, W.	"Corporate social responsibility, internal control, and firm financial performance", *Frontiers in Psychology*,2022,13,1-18.	Makale	6
8	Boulhaga, M; Elbardan, H; Elmassri, M	"The effect of internal control and corporate social responsibility on conditional accounting conservatism: Evidence from France", *Journal of Corporate Accounting and Finance*, 2023,34 (2),228-241.	Makale	5
9	Guan, X; Yao, C.L; Zhang, WM	"Sustainability of Entrepreneurship: An Empirical Study on the Impact Path of Corporate Social Responsibility Based on Internal Control", *Sustainability*, 2023, 15(16),1-17.	Makale	1
10	Fang, J.Y.	"Corporate social responsibility and stock-price crash risk: test of regulation mechanism based on institutional ownership and internal control", *Journal of Industrial and Production Engineering*, 2023, 40 (8),624-637.	Makale	1
11	Wang, Y.; Tang, M; Yu, X	"Can the High Quality of Internal Control Promote the Fulfillment of Corporate Social Responsibility in Energy Enterprises?", Proceedings of the 2015 Asia-Pacific Energy Equipment Engineering Research Conference,2015.	Bildiri	1
12	Hu, J.N; Lin, X; Xie, F.	"Executive compensation, internal control quality, and corporate social responsibility in China", *Journal of Financial Research*, 2024, 47 (1),147-177.	Bildiri	1

13	Song, GM	"Research on Internal Control of Corporate Social Responsibility and Its Evaluation System Construction", Proceedings of the Fourth International Symposium-Management, Innovation & Development,2017.	Bildiri	0
14	Lin, YH; Huang, TC.	"Does Regulatory Reform of Internal Controls in China Improve Internal Control Effectiveness? Role of Corporate Social Responsibility Engagement", *Journal of International Accounting Research*, 2023, 22 (2),121-147.	Makale	0
15	Blanco, B; Guillamón-Saorín, E; Guiral, A	"The two sides of corporate social responsibility and the quality of internal control audit opinions", *International Journal Of Auditing*,2024,28 (1),226-250	Makale	0

Kaynakça: WOS veri tabanı

Araştırma kapsamında elde edilen bulgular aşağıda açıklanmıştır.

İç kontrol sistemi geçmişte sadece işletmenin iç unsurlarına, örneğin operasyonel, raporlama, uyumluluk ve stratejik hedeflerine odaklandığı ve işletme dışındaki paydaşların çıkarlarını ihmal ettiği için eleştiriliyordu. Günümüzde giderek karmaşıklaşan iş dünyasında, işletmelerin hem iç hem de dış paydaşların beklentilerini karşılayabilmesi için iç kontrol hedeflerinin tüm paydaşların çıkarlarını dikkate alması gerektiği vurgulanmaktadır. Bu noktada, Kurumsal Risk Yönetimi Çerçevesi, şirketlerin kurumsal sosyal sorumluluk hedeflerine ulaşırken bu alandaki riskleri yönetmelerine katkıda bulunacaktır (Liu, 2018:3).Örneğin Liu (2018) çalışmasında iç kontrol sisteminin şirketin sürdürülebilir kalkınma hedeflerine ulaşmasına teşvik edeceğini ve kurumsal strateji ile iç kontrol hedeflerinin tutarlılığını sağlayacağını, şirketin sosyal sorumluluk hedeflerini uygulamaya yönelik rehberlik sağlayacağını tespit etmiştir.

Kurumsal sosyal sorumluluk sürecine iç kontrol sisteminin entegre edilmesi, finansal olmayan bilgilerin kalitesini, karşılaştırılabilirliğini ve güvenilirliğini artıracağı için iç ve dış paydaşların karar alma süreçlerine değer katacaktır. Ayrıca, iç kontrolün KSS'ye entegrasyonu KSS konularında hile risklerini önlemede ve tespit etmede etkili olacağından, paydaşların meşru haklarını ve çıkarlarını korumak, kurumsal itibara zarar verecek eylemleri önlemek ve böylece işletmenin stratejik hedeflerine başarıyla ulaşması açısından önemli bir rolü olacaktır (Harasheh ve Provasi, 2022:389-390). Örneğin Kim vd. (2017) çalışmalarında sosyal sorumluluk uygulamaları olan şirketlerin şeffaflık ve hesapverebilirliği sağlamada iç kontrol sisteminin etkisini incelemişlerdir. Çalışmada etik davranan ve sosyal sorumluluk uygulamaları olan şirketlerin etkili iç kontrol sistemlerine sahip olma olasılığının daha yüksek olduğunu belirlenmiştir. Fang'in (2023) çalışması, şirketlerin KSS performansının bilgi şeffaflığını artıracağını, bunun da yatırımcıların doğru kararlar almasına yardımcı olacağını ve dolayısıyla hisse senedi fiyatlarındaki düşüş riskini azaltacağını belirtmiştir. Ayrıca, iç kontrol sisteminin de aynı olumlu etkiye sahip olduğunu vurgulamıştır.

Günümüzde şirketlerin çevreye verdikleri zararları gizleyip sadece olumlu çevresel bilgileri açıklayarak yeşil yıkama yöntemini seçmeleri, ciddi bir bilgi asimetrisi sorununa yol açmaktadır. COSO iç kontrol çerçevesinin temel amaçlarından biri raporlama güvenliğidir. Bu nedenle bu çerçeveye göre iç kontrol sistemini kuran ve etkinliğini değerlendiren şirketler, daha az bilgi asimetrisi sorunu ile karşılaşacaklardır (Huang ve Huang, 2020:8-9). Örneğin Wang vd.(2015) yaptıkları çalışmada, Çin'deki halka açık enerji şirketlerini örneklem olarak almışlar ve iç kontrol sisteminin etkin olmasının kurumsal sosyal sorumluluk uygulamalarının yerine getirilmesinde teşvik edici etkisi olduğunu belirlemişlerdir.

Şirketlerin çevreye uyumları konusunda iç kontrol eksikliği, kurumsal sürdürülebilirliklerinin zayıflamasına neden olabilmektedir. Bu konuda en bilinen örnek, Volkswagen'in emisyon testlerinde hile yaptığını kabul etmesinin ardından, Dow Jones Sürdürülebilirlik Endeksi'nden çıkarılmasıdır (Koo ve Ki,2020 :5). Bu konuda Song'un (2017) çalışması iç kontrol sistemine dayalı KSS'nin şirketlerin ve toplumun sürdürülebilir gelişimini teşvik etmek için önemli bir yapı olduğunu göstermiştir. Li vd.(2018) çalışmalarında 2011 ve 2016 yılları arasında Çin borsasında işlem gören şirketleri örneklem olarak almışlar ve etkin iç kontrol sisteminin şirketlerin sosyal

sorumluluk uygulamalarını gerçekleştirmelerinde önemli ölçüde iyileştirici etkisi olduğunu belirlemişlerdir. Ayrıca çalışmada iç kontrol raporunda kurumsal sosyal sorumluluk süreci ile ilgili değerlendirmelerin yer alması gerektiği önerilmiştir.

İç kontrol sistemi şirketlerin operasyonel verimliliğini artırmalarını ve risklerini yönetmelerini sağlamaktadır. İç kontrol sistemini KSS'ye entegre etmek, kurumsal sosyal sorumluluğun ihmal edilmesinden kaynaklanan ekonomik kayıpları önlemede etkili olacaktır. Bu nedenle, literatür iç kontrol sistemini KSS uygulamalarına entegre etmenin finansal performans üzerindeki etkisini ölçen çalışmalara odaklanmıştır. Örneğin Hao vd. (2018) yaptıkları çalışmada, iç kontrolün Çin'deki şirketlerin kurumsal sosyal sorumluluk uygulamalarının iyileştirilmesinde ve özellikle piyasadaki hisse senedi fiyat dalgalanmaları üzerinde önemli bir etkiye sahip olduğunu ve operasyonel riskleri azaltmak için önemli bir sistem haline geldiğini belirlemişlerdir. Guan vd. (2023) ve Zhang & Su (2022) çalışmalarında iç kontrolün hem sosyal sorumluluğu hem de finansal performansı önemli ölçüde olumlu etkilediğini tespit etmişlerdir.

Harasheh ve Provasi (2022) çalışmalarında denetim literatürünün iç kontrol sisteminin finansal raporlamada hileleri önlemede makul güvence sağlayıp sağlamadığına odaklandığını ancak bu bağlantının sürdürülebilirlik raporlamasında da araştırılması gerektiğini vurgulamışlardır. Çalışmada iç kontrol sisteminin çevresel, sosyal ve yönetişim konularına entegre etmenin makul güvence aracı olarak etkilerini desteklediği belirlenmiştir. Örneğin Akisik ve Gal. (2017) tarafından yapılan çalışmada KSS raporları ve finansal raporlar üzerinde iç kontrollerin kalitesine ilişkin güvencenin paydaşlar açısından önemli olduğu vurgulanmıştır. Çalışmada paydaşların finansal performans üzerindeki etkilerinin, üçüncü taraflarca denetlenen KSS raporları ve etkin iç kontrol sisteminin etkinliği ile ilgili olduğu tespit edilmiştir. Ayrıca, çalışmada üçüncü taraflarca denetlenen KSS raporları ve etkin iç kontrolün şirketin finansal performansının devamlılığı için önemli bir unsur olduğu belirlenmiştir. Lin ve Huang (2023) çalışmalarında, Çin'deki iç kontrol konusunda yapılan reformların bazı şirketlerin iç kontrol sistemini KSS sürecine entegre etme ve bu konuda iç kontrol raporlarını yayımlama zorunluğu getirdiğini belirtmişlerdir. Çalışmada, bu reformla birlikte iç kontrol sisteminin etkinliğinin azaldığı, ancak KSS raporlarını GRI rehberine uygun olarak hazırlayan veya bağımsız denetçiler tarafından denetlenen şirketlerde iç kontrol sisteminin daha az sorun olduğu tespit edilmiştir.

Yukarıda açıklanan konulara ek olarak, Boulhaga vd. (2023) çalışmalarında 2012-2021 yılları arasındaki dönemde halka açık Fransız şirketlerini örneklem olarak almışlar, iç kontrolün ve kurumsal sosyal sorumluluğun muhafazakâr (ihtiyatlı) muhasebe üzerindeki etkisini incelemişlerdir. Blanco vd. (2024) çalışmada, denetçilerin KSS faaliyetlerine güvenmeleri ile iç kontrol görüşlerinin kalitesi üzerindeki etkisini incelemişlerdir. Hu vd.(2024) Çin'deki üst düzey yöneticilere verilen haklar (ücret, prim vd. yan haklar), iç kontrol kalitesi ve KSS arasındaki ilişkiyi incelemişlerdir.

SONUÇ ve TARTIŞMA

Enron, Parmalat ve Worldcom gibi küresel muhasebe skandallarından sonra, şirketlerde iç kontrol sisteminin kurulması ve etkinliğinin değerlendirilmesi konusunda ulusal ve uluslararası düzeyde güçlü düzenlemeler yapılmıştır. Bu gelişmeler, iç kontrol sisteminin literatürde farklı bakış açılarıyla ele alınmasını sağlamıştır. Bu çalışmanın odak noktası iç kontrol sistemi ile KSS ilişkisi olmasından dolayı, iç kontrol sisteminin KSS uygulamaları üzerindeki rolü nedir sorusuna cevap aranmıştır. Bu bağlamda, WOS veri tabanında bu konuda yapılan yayımlanmış çalışmaların değerlendirilmesi sonucunda elde edilen bulgular aşağıdaki gibidir:

- İç kontrol sisteminin, KSS faaliyetlerinin ölçülmesi ve raporlamasında hile risklerini önlemede ve tespit etmede etkili olduğu ve bu nedenle makul güvence sağladığı.
- İç kontrol sisteminin, şirketin sürdürülebilir kalkınma hedeflerine ulaşmasına teşvik edici rolü olduğu ve kurumsal sosyal sorumluluk uygulamalarında iyileştirici bir etkiye sahip olduğu.
- İç kontrol sisteminin, KSS konusunda bilgi şeffaflığını artırarak yatırımcıların mantıklı kararlar almasına yardımcı olduğu.
- İç kontrol sisteminin, şirketin hem KSS hem de finansal performansını iyileştirmede etkili olduğu.
- Çalışmada konuyla ilgili yayınların 2015 yılından itibaren yapılmaya başlandığı ve 2020 yılında yoğunlaştığı belirlenmiştir.

Deloitte denetim firması tarafından yayımlanan Sürdürülebilirlik raporuna (2022) göre, yöneticilerin büyük çoğunluğu (%96) "şirketlerinin bir sonraki sürdürülebilir raporlama döneminde güvence denetimi" planladığını belirtmiştir. Araştırma kapsamındaki yöneticilerin %37'si, şirketlerin sürdürülebilirlik raporlama sürecinde COSO iç kontrol bütünleşik çerçeveyi uygulamaya başladığını ve makul güvence düzeyine doğru adım attıklarını ifade etmişlerdir (www. deloitte.com). Bu gelişmeler, COSO iç kontrol bütünleşik çerçevenin şirketlerin kurumsal sosyal sorumluluk sürecinde kritik bir öneme sahip olduğunu göstermektedir.

Çalışmanın literatüre en önemli katkısı, iç kontrol ile KSS ilişkisini inceleyen araştırmaları derlemesidir. Çalışmanın konuyla ilgili literatür taramasından elde edilen bulgulara dayandırılması önemli bir kısıt olarak değerlendirilmelidir. Bu konuda gelecekte yapılacak çalışmalarda, gelişmekte olan ülkelerde faaliyet gösteren şirketlerin iç kontrol sistemlerinin kalitesinin KSS uygulamalarına etkisi incelenebilir.

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Özet

Son yıllarda oldukça popüler hale gelen borsalar yatırımcıların oldukça ilgisini çeken bir pazar olmaktadır. Özellikle değişen yatırım şekilleri ve teknolojinin hızla gelişmesi kişilerin kolaylıkla tüm dünya borsalarına erişebilmesine imkan vermektedir. İnternetin ve teknolojik aletlerin kolaylıkla erişebilir hale gelmesi de bu popülerliğin artmasında önemlibir rol oynamaktadır. Her geçen gün yeni yatırımcıların bu pazara girmesi de borsaları hem cazibe alanı hem de dikkat edilmesi gereken bir yatırım sahası haline getirmektedir. Özellikle ilk defa piyasaya giren bilgi düzeyi az analiz teknikleri konusunda yeterli bilgi sahibi olmayan kişiler bu piyasalardan umdukları kazançları elde edememekte hatta zaman zaman büyük kayıplar yaşamaktadırlar. Bu yüzden yeni yatırımcıların kolayca uygulabileceği ve tahmin oranı yüksek bir analiz yöntemi olan çoklu regresyon yöntemi kolay anlaşılabilir olması açısından önemlidir. Bu yüzden çalışmada yeni yatırımcıların sıklıkla satın aldığı işlem hacmi yüksek ve popüler on hisse senedinin fiyat hareketliliğinden yola çıkılarak çoklu regresyon yöntemiyle gelecek fiyat tahmini yapılmış ve yapılan bu tahminler ile gerçekleşen fiyatlar karşılaştırılmıştır. Çalışmada yer alan hisse senetleri, Ford Otomotiv(FROTO), Şisecam(SİSE), İş Bankası (ISCTR), Türk Hava Yolları (THYAO), Tüpraş (TURPS), Koç Holding (KCHOL), Ereğli Demir Çelik (EREGL), Birleşik Mağazalar Zinciri (BİMAS), Turkcell (TCELL), Emlak Konut GYO (EKGYO) 'dur. Bu hisselerin fiyat tahmini için yapılan çoklu regresyon analizinde bu hisselerin açılış, kapanış, gün içindeki en düşük ve en yüksek değerleri kullanılarak bir sonraki günün kapanış değeri tahmin edilmiştir. Sonrasında tahmini değerlerle gerçek değerler arasında karşılaştırma yapılmıştır. Çalışma sonucunda yapılan tahmin çalışmasının başarılı bir performans sergilediği gözlemlenmiş gerçekleşen değer ile tahmin edilen değerlerin çok yakın olduğu görülmüştür.

Keywords: Fiyat Tahmini, Hisse Senetleri, Çoklu Regresyon

STOCK PRICE FORECAST WITH MULTIPLE REGRESSATION METHOD

Abstract

Stock exchanges, which have become very popular in recent years, are a market that attracts the attention of investors. In particular, changing investment patterns and the rapid development of technology allow people to easily access all world stock exchanges. The fact that the internet and technological devices are easily accessible also plays an important role in increasing this popularity. The fact that new investors are entering this market day by day makes the stock exchanges both an area of attraction and an investment area that needs attention. Especially those who enter the market for the first time, who do not have sufficient knowledge about the low level of information and analysis techniques, cannot make the gains they expect from these markets and even experience great losses from time to time. Therefore, the multiple regression method, which is an analysis method that can be easily applied by new investors and has a high prediction rate, is important in terms of being easily understandable. Therefore, in this study, based on the price movements of ten popular stocks with high trading volume that are frequently purchased by new investors, future price forecasts are made by multiple regression method and these forecasts are compared with the actual prices. The stocks included in the study are Ford Otomotiv (FROTO), Şisecam (SİSE), İş Bankası (ISCTR), Turkish Airlines (THYAO), Tüpraş (TURPS), Koç Holding (KCHOL), Ereğli Demir Çelik (EREGL), Birleşik Mağazalar Zinciri (BİMAS), Turkcell (TCELL), Emlak Konut GYO (EKGYO). In the multiple regression analysis for the price prediction of these stocks, the opening, closing, low and high values of these stocks were used to predict the closing value of the next day. Afterwards, a comparison

was made between the predicted values and the actual values. As a result of the study, it was observed that the prediction study performed successfully, and the actual and predicted values were very close.

Keywords: Price Estimation, Stocks, Multiple Regression

GİRİŞ

İnternetin ve teknolojik aletlerin kolaylıkla erişebilir hale gelmesi de bu popülerliğin artmasında önemlibir rol oynamaktadır. Günümüzde finansal, teknolojik ve sosyal alanlarda meydana gelen gelişmelerin hız kazanması, ulaşılabilirliğin ve iletişimin de artması ile birlikte yatırım, firma değeri ve firma performansı gibi kavramlar işletmeler ve yatırımcıların bu işletmeleri seçmesi için daha da önemli hale gelmiştir.(Topal ve Elmas,2022). Her geçen gün yeni yatırımcıların hisse senedi pazarına girmesi de borsaları hem cazibe alanı hem de dikkat edilmesi gereken bir yatırım sahası haline getirmektedir. Özellikle ilk defa piyasaya giren bilgi düzeyi az analiz teknikleri konusunda yeterli bilgi sahibi olmayan kişiler bu piyasalardan umdukları kazançları elde edememekte hatta zaman zaman büyük kayıplar yaşamaktadırlar Bu çalışmada yatırımcıların son zamanlarda sıklıkla yatırım yaptıkları hisse senetlerinden daha fazla fayda sağlayabilmeleri adına veya gelecekle ilgili fiyat tahmininde bulunan finans yöneticilerinin en doğru ve yakın tahminde bulunmalarına yardımcı olmak adına yeni bir model ile fiyat tahminlemesi yapılabilmesidir. Borsalarda alım-satım işlemleri yapılırken teknik ve temel analiz yöntemleri kullanılmaktadır. Teknik analiz, geçmiş verilerden yola çıkarak gelecekteki fiyat hareketlerini tahmin etme işlemidir. Teknik analiz yapılırken çok büyük verilerle karşılaşılınca verilerin analizi zorlaşmakta ve teknik analiz sonucu elde edilecek verilerin hatalı olma ihtimali artmaktadır. Bu durum sonucunda büyük verileri doğru analiz edemeyen yatırımcıların büyük zararlara uğrama ihtimali artmaktadır (Seo ve Hwang, 2018). Bu yüzden yatırımcı bu verilerinin hangilerinin anlamlı hangilerinin anlamsız olduğunu bilmeden alım-satım stratejilerini belirlemek zorunda kaldığından dolayı hatalı strateji uygulama olasılığı artmaktadır ve yatırımcılar bu durumdan olumsuz etkilenebilmektedir. Literatürde hisse senetleri fiyatlarının tahmin edilmesiyle ilgili bilimsel çalışmaların sayısı oldukça fazla olmakla beraber çeşitli ve farklı modeler bu tahminlemelerde kullanılmaktadır. Çok ve karışık olan bazı modeler yatırımcıları zaman zaman zorlamaktadır. Bu sebeple çalışmada tahmin performansı yüksek olan regresyon analizi yöntemleriyle tahminleme çalışması yapılacaktır.

YÖNTEM

Çalışmada yöntem olarak çoklu regresyon modeli kullnılmıştır. Çok değişkenli regresyon analizi, bir adet bağımlı değişken ve birden çok bağımsız değişken arasındaki ilişkiyi araştıran analiz yöntemidir. Çok değişkenli regresyon analizinde bağımsız değişkenler aynı anda yani eş zamanlı olarak bağımlı değişkendeki değişimi açıklamaya çalışmaktadır. (Güneri ve Apaydın, 2004). Çoklu regresyon modelinde de tıpkı tekli regresyon modelinde olduğu gibi katsayılar hesaplanırken bağımsız değişkenlerin ortalamadan sapmaları kullanılmaktadır. Regresyon katsayıları hesaplanıp tahmin modeli kurulduktan sonra, belirlilik katsayısı olan $R2$ hesaplanır. Bu sayede modelin ne kadar anlamlı olduğu ve katsayıların uygunluğu gözlemlenmiş olur. $R2$ belirlilik katsayısı çok değişkenli regresyon modellerinde genellikle tek başına yeterli değildir. Çünkü çoklu regresyon modelleri için denkleme yeni bir değişken eklendiği durumlarda $R2$ genelde yükselir. Bu sebeple anlamlı bir test yapabilmek için düzeltilmiş $R2$'nin hesaplanması gerekmektedir (Tolon ve Tosunoğlu, 2008).

Tekli regresyon modellerinde olduğu gibi çoklu regresyon modellerinde de belirlilik katsayısı 1'e ne kadar yakınsa mevcut model o kadar anlamlıdır. Modelde tahmin edilen katsayıların güvenilirliği standart hata ve varyansın küçüklüğüne bakılıp test edilebilir. Bu bize gerçek değerler ile tahmin değerlerinin uygunluğu hakkında fikir verir.

Çalışmada yeni yatırımcıların sıklıkla satın aldığı işlem hacmi yüksek ve popüler on hisse senedinin fiyat hareketliliğinden yola çıkılarak çoklu regresyon yöntemiyle gelecek fiyat tahmini yapılmış ve yapılan bu tahminler ile gerçekleşen fiyatlar karşılaştırılmıştır. Çalışmada yer alan hisse senetleri, Ford Otomotiv(FROTO), Şisecam (SİSE), İş Bankası (ISCTR), Türk Hava Yolları (THYAO), Tüpraş (TURPS), Koç Holding (KCHOL), Ereğli Demir Çelik (EREGL), Birleşik Mağazalar Zinciri (BİMAS), Turkcell (TCELL), Emlak Konut GYO (EKGYO) 'dur

Çalışmada 01.01.2019-20.10.2024 tarihleri arasındaki hisse senetlerinin haftalık verilerinden hareketle bu hisse senetleri için ertesi gün kapanış fiyatı tahmin edilmiştir. Bağımsız değişkenler açılış değeri, kapanış değeri, gün içindeki en yüksek değer ve gün içindeki en düşük değerdir. Bağımlı değişken ise ertesi günün kapanış değeridir. Tablo 1'te bağımlı ve bağımsız değişkenler verilmiştir.

Table 1: Modelin Bağımlı ve Bağımsız Değişkenler

Bağımsız Değişkenler	Bağımlı Değişken
Açılış Değeri	Ertesi Gün Kapanış Değeri
Kapanış Değeri	
En Büyük Değer	
En Küçük Değer	

Bağımlı ve bağımsız değişkenlerin analizinde regresyon analizi için IBM SPSS programı kullanılarak çoklu doğrusal regresyon yöntemi uygulanmıştır.

BULGULAR

Aşağıda çalışmada yer alan hisse senetleri için yapılan tahmin analizleri tek tek ele alınacaktır.

Regresyon ile Ford Otomotiv (FROTO) fiyat tahmini

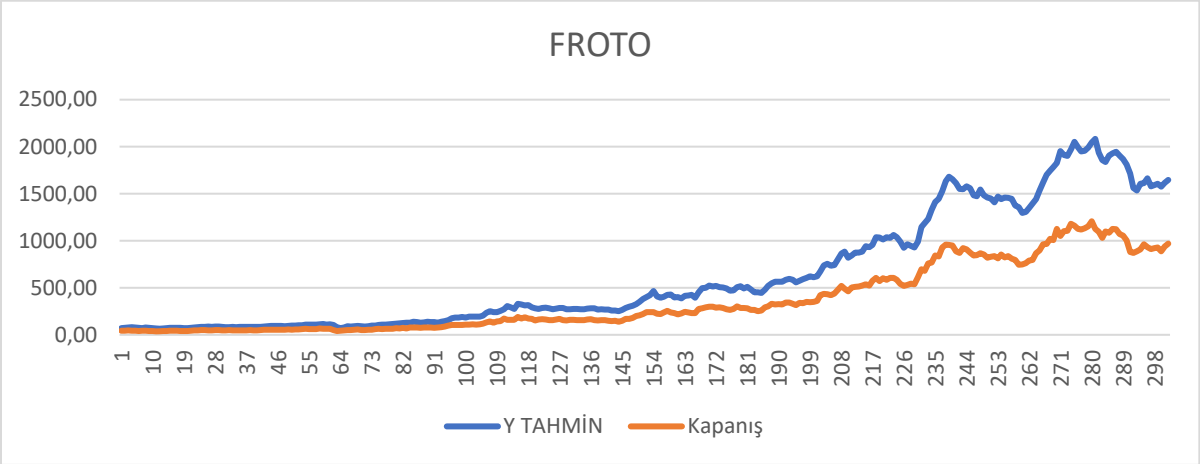
Aşağıdaki tabloda Ford Otomotiv için yapılan tahmin modelinin sonuçları gösterilmektedir.

Tablo 2: FROTO için Katsayılar

```
. regress Kapanış Açılış Enyüksek Endüşük

      Source |       SS           df       MS      Number of obs   =       302
-------------+----------------------------------   F(3, 298)       =  70095.04
       Model |  37735774.1         3  12578591.4   Prob > F        =    0.0000
    Residual |  53476.2539       298  179.450516   R-squared       =    0.9986
-------------+----------------------------------   Adj R-squared   =    0.9986
       Total |  37789250.3       301  125545.682   Root MSE        =    13.396

------------------------------------------------------------------------------
     Kapanış | Coefficient  Std. err.      t    P>|t|     [95% conf. interval]
-------------+----------------------------------------------------------------
      Açılış |  -.4802299    .061496    -7.81   0.000    -.6012514   -.3592084
   Enyüksek  |   .8953807   .0497251    18.01   0.000     .7975239    .9932375
   Endüşük   |   .5782017   .0710224     8.14   0.000     .4384327    .7179708
       _cons |  -.5520566   1.122175    -0.49   0.623    -2.760448    1.656335
------------------------------------------------------------------------------

.
```

Tablo 2'te FRTOTO için katsayılar tablosu görülmektedir. Bu tabloya göre BTC ertesi gün kapanış verilerinin tahmini için aşağıdaki formül kullanılacaktır.

Bir sonraki gün kapanış fiyatı= 0.552 + 0,480 (Açılış fiyatı) + 0,430(Kapanış fiyatı)+ 0,578(Min)+(0,895(Maks))



Şekil 9: : FROTO için Gerçekleşen ve Tahmin Değerleri Grafiği

Şekil 1 den de görüldüğü üzere gerçekleşen ve tahmin edilen Froto fiyatları oldukça benzer ve yakındır. Bu da modelin başarılı sonuçlar verdiğini göstermektedir.

Regresyon ile Şisecam (SİSE) fiyat tahmini

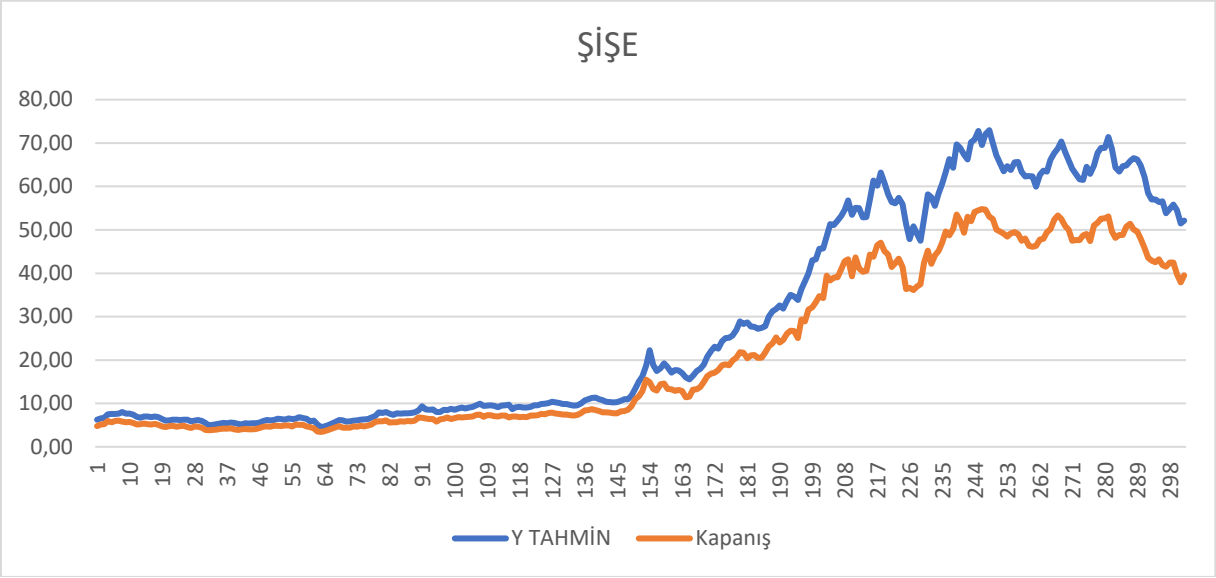
Aşağıdaki tabloda Şişecam için yapılan tahmin modelinin sonuçları gösterilmektedir.

Tablo 3: SİSE için Katsayılar

```
. regress Kapanış Açılış Enyüksek Endüşük

      Source |       SS           df       MS      Number of obs   =       302
-------------+----------------------------------   F(3, 298)       =  70226.79
       Model |  103498.45         3  34499.4835   Prob > F        =    0.0000
    Residual |  146.394937       298  .491258179   R-squared       =    0.9986
-------------+----------------------------------   Adj R-squared   =    0.9986
       Total |  103644.845       301  344.335034   Root MSE        =     .7009

------------------------------------------------------------------------------
     Kapanış | Coefficient  Std. err.      t    P>|t|     [95% conf. interval]
-------------+----------------------------------------------------------------
     Açılış  |  -.3224208   .0554279    -5.82   0.000    -.4315005   -.2133412
   Enyüksek  |   .7168528   .0497103    14.42   0.000     .6190252    .8146804
   Endüşük   |   .6028308   .0563851    10.69   0.000     .4918673    .7137943
      _cons  |   .0049881   .0624187     0.08   0.936    -.1178491    .1278254
------------------------------------------------------------------------------
```

Tablo 3'te ŞİŞE için katsayılar tablosu görülmektedir. Bu tabloya göre ŞİŞE ertesi gün kapanış verilerinin tahmini için aşağıdaki formül kullanılacaktır.

Bir sonraki gün kapanış fiyatı= 0.004 – 0,322(Açılış fiyatı) + 0,430(Kapanış fiyatı) + 0,602(Min)+(0,716(Maks))



Şekil 2: ŞİŞE için Gerçekleşen ve Tahmin Değerleri Grafiği

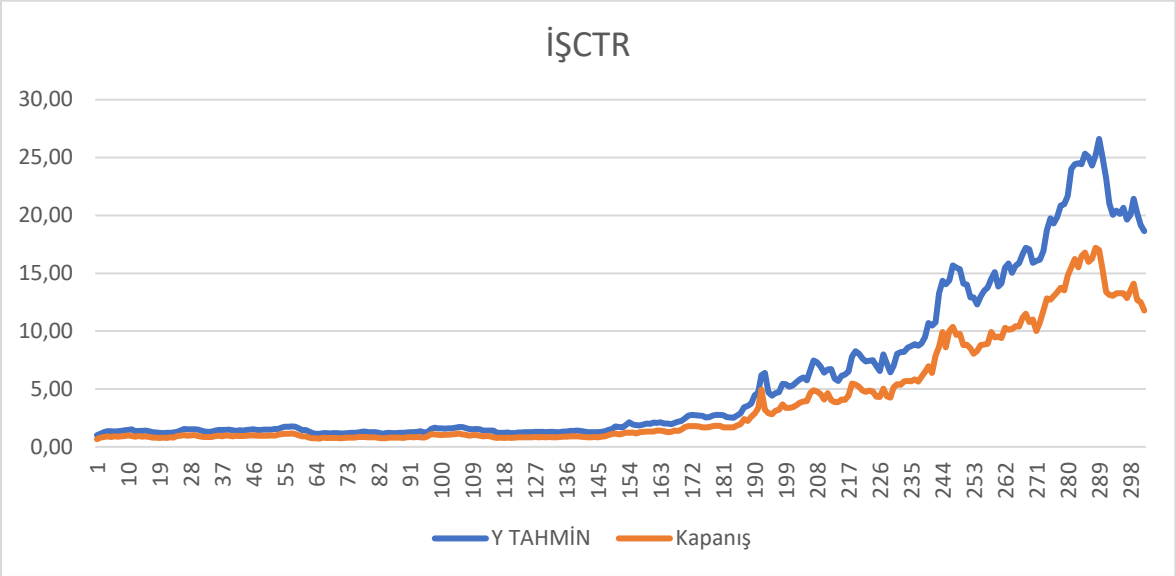
Şekil 1 den de görüldüğü üzere gerçekleşen ve tahmin edilen Şişe fiyatları oldukça benzer ve yakındır. Bu da modelin başarılı sonuçlar verdiğini göstermektedir.

Tablo 4: İSCTR için Katsayılar

```
. regress Kapanış Açılış Enyüksek Endüşük

      Source |       SS           df       MS      Number of obs   =       302
-------------+----------------------------------   F(3, 298)       =  46585.76
       Model |  5913.04116         3  1971.01372   Prob > F        =    0.0000
    Residual |  12.6081898       298  .042309362   R-squared       =    0.9979
-------------+----------------------------------   Adj R-squared   =    0.9979
       Total |  5925.64935       301  19.6865427   Root MSE        =    .20569

------------------------------------------------------------------------------
     Kapanış | Coefficient  Std. err.      t    P>|t|     [95% conf. interval]
-------------+----------------------------------------------------------------
      Açılış |  -.5413422   .0553887    -9.77   0.000    -.6503448   -.4323397
   Enyüksek  |   .8915669   .0489998    18.20   0.000     .7951373    .9879964
   Endüşük   |   .6361184   .0573572    11.09   0.000     .5232419     .748995
       _cons |   .0114035   .0156876     0.73   0.468     -.019469     .042276
------------------------------------------------------------------------------
```

Tablo 4'te İŞCTR için katsayılar tablosu görülmektedir. Bu tabloya göre İŞCTR ertesi gün kapanış verilerinin tahmini için aşağıdaki formül kullanılacaktır.

Bir sonraki gün kapanış fiyatı= 0.011 – 0,541 (Açılış fiyatı) + 0,430(Kapanış fiyatı) + 0,636 (Min)+(-0,891(Maks))



Şekil 3: İŞCTR için Gerçekleşen ve Tahmin Değerleri Grafiği

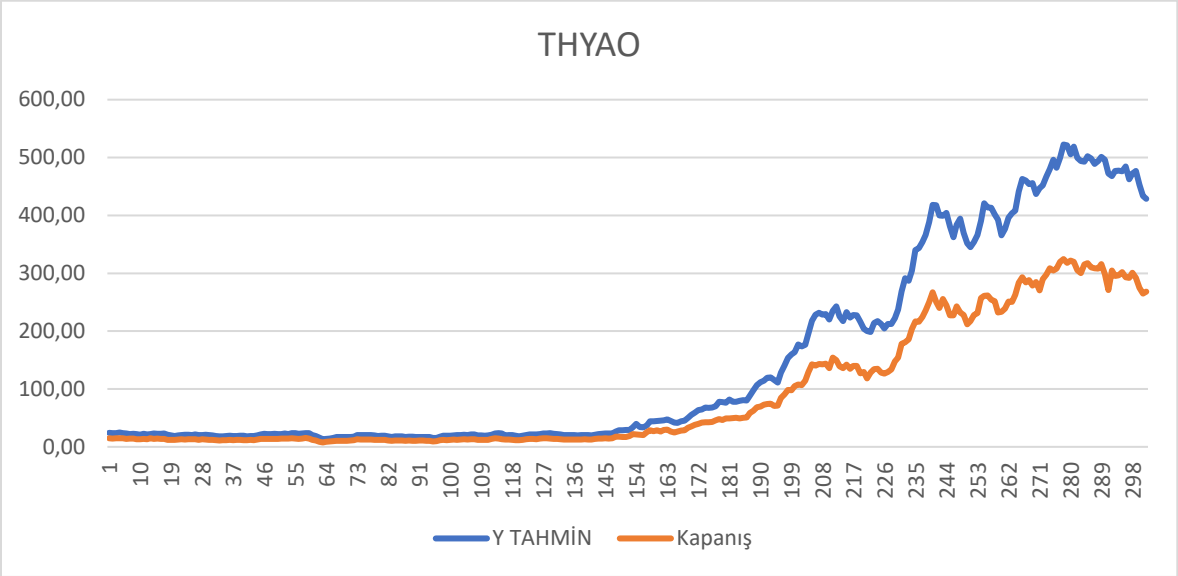
Şekil 3 den de görüldüğü üzere gerçekleşen ve tahmin edilen İŞCTR fiyatları oldukça benzer ve yakındır. Bu da modelin başarılı sonuçlar verdiğini göstermektedir.

Tablo 5: THYAO için Katsayılar

```
. regress Kapanış Açılış Enyüksek Endüşük

      Source |       SS           df       MS      Number of obs   =       302
-------------+----------------------------------   F(3, 298)       >  99999.00
       Model |  3452066.61         3  1150688.87   Prob > F        =    0.0000
    Residual |  3190.74408       298  10.7071949   R-squared       =    0.9991
-------------+----------------------------------   Adj R-squared   =    0.9991
       Total |  3455257.36       301  11479.2603   Root MSE        =    3.2722

------------------------------------------------------------------------------
     Kapanış | Coefficient  Std. err.      t    P>|t|     [95% conf. interval]
-------------+----------------------------------------------------------------
      Açılış |  -.5141244   .0532105    -9.66   0.000    -.6188404   -.4094085
   Enyüksek  |   .9405466   .0506885    18.56   0.000     .8407939    1.040299
   Endüşük   |   .5692933   .0609114     9.35   0.000     .4494223    .6891642
       _cons |  -.1743837   .2520467    -0.69   0.490    -.6704005    .3216332
------------------------------------------------------------------------------
```

Tablo 5'te THYAO için katsayılar tablosu görülmektedir. Bu tabloya göre THYAO ertesi gün kapanış verilerinin tahmini için aşağıdaki formül kullanılacaktır.

Bir sonraki gün kapanış fiyatı=-0,174- 0,514 (Açılış fiyatı) + 0,430(Kapanış fiyatı)+ 0,569 (Min)+(- 0,940Maks))



Şekil 4: THYAO için Gerçekleşen ve Tahmin Değerleri Grafiği

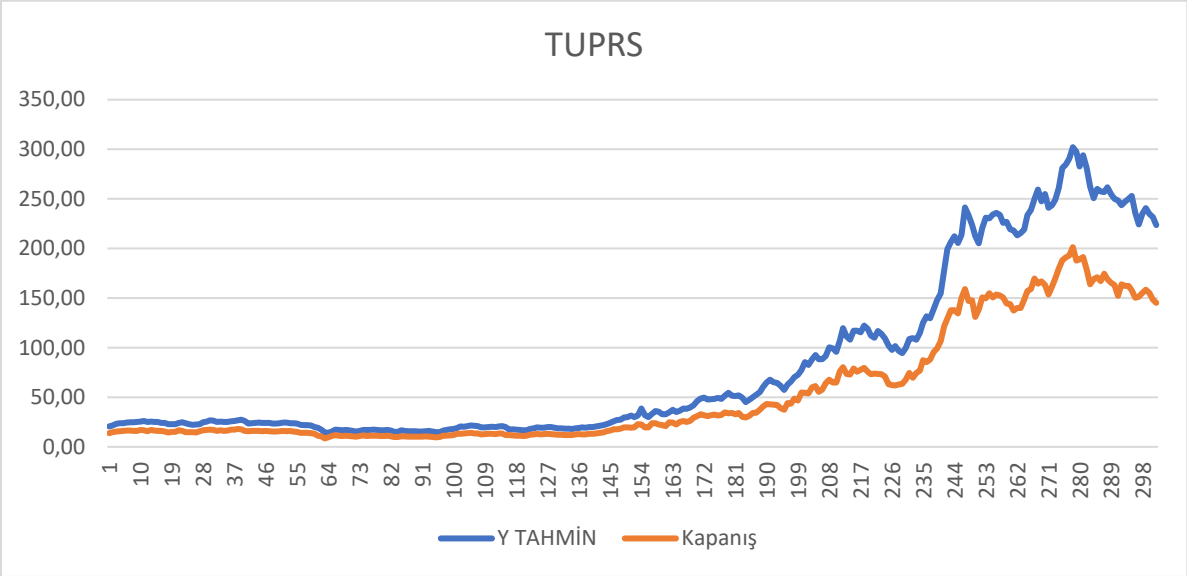
Şekil 4 den de görüldüğü üzere gerçekleşen ve tahmin edilen THYAO fiyatları oldukça benzer ve yakındır. Bu da modelin başarılı sonuçlar verdiğini göstermektedir.

Tablo 6: TUPRS için Katsayılar

```
. regress Kapanış Açılış Enyüksek Endüşük

      Source |       SS           df       MS      Number of obs   =       302
-------------+----------------------------------   F(3, 298)       =  83177.88
       Model |  984971.301         3  328323.767   Prob > F        =    0.0000
    Residual |  1176.28006       298  3.94724853   R-squared       =    0.9988
-------------+----------------------------------   Adj R-squared   =    0.9988
       Total |  986147.581       301  3276.23781   Root MSE        =    1.9868

------------------------------------------------------------------------------
     Kapanış | Coefficient  Std. err.      t    P>|t|     [95% conf. interval]
-------------+----------------------------------------------------------------
      Açılış |  -.5481262   .0541342   -10.13   0.000      -.65466   -.4415925
   Enyüksek  |   .7727254   .0484121    15.96   0.000     .6774525    .8679983
   Endüşük   |   .7761838   .0600142    12.93   0.000     .6580784    .8942892
       _cons |   .0409158   .1587667     0.26   0.797    -.2715302    .3533619
------------------------------------------------------------------------------
```

Tablo 6'te TUPRS için katsayılar tablosu görülmektedir. Bu tabloya göre TUPRS ertesi gün kapanış verilerinin tahmini için aşağıdaki formül kullanılacaktır.

Bir sonraki gün kapanış fiyatı= 0.0409 – 0,548 (Açılış fiyatı) + 0,430 (Kapanış fiyatı) + 0,776 (Min)+(0,772 (Maks))



Şekil 5: TUPRS için Gerçekleşen ve Tahmin Değerleri Grafiği

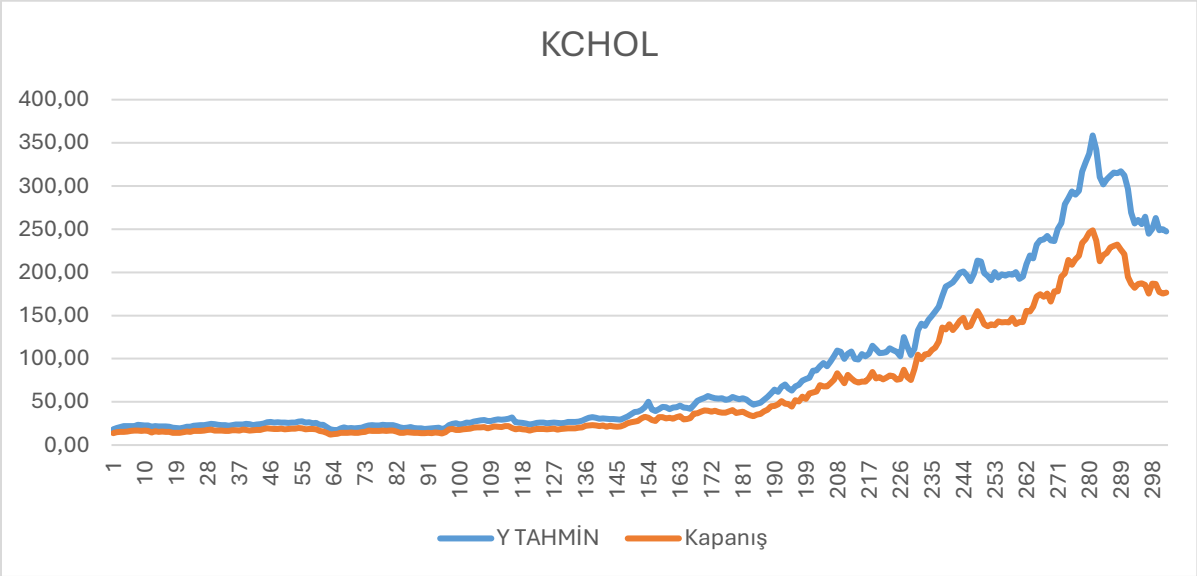
Şekil 5 den de görüldüğü üzere gerçekleşen ve tahmin edilen TUPRS fiyatları oldukça benzer ve yakındır. Bu da modelin başarılı sonuçlar verdiğini göstermektedir.

Tablo 7: KCHOL için Katsayılar

```
. *(4 variables, 302 observations pasted into data editor)

. regress Kapanış Açılış Enyüksek Endüşük

      Source |       SS           df       MS      Number of obs   =       302
-------------+----------------------------------   F(3, 298)       =  65942.50
       Model |  1291048.92         3  430349.64    Prob > F        =    0.0000
    Residual |  1944.78816       298  6.52613478   R-squared       =    0.9985
-------------+----------------------------------   Adj R-squared   =    0.9985
       Total |  1292993.71       301  4295.66016   Root MSE        =    2.5546

------------------------------------------------------------------------------
     Kapanış | Coefficient  Std. err.      t    P>|t|     [95% conf. interval]
-------------+----------------------------------------------------------------
      Açılış |  -.5127152   .0634146    -8.09   0.000    -.6375123   -.3879181
   Enyüksek  |   .7732606   .0515215    15.01   0.000     .6718684    .8746527
   Endüşük   |   .7348934    .070359    10.44   0.000       .59643    .8733567
       _cons |    .237926   .2049446     1.16   0.247    -.1653961    .6412481
------------------------------------------------------------------------------
```

Tablo 7'te KCHOL için katsayılar tablosu görülmektedir. Bu tabloya göre KCHOL ertesi gün kapanış verilerinin tahmini için aşağıdaki formül kullanılacaktır.

Bir sonraki gün kapanış fiyatı= 0.237 – 0,512 (Açılış fiyatı) + 0,430(Kapanış fiyatı) + 0,734 (Min)+(+ 0,773(Maks))



Şekil 6: KCHOL için Gerçekleşen ve Tahmin Değerleri Grafiği

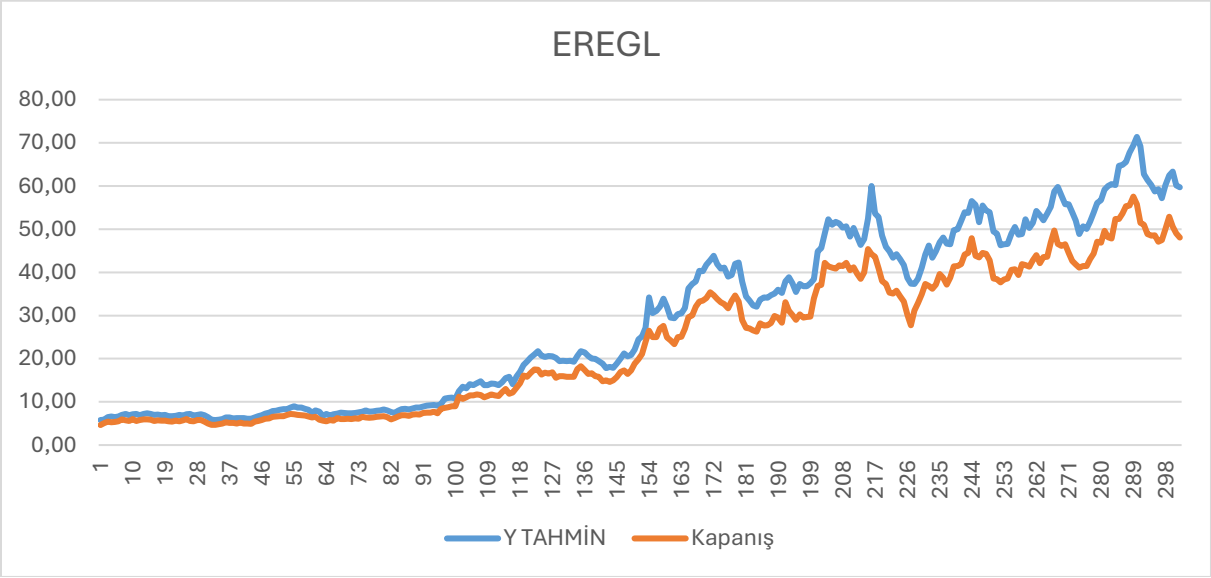
Şekil 6 den de görüldüğü üzere gerçekleşen ve tahmin edilen KCHOL fiyatları oldukça benzer ve yakındır. Bu da modelin başarılı sonuçlar verdiğini göstermektedir.

Tablo 8: EREGL için Katsayılar

```
. regress Kapanış Açılış Enyüksek Endüşük

      Source |       SS           df       MS      Number of obs   =       302
-------------+----------------------------------   F(3, 298)       =  35368.93
       Model |  77903.8223         3  25967.9408   Prob > F        =    0.0000
    Residual |  218.792195       298  .734201998   R-squared       =    0.9972
-------------+----------------------------------   Adj R-squared   =    0.9972
       Total |  78122.6145       301   259.54357   Root MSE        =    .85686

------------------------------------------------------------------------------
     Kapanış | Coefficient  Std. err.      t    P>|t|     [95% conf. interval]
-------------+----------------------------------------------------------------
      Açılış |  -.2504039   .0599936    -4.17   0.000    -.3684686   -.1323392
   Enyüksek  |   .6185522   .0486096    12.72   0.000     .5228907    .7142138
   Endüşük   |   .6298277   .0627625    10.04   0.000     .5063138    .7533417
       _cons |   .0783369   .0878796     0.89   0.373    -.0946064    .2512802
------------------------------------------------------------------------------
```

Tablo 8'te EREGL için katsayılar tablosu görülmektedir. Bu tabloya göre EREGL ertesi gün kapanış verilerinin tahmini için aşağıdaki formül kullanılacaktır.

Bir sonraki gün kapanış fiyatı= 0.0783 – 0,2504 (Açılış fiyatı) + 0,430(Kapanış fiyatı) + 0,329 (Min)+0,618 (Maks))



Şekil 7: EREGL için Gerçekleşen ve Tahmin Değerleri Grafiği

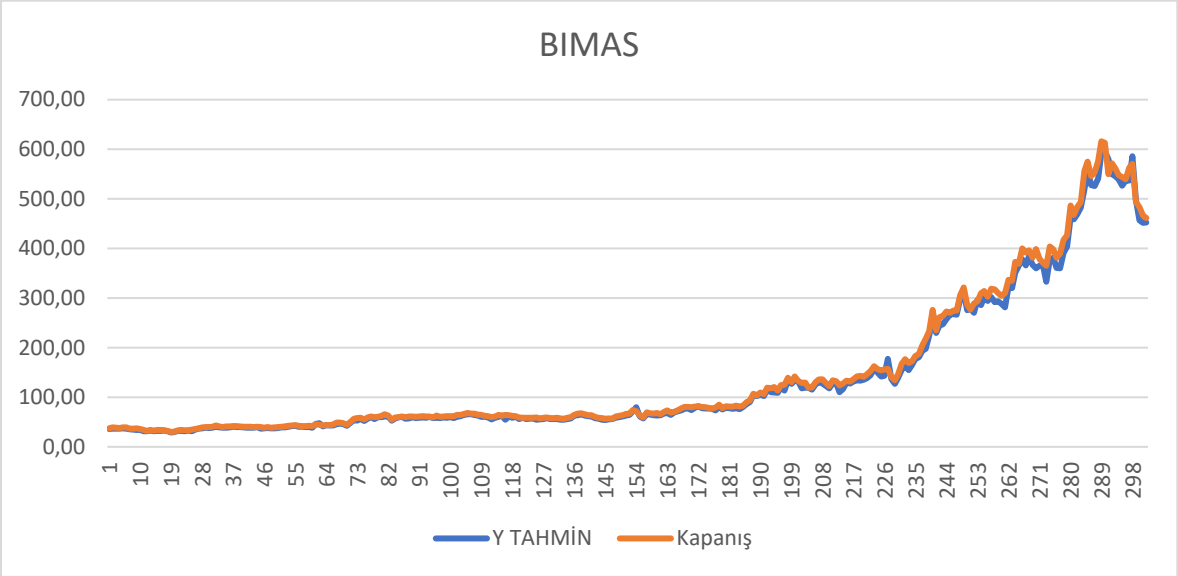
Şekil 7 den de görüldüğü üzere gerçekleşen ve tahmin edilen EREGL fiyatları oldukça benzer ve yakındır. Bu da modelin başarılı sonuçlar verdiğini göstermektedir.

Tablo 9: BİMAS için Katsayılar

```
. regress Kapanış Açılış Enyüksek Endüşük

      Source |       SS           df       MS      Number of obs   =       302
-------------+----------------------------------   F(3, 298)       =  56782.64
       Model |  6625804.02         3  2208601.34   Prob > F        =    0.0000
    Residual |  11590.9233       298  38.8957159   R-squared       =    0.9983
-------------+----------------------------------   Adj R-squared   =    0.9982
       Total |  6637394.94       301   22051.146   Root MSE        =    6.2366

------------------------------------------------------------------------------
     Kapanış | Coefficient  Std. err.      t    P>|t|     [95% conf. interval]
-------------+----------------------------------------------------------------
      Açılış |  -.7892376   .0639465   -12.34   0.000    -.9150815   -.6633937
   Enyüksek  |    .928644   .0572103    16.23   0.000     .8160566    1.041231
   Endüşük   |   .8503609   .0642909    13.23   0.000     .7238392    .9768825
       _cons |   1.041228   .4995327     2.08   0.038     .0581695    2.024287
------------------------------------------------------------------------------
```

Tablo 9'te BİMAS için katsayılar tablosu görülmektedir. Bu tabloya göre BİMAS ertesi gün kapanış verilerinin tahmini için aşağıdaki formül kullanılacaktır.

Bir sonraki gün kapanış fiyatı= 1,041 – 0,789 (Açılış fiyatı) + 0,430(Kapanış fiyatı) + 0,850 (Min)+ 0,928 (Maks))



Şekil 8: BİMAS için Gerçekleşen ve Tahmin Değerleri Grafiği

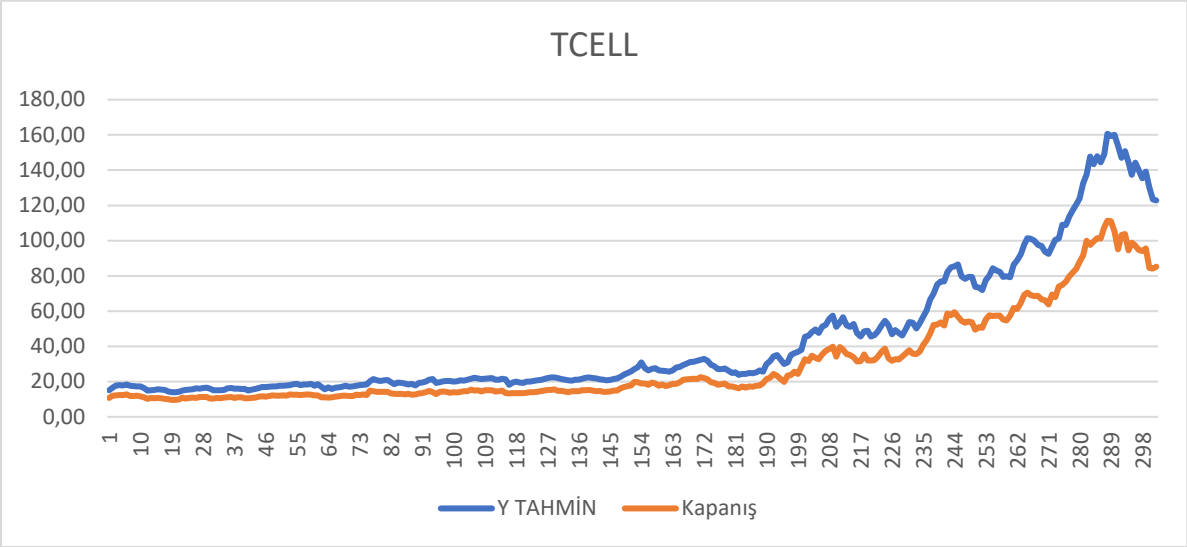
Şekil 8 den de görüldüğü üzere gerçekleşen ve tahmin edilen BİMAS fiyatları oldukça benzer ve yakındır. Bu da modelin başarılı sonuçlar verdiğini göstermektedir.

Tablo 10: TCELL için Katsayılar

```
. regress Kapanış Açılış Enyüksek Endüşük

      Source |       SS           df       MS      Number of obs   =       302
-------------+----------------------------------   F(3, 298)       =  46092.42
       Model |  203774.068         3  67924.6894   Prob > F        =    0.0000
    Residual |  439.151506       298  1.47366277   R-squared       =    0.9978
-------------+----------------------------------   Adj R-squared   =    0.9978
       Total |   204213.22       301  678.449235   Root MSE        =    1.2139

------------------------------------------------------------------------------
     Kapanış | Coefficient  Std. err.      t    P>|t|     [95% conf. interval]
-------------+----------------------------------------------------------------
      Açılış |  -.4919188   .0635295    -7.74   0.000    -.6169421   -.3668955
   Enyüksek  |   .6462942   .0528273    12.23   0.000     .5423324    .7502561
   Endüşük   |   .8522088   .0659143    12.93   0.000     .7224922    .9819253
       _cons |   .0776675   .1068231     0.73   0.468    -.1325557    .2878907
------------------------------------------------------------------------------
```

Tablo 10'te TCELLiçin katsayılar tablosu görülmektedir. Bu tabloya göre TCELL ertesi gün kapanış verilerinin tahmini için aşağıdaki formül kullanılacaktır.

Bir sonraki gün kapanış fiyatı= 0,776 – 0,491(Açılış fiyatı) + 0,430(Kapanış fiyatı) + 0,852 (Min)+ 0,646 (Maks))



Şekil 9: TCELL için Gerçekleşen ve Tahmin Değerleri Grafiği

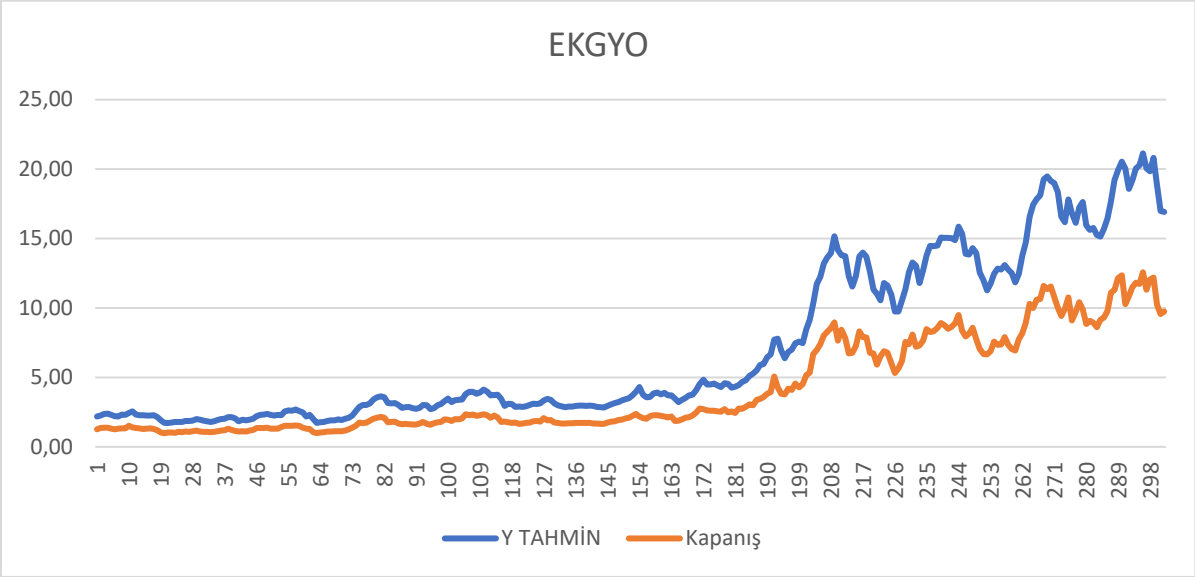
Şekil 9 den de görüldüğü üzere gerçekleşen ve tahmin edilen TCELL fiyatları oldukça benzer ve yakındır. Bu da modelin başarılı sonuçlar verdiğini göstermektedir.

Tablo 11: EKGYO için Katsayılar

```
. *(4 variables, 302 observations pasted into data editor)

. regress Kapanış Açılış Enyüksek Endüşük

      Source |       SS           df       MS      Number of obs   =       302
-------------+----------------------------------   F(3, 298)       =  53473.04
       Model |  3548.9709         3  1182.9903    Prob > F        =    0.0000
    Residual |  6.59268833       298  .022123115   R-squared       =    0.9981
-------------+----------------------------------   Adj R-squared   =    0.9981
       Total |  3555.56359       301  11.8125036   Root MSE        =    .14874

------------------------------------------------------------------------------
     Kapanış | Coefficient  Std. err.      t    P>|t|     [95% conf. interval]
-------------+----------------------------------------------------------------
      Açılış |  -.7087299   .0382144   -18.55   0.000    -.7839341   -.6335256
   Enyüksek  |   .8749128   .0418916    20.89   0.000      .792472    .9573537
   Endüşük   |   .8342677    .036685    22.74   0.000     .7620732    .9064622
       _cons |  -.0084004   .0135417    -0.62   0.536      -.03505    .0182491
------------------------------------------------------------------------------
```

Tablo 11'te EKGYO için katsayılar tablosu görülmektedir. Bu tabloya göre EKGYO ertesi gün kapanış verilerinin tahmini için aşağıdaki formül kullanılacaktır.

Bir sonraki gün kapanış fiyatı= 0,008 – 0,708 (Açılış fiyatı) + 0,430(Kapanış fiyatı) + 0,834 (Min)+ 0,874 (Maks))



Şekil 10: EKGYO için Gerçekleşen ve Tahmin Değerleri Grafiği

Şekil 10 den de görüldüğü üzere gerçekleşen ve tahmin edilen EKGYO fiyatları oldukça benzer ve yakındır. Bu da modelin başarılı sonuçlar verdiğini göstermektedir.

SONUÇ VE ÖNERİLER

Çalışmada yeni yatırımcıların sıklıkla satın aldığıişlem hacmi yüksek ve popüler on hisse senedinin fiyat hareketliliğinden yola çıkılarak çoklu regresyon yöntemiyle gelecek fiyat tahmini yapılmış ve yapılan bu tahminler ile gerçekleşen fiyatlar karşılaştırılmıştır. Çalışmada yer alan hisse senetleri, Ford Otomotiv(FROTO), Şisecam(SİSE), İş Bankası (ISCTR), Türk Hava Yolları (THYAO), Tüpraş (TURPS), Koç Holding (KCHOL), Ereğli Demir Çelik (EREGL), Birleşik Mağazalar Zinciri (BİMAS), Turkcell (TCELL), Emlak Konut GYO (EKGYO) ‘dur.

Çalışmada 01.01.2019-20.10.2024 tarihleri arasındaki Haftalık veriler için tahmin çalışması yapılmıştır.

Bağımsız değişkenler açılış değeri, kapanış değeri, gün içindeki en yüksek değer ve gün içindeki en düşük değerdir. Bağımlı değişken ise ertesi günün kapanış değeridir.

Yapılan regreyon modelleri ile analize konu olan hisse senetlerinin açılış fiyatları kapanış fiyatları ve seans içinde ulaştıkları en yüksek ve en düşük fiyatlardan yararlanılarak kurulan model ile ertesi gün kapanış fiyatları tahmin edilmiştir. Yapılan analiz ve kurulan tahmin modeli ile gerçekleşen fiyatlar karşılaştırıldığında fiyatların çok yakın ve hatta zaman zaman bierebir aynı olarak gerçekleştiği görülmüştür.

Modelde kullanılan değişkenlerin *R*2 değerleri oldukça yüksek çıkmıştır. **Özellikle BİM ve EREGL için kurulan modeller gerçeğe yakın değerler vermiştir.**

Popüler hisse senetlerinden olan **THY** için yapılan tahminlerde zaman zaman kaymalar görülse de genel kapanış fiyatlarının benzer olduğu görülmektedir.

Hisse senedi borsasının son yıllarda popülerleşmesinden dolayı literatürde hisse senedi fiyat tahmini ile ilgili yeterli sayıda çalışma olmaması sebebiyle, regresyon ile hisse senedi fiyat tahmini konusu araştırmacılar ve yatırımcılar için oldukça ilgi çekici olacağı ve yapılan çalışmanın literatüre oldukça yarar sağlayabileceği düşünülmektedir.

İleride yapılacak çalışmalarda daha çok veri veya daha uzun bir zaman periyodu için analiz genişletilebilir. Ayrıca çalışmaya tahmin işlemi yapılacak hisse senetlerinin seçimi için çok kriterli karar verme teknikleri entegre edilebilir.

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AI-POWERED CONTENT CREATION IN MARKETING

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Abstract

AI-powered content creation is reshaping businesses' content production processes. This advanced technology facilitates content marketing activities, enabling the rapid and effective production of content such as text writing, visual design, and social media posts. This study aims to examine publications on AI-powered content creation using bibliometric analysis methods. This analysis, conducted using R Studio and the Bibliometrix package, involved reviewing the titles, keywords, and abstracts of publications in the Web of Science (WoS) database, employing search terms such as "content," "creation or generation," "marketing or market or consumer," and "AI or artificial intelligence." This bibliometric analysis aims to identify research trends, collaboration networks, and critical information sources in AI-powered content creation. The study encompasses 78 publications published between 2018 and 2024. Key findings indicate a rapid increase in interest in AI-powered content creation, particularly with publications in 2023 and 2024. Thematic analyses identified vital themes such as "social media," "artificial intelligence," and "online content," reflecting the central role of AI in social media and digital content production. Emerging themes like "consumer behavior" and "sharing economy" not only highlight potential areas for future research but also inspire and motivate further exploration in these directions. These emerging themes open up new avenues for research and innovation in the field. Topics such as "decision making," "technology," and "customer engagement" form the foundational pillars of the field. The study also emphasizes the presence of a robust global network, marked by intense international collaboration among the US, China, and leading European countries. Key sources such as IEEE Access, Journal of Business Research, and Sustainability are essential journals contributing to developing AI-powered content creation. This study theoretically maps the conceptual structure of the field and provides guiding insights for marketing strategists, content creators, and organizations seeking to integrate AI into content production. Future research directions include expanding multilingual and sector-specific studies, addressing ethical issues, and exploring the integration of AI with other emerging technologies, thereby aiming to deepen the knowledge base in the field.

Keywords: AI content creation, bibliometric analysis, content marketing, AI-powered content creation

INTRODUCTION

In recent years, artificial intelligence (AI) has begun to play a significant role in transforming marketing strategies. Innovations and automation provided by AI in various fields are also fundamentally changing content creation processes. AI-powered content creation holds great potential in the marketing world, enabling rapid and effective content production processes and facilitating the development of personalized and user-focused content (Hoffman & Budree, 2024). This allows brands to reach consumers more quickly, effectively, and cost-efficiently, capturing their attention, ensuring customer loyalty, and increasing satisfaction (Burlacu, 2023; Gogula, 2024).

Content marketing is essential to digital marketing strategies, aiming to establish a meaningful connection with the target audience by providing value (Salonen et al., 2024). This strategy includes various content types such as blog posts, articles, social media posts, videos, infographics, and e-books. However, increasing speed and quality in content production has become a crucial goal for brands today. In this context, AI technologies emerge as ideal tools to enhance efficiency in content creation processes. Through AI algorithms, brands can analyze user data to offer personalized content and improve the customer experience (Bhalla, Kaur & Zafar, 2024).

AI-powered content creation offers numerous advantages in marketing. These include rapid content production, cost savings, data-driven strategic decisions, and more consistent and higher-quality content creation, all contributing to the growing popularity of AI-assisted content creation (Gogula, 2024; Kumar et al., 2024). AI also plays an active role in social media management, providing brand benefits by enabling trend tracking, suggesting content, and producing content in multiple languages (Angelen & Siddik, 2023).

AI-powered content creation is rapidly emerging as a transformative technology in digital marketing and media industries. Its advantages, such as speed, efficiency, personalization, and cost savings, enable brands to engage more effectively with their target audiences (Nasser El Erafy, 2023). However, despite the rapid developments in this field, academic knowledge about the scope, impact, and limitations of AI-powered content creation still needs to be improved. Comprehensive analyses could be more comprehensive on how these technologies are integrated into marketing strategies, which content types are most effective, how efficiency is improved, and how they transform user experiences. This study addresses these gaps by profoundly examining the existing academic knowledge on AI-powered content creation through a bibliometric analysis, highlighting key trends and identifying future research opportunities. The goal is to provide a comprehensive resource for researchers in the field and to enhance understanding of the role of AI-powered content creation technologies in marketing.

Bibliometric analyses provide an opportunity to examine the development process of literature in a specific field, identify core themes, influential researchers, international collaborations, and widely referenced sources (Donthu et al., 2021), and guide future research directions. Such analyses are crucial for understanding the structure of a research field, identifying new trends, and guiding future research directions. Therefore, this study aims to evaluate the current state and development trends in the literature on AI-powered content creation by examining academic publications in this field.

The study seeks to answer the following research questions:

RQ1: How has the literature on AI-powered content creation evolved over time?

RQ2: What are the current research trends in AI-powered content creation?

RQ3: Who are AI-powered content creation's most contributing researchers, institutions, and countries?

RQ4: What are the citation relationships and commonly referenced sources among publications on AI-powered content creation?

RQ5: What are the under-researched topics and potential opportunities in AI-powered content creation?

This article is organized as follows: Section 2 explains the key concepts, research areas, relevant terms, and theoretical development related to AI-powered content creation. Section 3 details the bibliometric analysis methodology and data collection process used in this study. Section 4 presents the results of the analysis that address the research questions. Section 5 discusses the findings and provides suggestions for future research.

LITERATURE

AI-powered content creation is a process where AI technologies are utilized to produce or enhance digital content types such as text, visuals, videos, and audio (Vayadande et al., 2024). This type of content creation is widely used across multiple sectors, including marketing, education, media, healthcare, and customer service. Integrating AI algorithms into the content creation process accelerates production and improves content quality, enabling the delivery of personalized, consistent, and strategic content.

The AI-powered content creation process is made possible by combining various fields such as machine learning, natural language processing, deep learning, and computer vision (Reddy & Reddy, 2024). These technologies facilitate content creation and management tailored to users' needs and target audiences.

Core Components of AI-powered Content Creation

Natural Language Processing (NLP)

NLP is one of the core components of AI-powered content creation. It enables AI to understand, process, and generate human language. This technology allows for the automatic generation of text-based content through language models. NLP helps AI produce content on specific topics or styles (Vuong & Mai, 2023). For example, blog posts, social media posts, or email texts can be created for digital marketing campaigns.

Machine Learning

Machine learning enables AI to analyze user behaviors and content consumption habits. Through these analyses, content can be tailored specifically for each user (Martín et al., 2021). For instance, an e-commerce platform can

use machine learning algorithms to create product recommendations and content based on the user's interests. By gathering and analyzing user data, machine learning algorithms provide suggestions for more effective and targeted content based on users' interests, demographics, and consumption habits.

Deep Learning

Deep learning is a more complex and advanced version of AI-powered content creation. Deep learning models work with larger datasets, analyzing content in more detail and producing content that better meets users' needs. Deep learning algorithms can be used in visual content creation or analysis, voice response systems, or automatic video editing (Rashi et al., 2024). For example, a video ad campaign for a brand can be created automatically through deep learning.

2Computer Vision

Computer vision allows AI to understand and process visual data (photos, videos, graphics). This technology analyzes and creates visual content (Ettalibi, Elouadi, & Mansour, 2024). For example, images or infographics for a social media campaign can be created automatically. Computer vision is also employed in processes such as analyzing existing content, selecting appropriate visuals, and adapting visuals to users' interests.

AI-powered Content Creation Process

Data Collection and Analysis

The AI-powered content creation process begins with collecting and analyzing user data. This data may include demographic information, content consumption habits, social media interactions, and personal interests (Srivastava, 2024). Data analysis helps determine the most suitable content type, style, and format for the user, forming the basis for personalized content creation.

Content Creation and Production

After analyzing the collected data, AI algorithms proceed to the content creation phase. In this stage, personalized content is produced using NLP and machine learning techniques (Wang et al., 2023). For instance, a blog post for a fashion brand can be created in line with the target audience's interests and trends. For visual content, computer vision and deep learning techniques process visual data to create new images or videos.

Content Editing and Optimization

In AI-powered content creation, correcting language and style errors after content generation can also be automated (Abinaya & Vadivu, 2024). AI identifies and corrects spelling mistakes and non-standard language use, enhancing content quality. AI can also optimize content for SEO (search engine optimization). By performing keyword analysis, content is made more visible in search engines.

Distribution and Publishing

AI-powered content creation ensures that content reaches the right audience on the right platform at the right time. For digital channels such as social media and email marketing, content timing can be optimized by AI (Gao et al., 2023). For example, social media content can be shared automatically when users are most active, resulting in higher engagement rates.

Advantages of AI-powered Content Creation

Speed and Efficiency

AI accelerates content production, making it more efficient (Ninduwezuor-Ehiobu et al., 2023). AI can complete content production processes that take days manually in minutes.

Personalization

AI can offer content tailored to users. Creating personalized content based on users' interests, needs, and behaviors increases customer satisfaction and fosters stronger customer loyalty (Vallabhaneni et al., 2024).

Consistency and Quality

AI-powered content creation minimizes language errors and generates content consistent with a specific tone or brand voice, allowing the brand to communicate consistently with its target audience (Izadi & Forouzanfar, 2024).

Cost Savings

Automated content production reduces content creation costs. Marketing teams can focus on strategic tasks and use resources more efficiently (Burlacu, 2023).

Data-Driven Decisions

AI analyzes user data to provide strategic insights to marketing teams. These analyses allow more informed marketing decisions by offering insights into users' interests, trends, and content interactions (Lopez, 2023).

Effectiveness on Social Media and Digital Platforms

AI can provide content suggestions for social media platforms, analyze trends, and ensure that content reaches a broader audience (Sadiku et al., 2021).

2.4. Applications of AI-powered Content Creation

Marketing and Advertising

Brands use AI-powered content creation to create personalized advertising campaigns for their target audience (Kumar et al., 2024). AI produces brand-specific content by analyzing users' preferences.

Customer Service and Support

AI can generate automated responses to customer inquiries and create knowledge bases or guides, making customer service teams more efficient (Abouelyazid, 2022).

Education and E-Learning

E-learning platforms leverage AI to produce learning content. Content tailored to students' learning styles can be created to provide personalized learning experiences (Gligorea, 2023).

Media and Journalism

News sites and media organizations use AI to produce news content quickly and efficiently, particularly for data-driven news (De-Lima-Santos & Ceron, 2021). AI-powered content creation enables fast and automatic reporting, such as AI applications that analyze and report market developments in financial news.

E-Commerce and Retail

E-commerce platforms use AI to automatically create content types such as product descriptions, customer reviews, and recommendations (Krishnan & Mariappan, 2024). Personalized recommendations for each customer enhance the shopping experience, and dynamic content production makes promoting new products more effective.

Healthcare Sector

In healthcare, AI-powered content creation is used for patient education materials, health guides, and treatment recommendations. AI algorithms analyze patient data to provide personalized health information, offering significant advantages in digital health applications and patient education (Neelima et al., 2024).

AI-powered Content Creation Technologies

GPT (Generative Pre-trained Transformer) and Similar Language Models

Language models like GPT, developed by OpenAI, are widely used in text-based content creation. Trained on large datasets, these models can deliver content in natural language, enabling the generation of diverse content types, from complex articles to social media posts (Yenduri et al., 2024).

DALL-E, Midjourney, Stable Diffusion, and Visual Creation Models

AI-powered content creation is not limited to text. Visual content production uses models such as DALL-E, Midjourney, and Stable Diffusion, which can generate artistic and photographic content to visually represent specific topics or concepts (Han & Cai, 2023).

Voice Content Production and Voice Assistants

AI is also used in voice content production. Content like podcasts or audiobooks can be automatically generated through voice response systems, voice assistants, and text-to-speech technology (Deshmukh et al., 2024).

Recommendation Engines

Recommendation engines are frequently used in AI-powered content creation processes (Sorbán, 2021). These systems analyze users' content preferences and suggest content that may interest them.

Text Mining and Sentiment Analysis

Text mining and sentiment analysis help analyze users' reactions to content (Taherdoost & Madanchian, 2023). These analyses are critical in understanding how users feel about content, particularly in social media management.

Challenges of AI-powered Content Creation

Ethical Issues and Data Privacy

The intensive use of user data in AI-powered content creation raises data privacy and ethical concerns (Nassar & Kamal, 2021). Protecting users' data and preventing misuse requires compliance with specific regulations.

Control Over Content Quality

AI-generated content may only sometimes meet the expected quality. Some content may be inconsistent, inaccurate, or misleading (Tuomi, 2023). Therefore, AI-generated content should be evaluated under human supervision.

Limitations in Creativity and Originality

While AI excels at producing data-driven content, it is limited in creativity and originality (Anantrasirichai & Bull, 2022). Generating original ideas and innovative concepts requires human intelligence, as AI cannot fully replicate creativity.

Risk of Misleading or Fake Content

AI-powered content creation technologies can quickly produce misleading or fake content. Deepfake technology and fake news highlight the risk of misuse, potentially undermining trust (Yu et al., 2024).

Complex Technology and Cost

AI-powered content creation technologies are often costly and complex, posing challenges for small and medium-sized businesses (Al Balushi et al., 2024). Implementing AI requires expertise in data science and software development.

AI-powered content creation is an innovation revolutionizing marketing and digital content management with technologies like NLP, machine learning, deep learning, and computer vision; content creation processes are accelerated, costs are reduced, and more personalized content can be produced. However, challenges such as data privacy, ethical issues, content quality, and creative limitations must be carefully addressed.

METHODOLOGY

This study used bibliometric analysis to comprehensively examine the academic literature on AI-powered content creation. Bibliometric analysis is a method used to outline the scientific profile of a particular research area by examining the development process, main trends, core sources, and collaboration networks within that field. The study analyzed data to identify key themes, influential researchers, leading institutions, and prominent countries in AI-powered content creation.

Data Collection

Data was collected from the Web of Science (WoS) database in October 2024. Specific keywords were used to analyze publications on AI-powered content creation comprehensively. Academic sources, such as articles, books, and conference papers published between 2018 and 2024, were included in the study based on search terms such as "content," AND "creation or generation," "marketing or market or consumer," AND "AI or artificial intelligence."

Data Processing

During the data processing stage, bibliometric data suitable for analysis were obtained, including information such as article titles, author names, institution details, abstracts, keywords, and journals in which they were published. The dataset was processed and analyzed using R Studio software and the Bibliometrix package.

Analysis Methods

Distribution of Publications Over Time:

The distribution of studies published on AI-powered content creation over time was analyzed to assess how research trends in this field have evolved.

Keyword Analysis:

Keywords used in the research were analyzed to identify the main themes in the field. A word cloud and thematic map were utilized to visualize the critical topics in AI-powered content creation.

Collaboration Analysis Between Countries and Institutions:

Collaboration relationships between countries and institutions working in AI-powered content creation were analyzed. This analysis aimed to reveal the global scope of the research and international collaboration networks.

Citation and Co-citation Analysis:

Citation data was examined to identify the most-cited publications and frequently referenced works. Co-citation analysis was used to determine fundamental relationships among studies and the most commonly referenced sources in the literature.

Author Productivity and Impact:

The number of publications, citations received, and collaborations of authors were examined to identify the most contributing authors in the field. Author productivity analysis highlighted the most influential authors and the significance of their contributions to the field.

Thematic Map and Factorial Analysis:

Key themes in AI-powered content creation and their levels of development were visualized using factorial analysis and a thematic map. This analysis aimed to identify core topics, emerging themes, and niche research areas...

FINDINGS

This section presents the findings derived from the bibliometric analysis of research in AI-powered content creation. The results are detailed under different headings, including basic study information, annual publication and citation counts, top contributing authors, influential sources, collaboration networks, and key themes.

General Data and Publication Profile

The analysis indicates a high annual growth rate of 61.13% in AI-powered content creation, demonstrating the rapidly increasing interest in this area. 78 documents were published across 69 different sources, involving contributions from 288 authors, highlighting a broad researcher base actively engaged in the field. Additionally, an international collaboration rate of 28.21% reflects the global interest in this area and underscores the importance of cross-border collaborations.

The average number of authors per document is 3.76, indicating that most studies are conducted collaboratively, while only 14 single-author publications suggest a tendency toward teamwork in research. Further data supporting the extensive knowledge base of this field include the use of 425 keywords and 6,441 references. The average of 24.83 citations per document indicates the published works' solid academic impact. With an average publication age of 1.46 years, most research focuses on relatively recent and contemporary topics. These findings reveal that AI-powered content creation is a rapidly growing research area marked by international collaboration and a significant academic influence (See Figure 1).

Figure 10: Main Information

4.2.

The number of studies on AI-powered content creation has significantly increased, especially in 2023 and 2024. While only two articles were published in 2018, this number rose to 6 in 2019, 4 in 2020, 8 in 2021, 9 in 2022, 14 in 2023, and 35 in 2024. Compared to previous years, the sharp increase in 2024 indicates the field's rapid development and growing interest (See Figure 2).

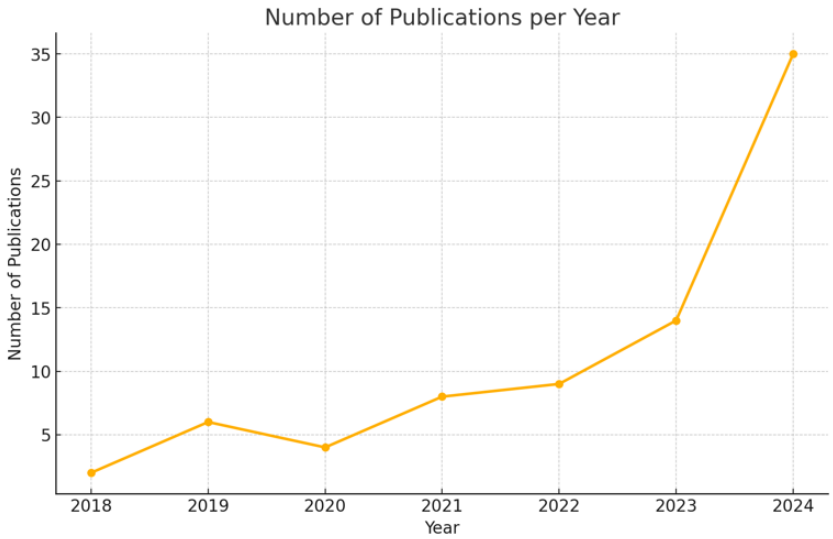

Figure 2: Number of Publications per Year

Three-Field Plot

The Three-Field Plot visualizes the connections between sources (CR), authors (AU), and keywords (DE) in AI-powered content creation. The plot highlights the broad interdisciplinary interest in this topic by bringing together famous reference works, prominent authors, and frequently used keywords.

Through CR, the plot emphasizes foundational works in the field. For instance, studies such as Kaplan AM (2010) and Dwivedi YK (2021) have become reference points, forming strong connections with other publications. Regarding AU, Krishen Anjala S stands out as the author with the most vital links, while other authors have more limited connections and are associated with diverse keywords.

With DE, "Artificial intelligence," "machine learning," and "AI" emerge as the most frequently used keywords, indicating that the research is heavily focused on AI and related technologies. Additionally, keywords like "blockchain," "social media," and "big data" reveal the study's connection to a broad range of technologies (See Figure 3)..

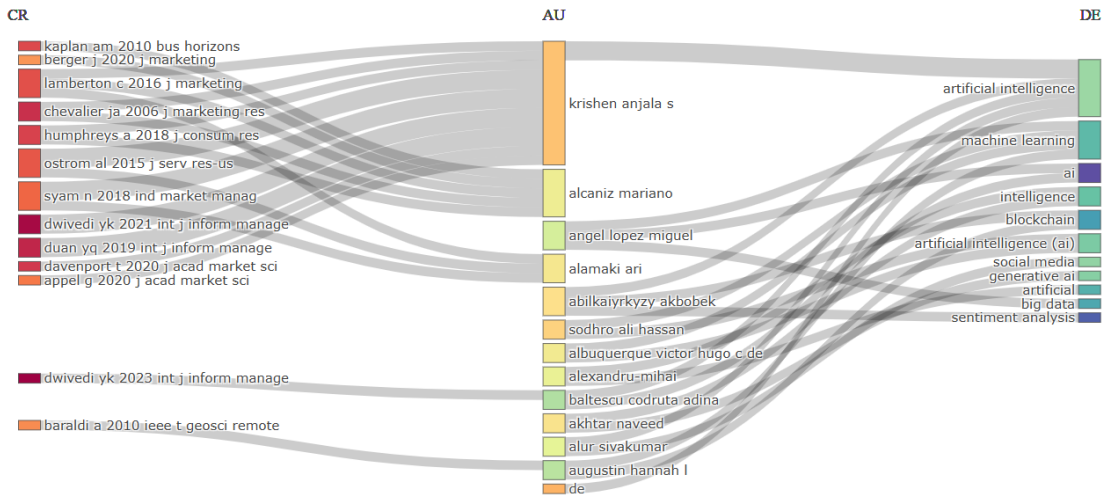

Figure 3: Three-Field Plot

Annual Average Citation Counts

Citation analysis reveals the average number of citations per article by year, providing insight into the field's impact and the academic value of studies published in different years. In 2018, the average citations per article were 20.50, with an annual average citation count of 2.93. In 2019, these numbers rose to 30.33 and 5.06, respectively; in 2020, to 56.00 and 11.20; in 2021, to 91.75 and 22.94; and in 2022, to 70.78 and 23.59. However, in 2023, the averages dropped to 4.79 and 2.40, and in 2024, to 1.49 for both measures. These results indicate that studies published in 2021 and 2022 have received significant academic attention and frequent citations, highlighting their substantial impact on the field (See Figure 4).

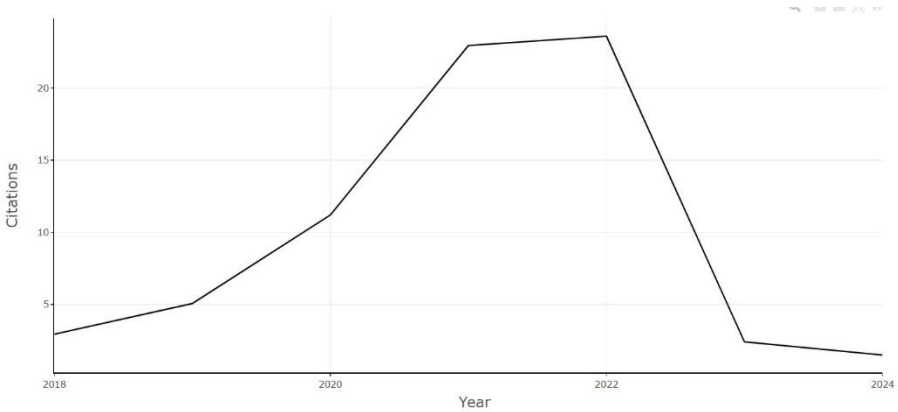

Figure 4: Annual Total Citation per Year

Top Publishing Sources

In distributing publications by source, IEEE Access stands out as the most frequently used journal. Five articles have been published in IEEE Access, while Entertainment Computing, Entrepreneurship and Sustainability Issues, Journal of Business Research, and Sustainability each contain two articles. This distribution of sources indicates that AI-powered content creation is a multidisciplinary field that attracts interest from various research communities (See Figure 5).

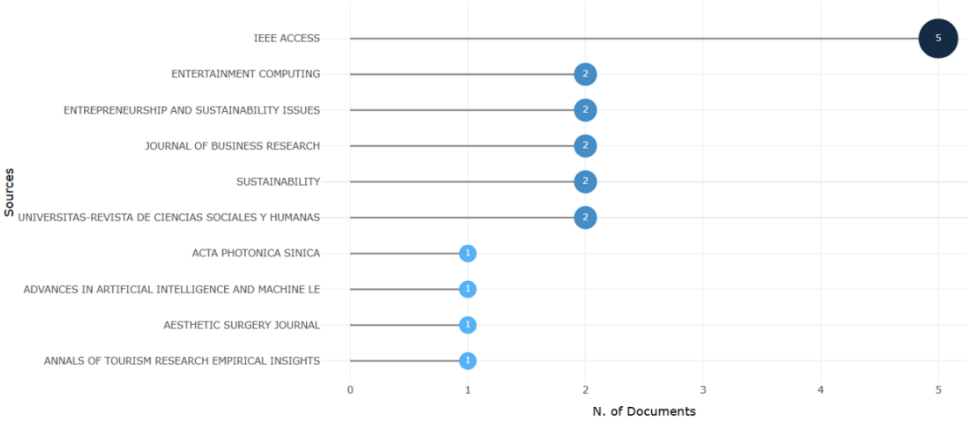

Figure 5: Most Relevant Sources

Bradford's Law

According to Bradford's Law, the core sources in AI-powered content creation have been identified. IEEE Access is the journal publishing the most articles and is recognized as one of the most essential sources in this field. Other core sources include journals such as Entertainment Computing, Entrepreneurship and Sustainability Issues, Journal of Business Research, and Sustainability. These journals provide a concentrated body of knowledge in AI-powered content creation and house a significant portion of the research in this domain (See Figure 6).

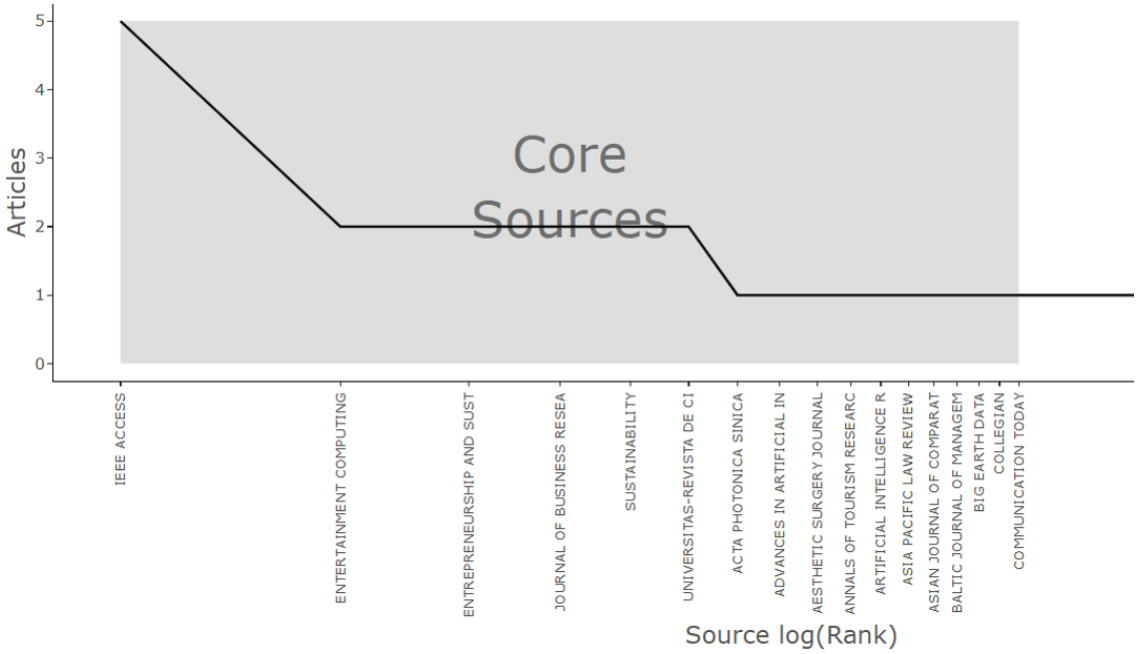

Figure 6: Bradford's Law

Most Cited Sources

Citation analysis reveals that the Journal of Business Research received 184 citations, the Journal of Retailing and Consumer Services received 86 citations, Industrial Marketing Management received 83, and Computers in Human Behavior received 68. These sources form the foundation of the AI-powered content creation literature and are highlighted as critical references that underpin research in this field (See Figure 7).

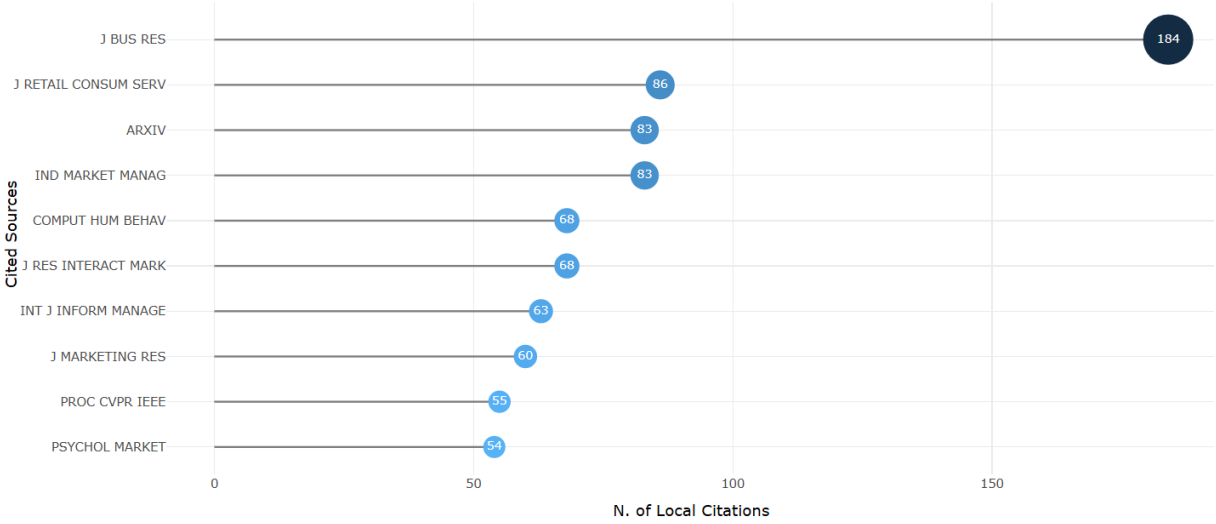

Figure 7: Most Cited Sources

Top Publishing Authors

The analysis highlights authors such as Diaz-Soloaga Paloma and Krishen Anjala S as leading contributors with the highest publication counts. Their high citation rates underscore their significant contributions and impact within the field.

Authors' Productivity and Citation Counts by Year

Based on annual productivity and citation data, Krishen Anjala S garnered substantial attention with a 2021 publication that received 616 citations, averaging 154 annually. Sodhro Ali Hassan has also made an impactful presence in the field, with works published in 2019 and 2021 that received 57 and 25 citations, respectively (See Figure 8).

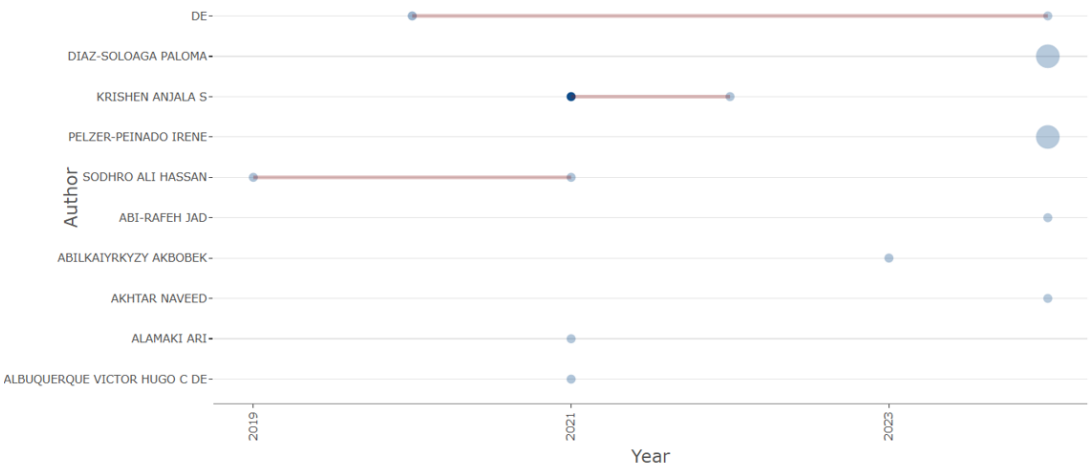

Figure 8: Author Production over Time

Top Collaborating Countries and Institutions

China, Spain, the USA, Canada, and India are the top countries for publications in this field. China is leading with a high publication count and a solid international collaboration rate (33.3%). The data indicates that China has the most publications in AI-powered content creation and actively engages in global partnerships. While Spain and the USA also have high publication counts, Canada shows a notable participation rate in collaborations, with 75% of its publications involving international co-authorship despite a relatively lower publication count. This suggests that countries like China and the USA prioritize national and international collaborations, while Canada's work primarily relies on global partnerships. Among institutions, McGill University, Shanghai International Studies University, and City University of Macau have the highest number of publications (See Figure 9).

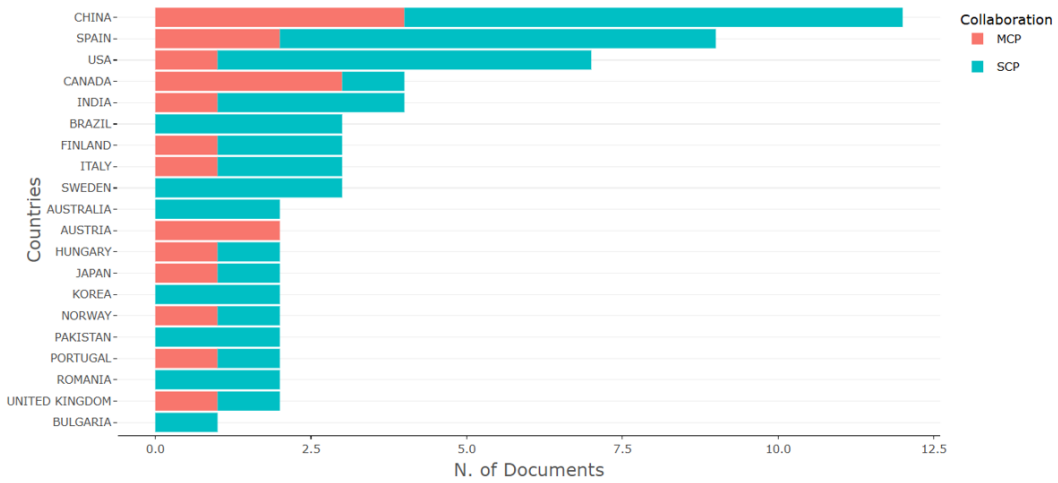

Figure 9: Country Production

Most Cited Articles

The analysis shows that specific articles have received significantly more citations, establishing a prominent place in the literature. Dwivedi YK (2021, International Journal of Information Management) stands out with 616 citations, followed by Park SM (2022, IEEE Access) with 556 citations, and Brunetti F (2020, TQM Journal) with 128 citations. These articles serve as foundational references in AI-powered content creation and are central to the literature (See Figure 10).

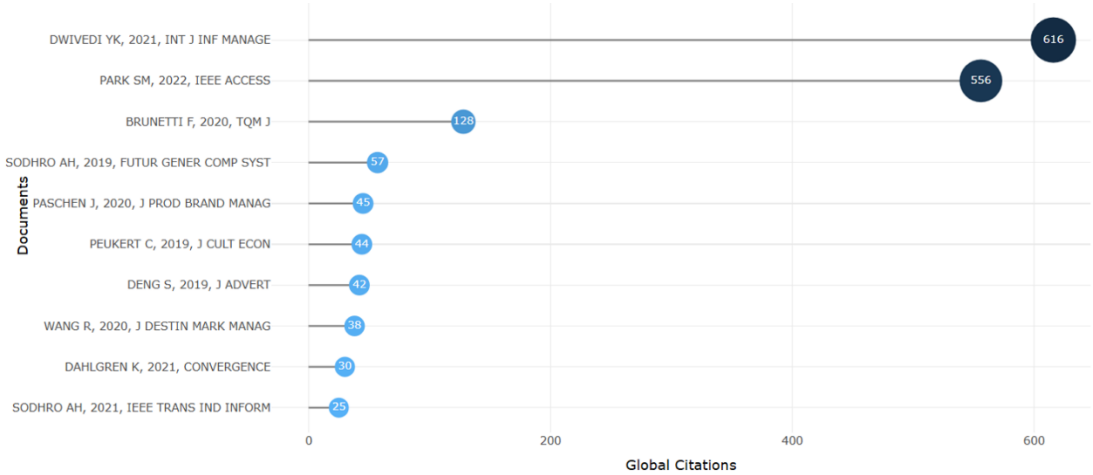

Figure 10: Most Global Cited Documents

Keyword and Thematic Map Analysis

The word cloud illustrates the most frequently used keywords in research on AI-powered content creation. "Social media" and "artificial intelligence" emerge as the most significant and central terms, highlighting the primary focus of this research area on social media and AI. Other prominent terms include "online," "co-creation," "user-generated content," and "word-of-mouth," which relate to digital marketing, user engagement, and content creation. Additionally, modern technological trends such as "big data," "technology," and "personalization" are noteworthy. These findings indicate that AI plays a significant role in personalization, content creation, and user engagement within social media and digital marketing contexts (See Figure 11).

Figure 11: Word Cloud

Thematic Map Analysis

The thematic map visualizes the development and centrality of research themes in AI-powered content creation. The map classifies themes into four main quadrants based on their relevance and development:

Motor Themes (Upper Right): Keywords such as “social media,” “artificial intelligence,” and “online” are located in this quadrant with high centrality and density. These represent core and actively researched topics in the field, serving as primary focal points for researchers.

Niche Themes (Upper Left): Terms like “technologies,” “Facebook,” “markets,” and “sentiment analysis” display high development (density) but low centrality. This suggests these themes are concentrated within narrower areas, appealing to a more specialized research audience.

Emerging or Declining Themes (Lower Left): Themes such as “customers,” “digitization,” and “system” are positioned in this quadrant with low centrality and density. These topics represent either emerging areas with potential for future research or regions that may decline in importance.

Basic Themes (Lower Right): Keywords like “model,” “technology,” and “decision-making” appear here, exhibiting high centrality but lower density. While they form the foundational structure of the field, these themes may benefit from more in-depth research.

This analysis highlights that studies on social media and AI are the most central and well-developed topics, while themes like “customers” hold growth potential in the field (See Figure 12).

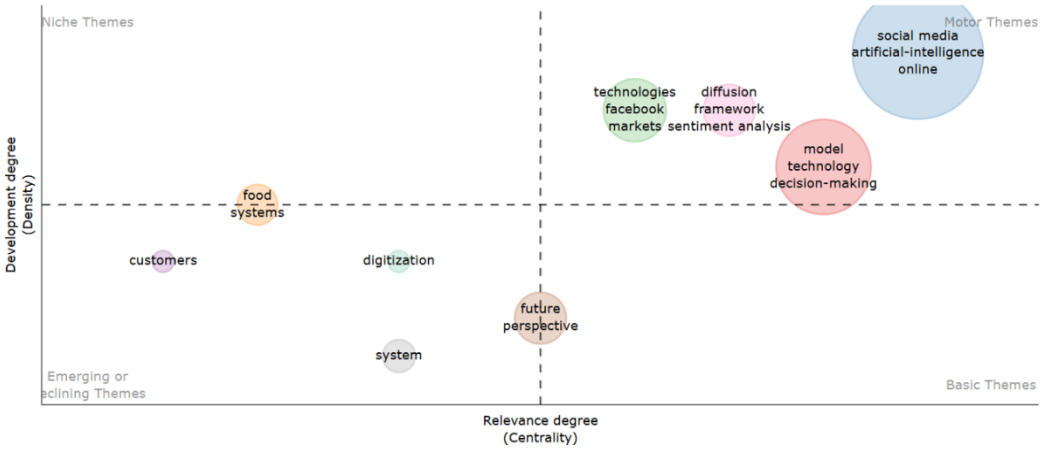

Figure 12: Tematic Map

Co-Citation and Collaboration Networks

The Co-Citation Network visualizes how frequently studies in AI-powered content creation are cited together with other research. Dark red areas on the graph indicate studies with the highest co-citations, while lighter areas show those with fewer co-citations. Studies like Dwivedi YK (2021) and Lamberton C (2016) are represented at the center with intense red, signifying their frequent co-citation and marking them as key reference points within the field. Similarly, Humphreys A (2018) and Berger J (2020) are also centrally located and highly cited, indicating their substantial influence in the field.

Studies such as Kamboj S (2018) and Kaplan AM (2010), though positioned further from the center, have received significant citations within niche areas, suggesting they have a strong impact on specialized topics. Studies located at the graph's periphery and in lighter shades, like Podsakoff PM (2003) and Anderson JC (1988), are cited less frequently than others or focus on more specific subtopics.

This Co-Citation Network highlights that certain studies have become foundational references in AI-powered content creation. The dense areas at the graph's center emphasize these works' crucial role in shaping the field and their acceptance as core resources by other researchers (See Figure 13).

Figure 13: CoCitation Network

Countries and Institutions Collaboration Networks

Collaborations between countries and institutions have concentrated primarily among China, the USA, and Europe. The map illustrates the collaboration network in the field of AI-powered content creation. The map's dark and light blue shades indicate the intensity of collaboration among countries, while the lines represent direct cooperative

connections between them. The USA, China, and several European countries (such as the UK, Germany, and France) are highlighted in dark blue, emerging as the nations with the most significant collaborative efforts.

These countries hold leading positions in AI-powered content creation and actively collaborate with others. Intensive Collaboration within Europe: The map reveals a robust collaboration network among numerous European countries. Notably, the UK, Germany, and France have established cooperative ties both within Europe and with nations like the USA and China, playing an influential role in this field.

Strong Connections between China and the USA: A clear collaboration line is evident between the USA and China, indicating that these two major powers are involved in knowledge sharing and joint ventures in the AI domain. Collaborations from Emerging Countries: Countries like Brazil, Australia, and India also play a significant role in the collaboration network. These nations contribute to global cooperation in AI-powered content creation by partnering with major economies.

This map demonstrates that the USA, China, and Europe are at the forefront of AI-powered content creation, establishing strong collaborations among themselves and other nations. Furthermore, it highlights the contributions of emerging countries to global knowledge sharing in this area (See Figure 14).

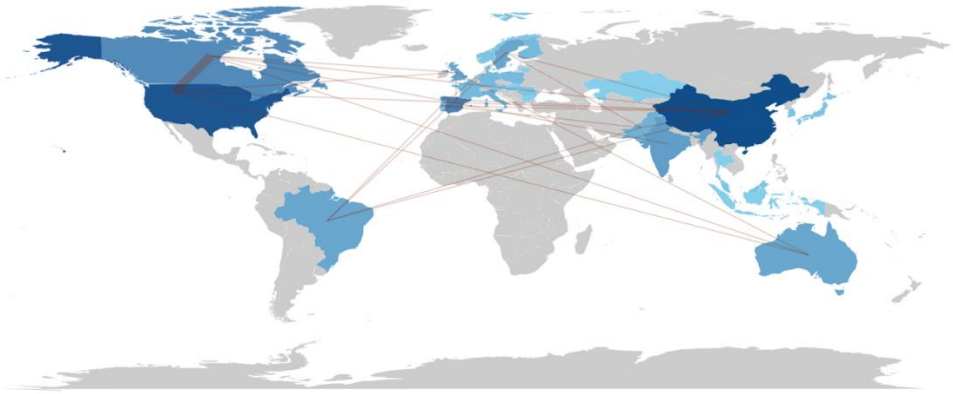

Figure 14: Collaboration Network

These findings indicate a strong academic interest in AI-powered content creation, which has rapidly increased over the years. The most cited sources, key themes, and influential researchers provide significant insights into the future development of this area and emerging research opportunities. In particular, social media, consumer engagement, and personalization constitute the main themes within AI-powered content creation.

Historiography

The historiography illustrates the citation relationships among prominent works in AI-powered content creation from a temporal perspective. Each point represents a study, while the lines between points indicate the citations made between these studies. The size of the points reflects the intensity of citation counts. The survey by Rosati E (2019) is the most significant point, highlighting its significance as an essential reference within the field. This indicates that Rosati's work is one of the foundational sources for the area and provides a robust basis for subsequent research.

More recent publications, such as those by Park SM (2022) and Yang X (2023), emerge as new and developing sources within the field. These studies continue to advance the literature by citing earlier works. The study by Vesala J (2023) cites Rosati's work, indicating its influence on his research. Additionally, studies from 2023, such as those by Abilkaiyrkyzy A and Yang X, show connections to each other and previous works. This suggests that new studies are being developed based on existing literature, demonstrating a temporal flow in research progression.

This historiography reveals how studies in AI-powered content creation are interconnected and how the body of knowledge has been constructed over time. Rosati's 2019 study has established a crucial foundation, and subsequent research has built upon this groundwork for further advancement (See Figure 15).

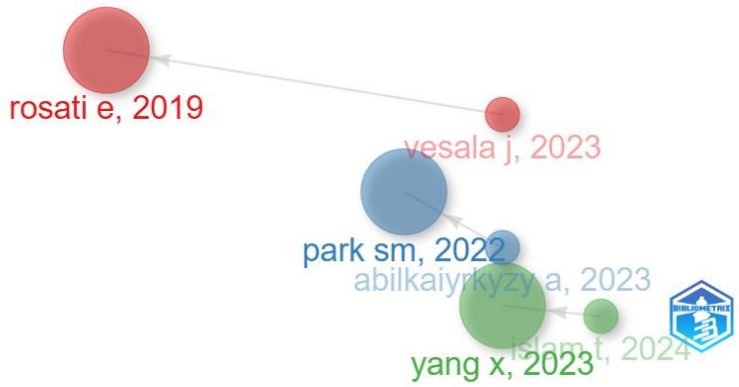

Figure 15: Historiography

CONCLUSION

This bibliometric analysis of AI-powered content creation comprehensively reveals research trends, collaboration networks, and critical information sources in the field. The findings examine various dimensions, including the field's rapid growth rate, key topics, influential researchers, international collaborations, and important reference works. Results indicate that the field is experiencing increasing interest, with research based on a broad international collaboration network.

This analysis guides researchers in understanding the main trends and collaboration opportunities in the field while offering critical insights into new research directions and thematic focal points. Notably, there has been a significant surge in publication numbers in 2023 and 2024, highlighting the growing importance of AI-supported content creation. This trend suggests that more research will be conducted and innovations in the field will accelerate.

Thematic and factorial analyses emphasize core themes such as social media, artificial intelligence, and online content. These themes indicate the widespread use of AI in social media and digital content production. Topics like decision-making, technology, customer engagement, and sentiment analysis form the field's foundational pillars, showcasing the broad application potential of these technologies. Emerging or less-developed niche topics, such as consumer behavior and the sharing economy, have been identified as areas for further research.

The analysis also highlights influential researchers and frequently cited works in the field. Works by Dwivedi YK (2021), Lamberton C (2016), and Humphreys A (2018) have become fundamental sources frequently referenced in AI-supported content creation. Similarly, authors such as Diaz-Soloaga Paloma and Krishen Anjala S play a central role in the field with extensive collaborations and high citation counts. These works and authors shape AI-supported content creation's fundamental theoretical framework and methodological approaches.

The map of international collaborations shows that the most robust networks in the field are formed by the USA, China, and several European countries, mainly the UK, Germany, and France. The intense collaboration between the USA and China indicates that these two countries are leading the development of the field. Countries like Brazil, India, and Australia contribute significantly by participating in international collaboration networks. In Europe, intra-continental collaborations are actively ongoing.

According to the analysis based on Bradford's Law, journals such as IEEE Access, Journal of Business Research, and Sustainability have been identified as important information sources in the field, frequently cited publications. These journals are significant sources that publish essential research in AI-supported content creation, contributing to the knowledge base in the field.

Theoretical Contributions

This bibliometric analysis of AI-powered content creation provides various theoretical contributions. Here are the theoretical contributions of this study:

Identification of Key Concepts and Themes: The study comprehensively identifies the key concepts, main themes, and research trends used in AI-powered content creation, offering significant contributions to the literature. It has been demonstrated that core themes such as social media, artificial intelligence, and online content are central to the field, thus presenting focal points for researchers.

Providing an Interdisciplinary Perspective: The analysis results reveal that AI-powered content creation is connected not only to technology but also to various disciplines such as business, marketing, social sciences, and sustainability. This multidisciplinary perspective provides a strong foundation for researchers to adopt interdisciplinary methods and theoretical approaches in their studies of AI-powered content creation.

Construction of Theoretical Frameworks and Structural Models: Examining the most cited works in AI-powered content creation reinforces this area's theoretical framework and methodological approaches. The high citation rates of works such as Dwivedi YK (2021) and Lamberton C (2016) indicate that these studies are significant references in the field and guide other research. This analysis contributes to developing the existing theoretical infrastructure in the field.

Conceptual Insights on Collaboration and Knowledge Sharing: The strong emphasis on collaboration networks between countries and international cooperation highlights the importance of cross-border knowledge sharing in AI-powered content creation. The strong collaborations between the USA, China, and European countries provide a theoretical framework for understanding how this field has developed internationally. In this context, the study demonstrates the contribution of conducting research within a global collaboration framework to the knowledge base.

Identification of Emerging and Potential Research Areas: The bibliometric analysis emphasizes emerging or niche areas such as consumer behavior and the sharing economy, proposing new theoretical directions and potential research topics for researchers. These themes indicate that such issues as the impact of AI on user behavior and the sharing economy may be further explored in the future. Thus, the study presents a roadmap for theoretical work in these areas.

Identification of Key Sources in the Literature: Analyses based on Bradford's Law have identified the most referenced foundational sources in AI-powered content creation, demonstrating how these sources contribute to the field's theoretical foundations. Studies published in journals like IEEE Access, Journal of Business Research, and Sustainability are defined as significant theoretical resources supporting the direction and knowledge base of research in this area.

Providing a Theoretical Framework for Citation Networks and Knowledge Dissemination: Co-citation and historiographic analyses help us theoretically understand knowledge dissemination and development processes over time in the field. For instance, works like Rosati E (2019) have frequently been cited as foundational references and stand out as studies that shape the knowledge base in the literature. These analyses illustrate how knowledge flows within the research field and which works are central to this information transfer.

These theoretical contributions lay a foundation for future studies in AI-powered content creation, facilitating a deeper understanding of critical trends, information sources, and interdisciplinary connections in the field.

Practical Implications

This This bibliometric analysis of AI-powered content creation provides various practical contributions to the field of research and application. Here are the useful contributions of this study:

Strengthening Marketing Strategies: By emphasizing the importance of social media, artificial intelligence, personalization, and user engagement, the research empowers marketing professionals to develop more effective strategies targeted at their audience. It provides practical insights on how AI-powered content creation can be effectively utilized in areas such as personalized content production, enhancing customer engagement, and making data-driven decisions, thereby boosting their confidence and capabilities.

Increasing Efficiency in Content Production: This analysis not only highlights the potential of AI tools to accelerate content production processes and reduce costs but also provides practical guidance on how to apply these insights. It equips content creators with the knowledge of how AI can enhance productivity in social media posts, blog writing, and customer interactions, making them feel more prepared and efficient in their tasks.

Enhancing International Collaboration Opportunities: The study emphasizes the strong collaborations between the USA, China, and European countries, demonstrating the importance of establishing global partnerships for researchers and practitioners. This emphasis fosters a sense of connection and belonging in the global community, facilitating strategic partnerships that promote international knowledge and technology sharing.

Guidance for Data-Driven Marketing Approaches: The research, particularly emphasizing data analytics, big data, and user behaviors, provides practical advice for practitioners developing data-driven marketing strategies. It offers insights into how AI can be effectively utilized in data analytics processes and how this technology can be integrated to improve customer experience.

Integration of New Technologies: The analysis shows that advanced technologies and methods such as blockchain, sentiment analysis, and co-creation are becoming increasingly crucial in AI-powered content creation. These findings provide a roadmap for companies and content creators looking to invest in these technologies and support the processes of technological integration in practice.

Improving Social Media Strategies: The emphasis on the role of social media and AI in content creation offers practical recommendations for social media managers and content strategists to develop strategies that enhance user engagement. For instance, valuable insights are provided on leveraging social media analytics to understand audience preferences, personalizing content with user data to increase relevance, and understanding social media trends using AI to stay ahead of the curve.

Application Opportunities for Emerging Markets: The study highlights the involvement of countries such as Brazil, India, and Australia in collaborative efforts in AI-powered content creation. This presents new opportunities for organizations operating in emerging markets to develop AI-powered content strategies and provides a guide for assessing the potential of global markets.

Expansion of the Content Creation Ecosystem: Demonstrating the connections between AI-powered content creation and various disciplines offers practical ideas for how AI applications can be disseminated across different sectors, such as business, education, and healthcare. This broad ecosystem allows content creators to utilize sector-specific AI solutions more effectively.

Recommendations for Future Studies Addressing Industry Needs: The emerging topics and niche areas identified in this study provide suggestions for improving existing practices for professionals working in AI-powered content creation. Practical research in areas such as consumer behavior and the sharing economy can enhance the field's tangible contributions to the business world.

These practical contributions enable businesses, content strategists, and AI professionals to conduct more efficient and targeted work in the AI-powered content creation process. They also assist in developing global collaboration by highlighting successful models, technological integration by providing a roadmap for adopting new technologies, and user-focused strategies by emphasizing the importance of personalization and engagement.

Limitations

The limitations of this study can be summarized as follows:

Database Limitations: The data used in this study was obtained solely from the Web of Science database. As a result, works that are included in other databases or not indexed may have yet to be included in the analysis. This

could limit the representation of the overall field in the analyzed studies and potentially overlook some significant research.

Language Limitation: The analysis includes only articles published in English. Research conducted in other languages has yet to be excluded from the evaluation, which may overlook the multilingual approaches, especially in AI-powered content creation.

Time Frame Limitations: The study analyzed publications from 2018 to 2024. Therefore, earlier but impactful works have yet to be included. This limitation may hinder the complete presentation of long-term research trends and provide incomplete information about the development process in the field.

Publication Type Scope: The analysis primarily covers specific publications, such as academic articles. Other sources, like books, technical reports, industry reports, and articles in professional journals, have yet to be included in the analysis. This may create gaps in evaluating the full scope of AI-powered content creation.

Citation-Based Bias: Bibliometric analyses are generally citation-based, emphasizing studies with a higher number of citations. This can result in focusing on more popular or mainstream topics while potentially neglecting innovative or niche studies.

Technological and Methodological Limitations: The analysis depends on the technological limitations of the bibliometric software used (e.g., Bibliometric) and the available tools. The analysis types offered by these software tools may limit the scope, preventing some advanced analyses or assessments from being conducted using different methodologies.

Although these limitations narrow the scope of the study to some extent, the findings still provide valuable insights into general trends and key sources related to AI-powered content creation. Future research can build upon these limitations to conduct more comprehensive analyses.

Future Research Directions

Future Future research directions proposed for the field of AI-powered content creation hold the potential to open up new knowledge areas and methodological approaches. This exciting prospect is based on the following suggested research directions:

Utilization of Broader Databases: Future research could significantly enhance the field by employing a variety of databases, such as Scopus and Google Scholar, in addition to Web of Science. This comprehensive approach to literature analysis is of great significance, as it allows for a more complete field mapping and the analysis of lesser-known or non-indexed studies.

Examination of Multilingual Publications: Including research published in languages other than English to study AI-powered content creation can provide insights into different cultural and regional perspectives. Such research could offer a broader view of multilingual approaches in the field.

Investigation of Sectoral Differences: AI-powered content creation is applied in various sectors, including marketing, healthcare, education, and media, in different ways. Future research could focus on these sectoral differences, providing an in-depth analysis of AI's specific applications and impacts in each sector.

Studies Focused on Ethical and Social Impacts: AI-powered content creation's ethical and social implications are of paramount importance and still need to be sufficiently addressed. Future research could focus on ethical concerns, data privacy, content manipulation, and workforce impacts, helping to fill significant knowledge gaps in the field's development and ensuring that AI-powered content creation is used responsibly and for the benefit of society.

In-Depth Research on Niche Themes: Emerging or niche areas identified in the bibliometric analysis, such as consumer behavior and sharing economy, present exciting opportunities for further research. Detailed studies on these topics can inspire new perspectives and offer new opportunities to investigate AI's social and economic impacts.

Increased Focus on Applied Studies: Conducting more applied research in AI-powered content creation can strengthen the ties between academia and the business world. This can provide insights into how theoretical findings can be applied in real-world scenarios, expanding knowledge in the field.

Establishment of a Dynamic Collaboration Network: Strong collaboration networks exist between the US, China, and European countries. Future research can examine the impact of these collaboration networks and the contributions of joint projects with other countries to collective knowledge. Additionally, it could explore how developing countries can be more integrated into this field and contribute to collaborations, potentially leading to a more diverse and inclusive research community and accelerating the pace of innovation in AI-powered content creation.

Integration of AI and Content Creation Technologies: The effects of integrating AI-powered content creation with other technologies such as blockchain, sentiment analysis, and big data analytics are important topics for future exploration. Investigating how these integration processes impact content creation can provide valuable directions for developing

These suggestions aim to create a comprehensive and innovative knowledge base on AI-powered content creation, offering new perspectives that can contribute to its advancement. Future research addressing these areas can enhance both theoretical and practical knowledge.

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Z KUSAĞI ve SOSYAL MEDYA KULLANIMI: SOSYO-DEMOGRAFİK DEĞİŞKENLER BAĞLAMINDA BİR ARAŞTIRMA1

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Özet

Z Kuşağı, belirli bir doğum aralığına dayalı olarak tanımlanan bir grup olup, dijital kültürle iç içe geçmiş yaşam tarzları nedeniyle diğer kuşaklardan ayrılan belirgin özellikler ve davranışlar sergilemektedir. Her nesil sosyal ağları aktif olarak kullanırken, bu platformlar nesillerin kendine özgü niteliklerine göre şekillenmiş bir yapı sunar. Z Kuşağının teknolojiye olan yatkınlığı ve dijital ortamlarla kurduğu güçlü bağ, sosyal medya kullanım alışkanlıklarını, ilgi alanlarını ve becerilerini önemli ölçüde etkilemektedir. Bu davranışların ekonomik ve kültürel bağlamda değerlendirilmesi, onların dijital ekosistemdeki etkilerini anlamak açısından önemlidir. Bu çalışma, Z Kuşağının önemli bir temsilcisi olan lise öğrencilerini örneklem grubu olarak ele almaktadır. Türkiye nüfusunun %17,7'sinin 13-24 yaş aralığında olduğu gerçeğinden hareketle, 14-18 yaş grubundaki lise öğrencilerinin sosyal medya kullanımı farklı sosyo-demografik değişkenler çerçevesinde değerlendirilmiştir. Araştırma sonuçları, sosyal medya kullanımına ilişkin farkındalıkların artırılmasına katkı sağlamayı ve Z Kuşağını daha iyi anlamak için bir perspektif sunmayı amaçlamaktadır. Aynı zamanda, gençlerin dijital alanlarda verimli ve bilinçli bir şekilde yer alabilmeleri için bir yol haritası oluşturulmasına da yardımcı olması beklenmektedir. Bu yaklaşımla, gelecekte toplumsal ve ekonomik sorumluluklar üstlenecek olan genç neslin sosyal medya kullanımına dair mevcut durumlarının daha kapsamlı bir şekilde anlaşılması hedeflenmiştir.

Keywords: Z Kuşağı, Sosyal Medya Bağımlılığı, Sosyal Medya Kullanımı, Sosyal Medya, Eğitim Yönetimi

GENERATION Z AND SOCIAL MEDIA USE: AN ANALYSIS IN THE CONTEXT OF SOCIO-DEMOGRAPHIC VARIABLES

Abstract

Generation Z, defined by a specific birth range, stands out from other generations with its distinct traits and behaviors, deeply rooted in the digital culture. While all generations actively participate in social networks, these platforms adapt to the unique attributes of each cohort. The technological aptitude and digital immersion of Generation Z significantly shape their social media habits, interests, and skills. These behaviors must be examined within the economic and cultural framework of the era to better understand their role in the digital ecosystem. This study focuses on high school students as a key representation of Generation Z. Considering that 17.7% of Turkey's population falls within the age range of 13-24, the research evaluates the social media usage of high school students aged 14-18 based on various socio-demographic variables. The findings aim to enhance awareness of social media usage, provide a deeper understanding of Generation Z, and explore ways to empower them to effectively navigate digital platforms. Additionally, the research sheds light on the current state of the younger generation, who will assume future roles as employees and managers, in terms of their social media engagement and practices.

Keywords: Generation Z, Social Media Addiction, Social Media Usage, Social Media, Educational Management

[1] Bu çalışma, '14-18 Yaş Lise Öğrencilerinin Sosyal Medya Bağımlılığı İle İletişim Becerileri Arasındaki İlişkinin Çeşitli Değişkenler Açısından İncelenmesi (Bilecik ili örneği)' başlıklı yüksek lisans tezi esas alınarak hazırlanmıştır (Yüksek Lisans Tezi, Bilecik Şeyh Edebali Üniversitesi, Bilecik, Türkiye, 2022).

GİRİŞ

Değişimle birlikte dijitalleşmenin hızla artışı, küresel internet ve sosyal medya kullanıcılarının sayısında önemli bir artışı beraberinde getirmiştir. We are Social Dijital raporuna göre, Ocak 2024 itibarıyla Türkiye'de internet kullanıcılarının sayısı 74,41 milyona, sosyal medya kullanıcılarının sayısı ise 57,50 milyona ulaşmıştır. Bu rakamlar, toplam nüfusunun %66,8'ine karşılık gelmekte ve sosyal medyanın insan yaşamındaki etkisini gözler önüne sermektedir (We are Social Digital, 2924). İnternetin, özellikle akıllı telefonların yaygınlaşmasıyla gündelik hayatın ayrılmaz bir parçası haline gelmesi, bireylerin kendi içeriklerini (video, ses, resim, metin vb.) oluşturup paylaşmalarını kolaylaştırmıştır (Mayfield, 2008). İnternet ve sosyal medya, iletişim süreçlerini değiştirerek bireylerin yaşam biçimlerini yönlendirmiş ve sosyal medya araçlarının kullanımını artırmıştır. Bu dönüşüm, sosyal medya bağımlılığı kavramının ortaya çıkmasına neden olmuş ve bu alanda akademik çalışmaların yoğunlaşmasını sağlamıştır (Siddiqui ve Singh, 2016).

Sosyal medya, kullanıcılarına çevrimiçi ortamda farklı amaçlarla kullanım imkânı sunmakta (Köksal ve Özdemir, 2013) ve bireyler, gruplar ve organizasyonlar arasında bilgi paylaşımı ve iletişim kurulmasını mümkün kılmaktadır (Evans, 2008; Onat, 2010). Video, görsel, hikâye, düşünce ve deneyimlerin paylaşılabildiği bu platformlar, bireylerin kişisel yorum ve aktivitelerde bulunmasını desteklerken (Özdemir vd., 2014; Bostancı, 2010), kullanıcıların içerik üretimine katkı sağlamasına olanak tanır (Boyd ve Ellison, 2008). Twitter, Facebook gibi sosyal paylaşım platformları, YouTube ve Daily Motion gibi video paylaşım platformları ve LinkedIn gibi iş bağlantılarını güçlendirmeyi amaçlayan uygulamalar bu tür sosyal medya platformlarına örnek gösterilebilir (Dawley, 2009; Lopez, Gidumal, Tona ve Armas, 2011).

Sosyal medya, kullanıcıların duygusal ihtiyaçlarını ve tercihlerini ticari verilere dönüştüren, insan psikolojisini rakamlarla anlamlandıran güçlü bir veri deposu olarak öne çıkmaktadır. Eğitim, eğlence, alışveriş, sağlık ve çevresel gelişmeler gibi pek çok alanda bilgiye hızlı erişim imkânı sunması, sosyal medyanın yaygınlaşmasının temel nedenlerinden biri olarak kabul edilmektedir (Köseoğlu ve Al, 2013; Vural ve Bat, 2010). Dijital dünyada sosyal medya, bireyler arasındaki bağlantıyı sağlayan bir araç olarak öne çıkmakta ve medya, kullanıcı, teknoloji gibi farklı boyutlar altında incelenmektedir (İşlek, 2012).

Sosyal medya üzerine yapılan çalışmalar, dönemsel olarak farklılaşmaktadır. Teknolojinin sürekli gelişmesi, platformların kullanımını kolaylaştırmış ve kullanıcı sayılarındaki artışla medya dinamiklerini değiştirmiştir. Örneğin, TÜİK 2022 verileri, Türkiye nüfusunun %7,8'inin 13-17 yaş aralığında olduğunu ve bu yaş grubunun sosyal medya bağımlılığı üzerine yapılan araştırmalarda ön planda olduğunu göstermektedir (Kandell, 1998; Tutgun, Deniz ve Moon, 2011; Tutgun-Ünal ve Deniz, 2016). Ök (2013), lise öğrencilerinin sosyal medya kullanımına etki eden faktörleri "narsisizm ve medya alışkanlığı", "eğlence ve zaman geçirme", "ilişki sürdürme", "sanal topluluk" ve "bilgilenme ve kişisel statü" olarak sıralamıştır. Bu bulgular, sosyal medya bağımlılığı konusundaki araştırmaların farklı değişkenler bağlamında analiz edilmesi gerekliliğini ortaya koymuştur. Böylece, sosyal medya bağımlılığı düzeylerinin farklı değişkenlerle ilişkilendirilmesi literatüre katkı sunmayı hedeflemiştir.

KAVRAMSAL ÇERÇEVE

Bağımlılık, bireylerin kullandıkları madde, nesne ya da gerçekleştirdikleri etkinliklerle kurdukları ilişki sonucunda, bunlar olmadan yaşamlarını sürdürememeleri ve üzerlerindeki kontrolü kaybetmeleri ile karakterize edilen bir irade hastalığı olarak tanımlanabilir. Bu durum, bireylerin zihinsel, fiziksel ve sosyal yaşantılarında çöküntülere yol açan patolojik bir davranış biçimi olarak ele alınmaktadır (Demirci, 2016). Bağımlılık, aynı zamanda bireyin kendisi için zararlı olduğunu bildiği halde belirli bir maddeyi ya da davranışı iradesi dışında arzulaması, bu unsurlara ulaşmak için önemli ölçüde zaman harcaması ile de tanımlanır (Ögel, 2001). Bu tanımlamalardan yola çıkarak, bağımlılığın bireyin kontrolünü aşan bir arzu durumu olduğu ve bu arzunun bireyin günlük yaşamının merkezine yerleştiği söylenebilir.

Bağımlılık Türleri: Literatürde bağımlılık genel olarak iki temel başlıkta incelenmektedir: madde bağımlılığı ve davranışsal bağımlılık (Karaman ve Kurtoğlu, 2009).

- Madde Bağımlılığı, bireyin zihinsel ve fiziksel fonksiyonlarını etkileyen bir maddenin kontrolünü kaybetmesi ve bu maddenin bireyin yaşamında merkezi bir yer tutması olarak tanımlanır (Uzbay, 2009). Bu bağımlılık türü, kişinin yalnızlık ve boşluk hissiyle tetiklenebilen, anlamlı sosyal ilişkiler kuramama veya yetersiz duygusal paylaşımlarla ilişkilendirilebilir (Sayar ve Yalaz, 2019).

- Davranışsal Bağımlılık, bireylerin madde dışındaki faaliyetlere bağımlılık geliştirmeleri olarak tanımlanır (Ögel, 2001). Davranışsal bağımlılık, bireyin günlük yaşamında olumsuz sonuçlara yol açabilir ve teknoloji bağımlılığı (örneğin internet, sosyal medya, bilgisayar oyunları) bu kategoriye dahildir (Türkiye Bağımlılıkla Mücadele Eğitim Programı, 2015).

Teknoloji Bağımlılığı ve Sosyal Medya

1970'lerden itibaren iletişim ve medya çalışmaları, "yeni medya" kavramını literatüre kazandırmıştır. Bu kavram, 1990'larda internet ve bilgisayar teknolojilerindeki hızlı gelişmelerle birlikte ivme kazanmış ve bireylerin teknolojiyle bağ kurma biçimlerini kökten değiştirmiştir (Vural ve Bat, 2010). Medya bağımlılığı kavramı ise ilk kez 1976'da insanların kitle iletişim araçlarına olan bağlılıklarını açıklamak amacıyla ortaya atılmıştır (Işık ve Topbaş, 2015). İnternet bağımlılığı, 1995 yılında Ivan Goldberg tarafından tanımlanmış ve "İnternet Bağımlılığı Rahatsızlığı" literatüre kazandırılmıştır. Araştırmalar, internet bağımlılığının madde bağımlılığına benzer özellikler gösterdiğini ve patolojik kullanımın davranışsal bağımlılığın bir alt grubu olan "teknolojik bağımlılık" kapsamında değerlendirilmesi gerektiğini ortaya koymuştur (Young, 1996).

Sosyal medya bağımlılığı, internet bağımlılığında görülen belirtilerle benzerlik taşır. Bu bağımlılık türü, bireylerin sosyal medyada geçirdikleri zamanın günlük yaşamlarını olumsuz etkilemesi ve sosyal, psikolojik, hatta fiziksel problemlere yol açması ile karakterizedir (Andreassen, 2012; Kuss ve Griffiths, 2011; Tutgun-Ünal, 2015).

Sosyal Medya Bağımlılığının Etkileri

Sosyal medya bağımlılığı, bireylerin sosyal medya platformlarında geçirdikleri sürenin, günlük işlevselliklerini yerine getirmede zorluk yaşamalarına, sağlık sorunlarına ve kişilerarası ilişkilerde sorunlara yol açtığını göstermektedir (Andreassen vd., 2012). Ayrıca, bu bağımlılığın sosyal medyanın sunduğu içeriklere mi yoksa sosyal medya platformlarının kendisine mi yönelik olduğu konusunda literatürde farklı yaklaşımlar bulunmaktadır (Tutgun-Ünal, 2015).

Z Kuşağı ve Sosyal Medya Kullanımı

Literatürde, özellikle dijital yerli olarak tanımlanan Z kuşağının sosyal medya kullanım özellikleri üzerine yoğun çalışmalar yapılmıştır. Bu çalışmalar, gençlerin sosyal medya platformlarında geçirdikleri sürenin aşırılığının, psikolojik ve sosyal sorunlara yol açabileceğini göstermektedir (Özdemir, 2017; Bozkurt, 2018). Türkiye'de yapılan araştırmalar, gençlerin sosyal medyayı daha çok eğlence, iletişim ve sosyalleşme amaçlı kullandığını ortaya koymuştur (Onarman, 2020). Örneğin, lise öğrencilerinin %85,1'inin sosyal medya platformlarından birine üye olduğu ve bu platformlarda günlük 1-3 saat geçirdikleri belirtilmiştir (Alkış, 2020).

Dijital Bağımlılığın Yeni Türleri

Sosyal medya ve internetin günlük yaşamlardaki etkisi, FOMO (kaçırma korkusu), Nomofobi (telefonsuz kalma korkusu), Selfisist (özçekim bağımlılığı) gibi yeni bağımlılık türlerinin ortaya çıkmasına neden olmuştur (Batu ve İplikçi, 2019). Bu bağımlılık türleri, dijital dünyanın bireyler üzerindeki derin etkisini vurgulamakta ve yeni araştırma alanları sunmaktadır.

Literatürde sosyal medya bağımlılığı üzerine yapılan araştırmalar, bu bağımlılığın bireylerin yaşamları üzerindeki etkilerini incelemekte ve özellikle gençler arasında yaygınlığını vurgulamaktadır. Araştırmalarda sıklıkla, bağımlılığın neden olduğu bilişsel ve davranışsal problemler ele alınırken, bu bağımlılığın kullanıcıların sosyal ve akademik yaşamlarına etkileri de değerlendirilmiştir. Bu alandaki çalışmalar, sosyal medya bağımlılığını anlamak ve önleyici stratejiler geliştirmek için önemli bir temel sunmaktadır..

METODOLOJİ

Bu araştırmada iki ana hipotez geliştirilmiştir:

- H1 Hipotezi: Sosyal medya bağımlılık düzeyleri; cinsiyet, yaş, sınıf düzeyi, okul türü, kardeş sayısı, ailenin ekonomik durumu, yaşanılan yer, anne-baba eğitim seviyesi ve sosyal medyada geçirilen süre gibi sosyo-demografik değişkenlere göre farklılaşmaktadır.

- H3 Hipotezi: Sosyal medya bağımlılığı, sosyal medya ile ilgili değişkenler (akıllı telefon kullanımı, sosyal medya kullanım süresi, günlük sosyal medyada geçirilen süre, profildeki arkadaş sayısı vb.) açısından farklılık göstermektedir.

Araştırmanın Amacı

Bu araştırmanın temel amacı, 2021-2022 Eğitim-Öğretim yılında Bilecik ilindeki farklı türden liselerde öğrenim gören öğrencilerin sosyal medya bağımlılıklarının sosyo-demografik ve sosyo-ekonomik değişkenlere bağlı olarak nasıl değiştiğini incelemektir. Bu inceleme, geleceğin çalışanları ve yöneticileri olacak gençlerin sosyal medya kullanım alışkanlıklarını anlamaya ve mevcut durumu ortaya koymaya yöneliktir. Araştırmada incelenen değişkenler; cinsiyet, sınıf düzeyi, okul türü, okul başarısı, kullanılan sosyal medya platformları, arkadaş sayısı, sosyal medyada geçirilen süre ve internet kullanım amacıdır.

Evren ve Örneklem

Araştırmanın evrenini, 2021-2022 Eğitim-Öğretim yılında Bilecik ilindeki resmi ve özel tüm liselerde (özel eğitim kurumları hariç) eğitim gören 10.169 öğrenci oluşturmaktadır. Örneklem grubu ise Bilecik merkez ve ilçelerindeki Meslek Lisesi, Fen Lisesi, Anadolu Lisesi (özel ve resmi), İmam Hatip Lisesi ve Çok Programlı Lise gibi farklı okul türlerinde eğitim gören 1060 öğrenciden oluşmaktadır.

Veri Toplama Araçları

Araştırmada kullanılan veri toplama araçları aşağıda açıklanmıştır:

Kişisel Bilgi Formu, araştırmanın örneklemini oluşturan öğrencilerin demografik bilgilerini toplamak amacıyla hazırlanan bu form, cinsiyet, yaş, okul türü, sınıf düzeyi gibi sosyo-demografik özelliklerin yanı sıra eğitim-öğretim başarısı ve sosyal medya kullanım durumuna yönelik sorular içermektedir.

Sosyal Medya Bağımlılığı Ölçeği, araştırmada, Tutgun-Ünal (2015) tarafından geliştirilen ve 41 maddeden oluşan 5'li Likert tipi derecelendirme yöntemiyle uygulanan Sosyal Medya Bağımlılığı Ölçeği kullanılmıştır. Bu ölçek, "Hiçbir zaman", "Nadiren", "Bazen", "Sıklıkla", "Her zaman" seçenekleri ile katılımcıların sosyal medya bağımlılığı düzeylerini ölçmektedir. Ölçekte yapı geçerliliği için faktör analizi uygulanmış ve "Meşguliyet", "Duygu Durumu", "Tekrarlama" ve "Çatışma" olmak üzere dört alt boyut tanımlanmıştır. Bu araştırmada sosyal medya bağımlılığı tek boyut olarak ele alınmıştır.

Verilerin Toplanması ve Analizi

Araştırmanın verileri, etik izinler alındıktan sonra Bilecik ilindeki farklı liselerde öğrenim gören öğrencilerden toplanmıştır. Veri toplama öncesinde katılımcılara araştırmanın amacı açıklanmış ve bilgilendirme yapılmıştır. Verilerin analizi SPSS 20.0 (Statistical Package for the Social Sciences) programı kullanılarak gerçekleştirilmiştir.

Tanımlayıcı İstatistikler: Katılımcıların demografik bilgileri, frekans ve yüzde hesaplamaları ile değerlendirilmiştir.

Gruplar Arası Farklılık Analizleri: Sosyal medya bağımlılık düzeylerinin cinsiyet, sınıf düzeyi, okul türü, okul başarısı, kullanılan sosyal medya platformları ve arkadaş sayısı gibi değişkenler açısından farklılık gösterip göstermediğini belirlemek için bağımsız örneklem t-testi ve tek yönlü varyans analizi (ANOVA) uygulanmıştır.

Güvenilirlik Analizi: Kullanılan ölçeklerin güvenilirliği Cronbach's Alpha katsayısı ile değerlendirilmiştir.

Bu metodolojik yaklaşım, sosyal medya bağımlılığı ile ilgili sosyo-demografik ve sosyo-ekonomik faktörlerin nasıl bir etki yarattığını anlamak için kapsamlı bir çerçeve sunmaktadır. Analizlerin sonuçları, bu bağlamdaki mevcut durumun daha iyi anlaşılmasına katkı sağlayacaktır.

BULGULAR

Araştırmada, lise öğrencilerinin sosyal medya bağımlılık düzeyleri, sosyo-demografik değişkenler temelinde incelenmiş ve bu değişkenlerin bağımlılık üzerindeki etkisi istatistiksel yöntemlerle analiz edilmiştir.

Tablo 1: Sosyo-Demografik Değişkenlere Ait Tanımlayıcı İstatistikler

Sosyo-Demografik ve Sosyo-Ekonomik Özellikleri	Kategoriler	f	%
Cinsiyetiniz	Erkek	414	39,1
	Kız	646	60,9
Yaşınız	14	281	26,5
	15	289	27,3
	16	210	19,8
	17	218	20,6
	18	62	5,8
Kardeş Sayısı	1	319	30,1
	2	388	36,6
	3	242	22,8
	4	55	5,2
	5	31	2,9
	6 ve daha fazla	25	2,4
Okul Türü	Fen Lisesi	102	9,6
	Anadolu Lisesi	359	33,9
	Mesleki Lise	471	44,4
	İmam Hatip Lisesi	126	11,9
	Çok Programlı Lise	2	0,2
Sınıf	9	297	28
	10	331	31,2
	11	203	19,2
	12	229	21,6
Yaşanılan Yer	İl Merkezi	467	44,1
	İlçe Merkezi	478	45,1
	Kasaba	22	2,1
	Köy	93	8,8

2021-2022 Eğitim Öğretim yılında, Bilecik İli' nde Özel Eğitim Kurumları hariç liselerde eğitim gören toplam 10.166 öğrencinin 4.394'ü (%43,2) Meslek Liselerinde, 3.716'sı (%36,54) Anadolu Liselerinde, 1.128'i (%11,1) İmam Hatip Liselerinde, 628'i (%6,2) Fen Liseleri 'nde, 235'i (%2,3) Özel Liselerde, 65'i (%0,7) Çok Programlı Liselerde eğitim görmektedir. Özel liselerde akademik özellikteki Anadolu Lisesi olduğu için özel liselerde eğitim gören 235 (%2,3) öğrenci kendilerini Anadolu Lisesi öğrencisi olarak ifade etmiştir. Bu sebepten araştırmanın örneklem sayısı olan 1060 öğrenci evreni temsil etmektedir.

Liselerde eğitim gören öğrencilerin sınıf düzeyleri ve yaş düzeyleri paralellik arz etmektedir. Öğrencilerin 14 yaş grubu %26,5, 15 yaş grubu %27,3, 16 yaş grubu %19,8 17 Yaş grubu %20,6, 18 yaş grubu ise %5,8 oranına sahiptir. Sınıf düzeylerine bakıldığında ise 9. sınıfta %28,0, 10. Sınıf %31,2, 11. sınıfta %19,2, 12 sınıfta %21,2' lık kısmı eğitim görmektedir.

Tablo 2. Sosyo-Demografik Değişkenlere Ait Tanımlayıcı İstatistikler- Devam

Anne Yaşam Durumu	Sağ	1.057	99,71
	Ölü	3	0,29
Baba Yaşam Durumu	Sağ	1.044	98,49
	Ölü	16	1,51
Ebeveynler	Birlikte	966	91,1
	Ayrı	94	8,9
Anne Eğitim Düzeyi	Okur-yazar değil	39	3,7
	İlkokul mezunu	446	42,1
	Ortaokul mezunu	217	20,5
	Lise mezunu	252	23,8

	Ön lisans veya üniversite mezunu	94	8,9
	Yüksek lisans veya doktora mezunu	12	1.1
Baba Eğitim Düzeyi	Okur-yazar değil	7	0,7
	İlkokul mezunu	270	25,5
	Ortaokul mezunu	250	23,6
	Lise mezunu	355	33,5
	Ön lisans veya üniversite mezunu	157	14,8
	Yüksek lisans veya doktora mezunu	21	2
Aile Gelir Durumu	1000 TL ve daha az	32	3
	1001 – 2000 TL arası	66	6.2
	2001 – 3000 TL arası	233	22
	3001 – 5000 TL arası	365	34,4
	5001 – 7000 TL arası	198	18,7
	7001 TL ve üstü	16.6	15.7
Sınıftaki Başarı Durumu	Zayıfım Yok	136	12,8
	1 Zayıfım var	122	11,5
	2 Zayıfım var	101	9,5
	3 ve daha çok Zayıfım var	269	25,4
	Teşekkür Aldım	186	17,5
	Takdir Aldım	246	23,2
Önceki Yıldaki Başarı Durumu	Zayıfım Yok	279	26,32
	1 Zayıfım vardı	98	9,24
	2 Zayıfım vardı	123	11,6
	3 ve daha çok Zayıfım vardı	140	13,2
	Teşekkür Almıştım	180	16,98
	Takdir Almıştım	240	22,64
Evde Bilgisayar Varlığı	Var	**692**	65,3
	Yok	368	34,7
Odada İnternet Varlığı	Var	**922**	87
	Yok	138	13
Akıllı Telefon Kullanma Durumu	Evet	**1.027**	96,9
	Hayır	33	3,1
İnternete Bağlanma Şekli	Evdeki bilgisayardan	228	21,5
	Cep telefonum	**825**	77,8
	İnternet cafe	2	0,2
	Okuldan	4	0,4
	Diğer	1	0,1
İnternet Kullanma Süresi Günlük	Hiç kullanmıyorum	7	0,7
	Günde 1 Saatten az	44	4,2
	Günde 1-2 Saat	255	24,1
	Günde 3-4 Saat	**453**	42,7
	Günde 5-6 Saat	183	17,3
	Günde 7 saat ve üstü	118	11,1
İnternette Bulunma Amacı	Eğitim, Bilgi edinme, Araştırma	217	20,5
	İletişim, Tanışma, Sohbet	131	12,4
	Oyun, Eğlence	174	16,4
	Alış veriş	6	0,6
	Haber takibi	10	0,9
	Zaman Geçirme	**301**	28,4
	Günlük sorunlardan uzaklaşma	95	9
	İnternette Gezinti yapma	119	11,2
	Diğer	7	0,7

Araştırmaya katılan öğrencilerin %91,32'si sosyal medya hesabının bulunduğunu, %42,26' sı 1-3 yıl, %33,01' i 4-6 yıldır sosyal medya kullanıcısı olduğunu, % 29,0'ı günde 1 saatten az, %51,41' i günde 3-4 saat arasında, %5,84' ü 7 saat ve üzerinde sosyal medya kullandığını ifade etmiştir. Öğrencilerin %74,33'ü sosyal paylaşım

sitelerinin yaşamlarını olumlu, %25,56'sı ise olumsuz etkilediğini ifade etmişlerdir. Katılımcıların % 27,1' i sosyal medya profillerindeki arkadaş sayısının 50' den az, %16,90'i 401'den fazla olduğunu, %48,40'u sosyal medyalarında herhangi bir paylaşım yapmadıklarını, %33,90'ı fotoğraf, %0,50'si ise haber ve duyuru paylaştıklarını ifade etmişlerdir. En çok kullandıkları sosyal medya platformunun ise %71,63' ile Instagram, %11,22 ile Youtube, %9 ile Facebook, %5,18 ile Snapchat olduğunu ifade etmişlerdir.

Tablo. 3. Örneklem Grubunun Sosyal Medya Bağımlılığı Ölçeği Veri Dağılımları

Sosyal Medya Bağımlılığı		Tutumlar					
		Hiçbir Zaman	Nadiren	Bazen	Sık Sık	Herzaman	Toplam
Sosyal Medya Bağımlılığı Toplam Puan	f	321	423	221	84	11	1060
	%	30.3	39.9	20.8	8	1	100

Araştırmada, lise öğrencilerinin sosyal medya bağımlılık düzeyleri, sosyo-demografik değişkenler temelinde incelenmiş ve bu değişkenlerin bağımlılık üzerindeki etkisi istatistiksel yöntemlerle analiz edilmiştir.

Sosyo-Demografik Değişkenler ve Sosyal Medya Bağımlılığı

Araştırmada, cinsiyet, yaş, sınıf düzeyi, okul türü, kardeş sayısı, ailenin ekonomik durumu, yaşanılan yer, anne-baba eğitim seviyesi, internette bulunma süresi ve sosyal medyada bulunma süresi gibi değişkenlerin sosyal medya bağımlılık düzeyleri üzerinde farklılık yaratıp yaratmadığını anlamak için hipotezler oluşturulmuştur. Araştırma sonuçları şu şekilde özetlenebilir:

Cinsiyet değişkeni bağlamında yapılan t-test sonuçlarına göre, kız öğrencilerin sosyal medya bağımlılık puanlarının ($\bar{x}$ = 95,614), erkek öğrencilere ($\bar{x}$ = 86,067) göre istatistiksel olarak anlamlı bir şekilde daha yüksek olduğu belirlenmiştir ($t(1058) = 4,968$; $p < .05$). Bu durum, sosyal medya bağımlılık düzeylerinin cinsiyet açısından kız öğrenciler lehine farklılaştığını göstermektedir. Ancak, bu bulgunun genel yargıya ulaşmada dikkatli değerlendirilmesi gerektiği, çünkü araştırmaya katılan kız öğrencilerin sayısının daha fazla olmasının sonuçları etkileyebileceği ifade edilmiştir.

Öğrencilerin sosyal medya bağlanma süresi ile sosyal medya bağımlılık düzeyleri arasındaki ilişkinin incelendiği ANOVA testi sonuçlarına göre, sosyal medya bağlanma süresi değişkeni ile bağımlılık düzeyi arasında istatistiksel olarak anlamlı bir farklılık bulunmuştur ($F=55,268$; $p < .05$).

Post-Hoc testi sonuçları, günde 4-6 saat ile 7 saat ve üzeri kullanım grupları hariç, diğer tüm gruplar arasında sosyal medya bağlanma süresi açısından anlamlı farklılıklar olduğunu göstermektedir. Bu bulgu, sosyal medyada geçirilen sürenin bağımlılık düzeyi üzerinde önemli bir etkisi olduğunu ortaya koymaktadır.

Araştırmada, internette bulunma süresi, internet kullanım amacı, sosyal medya kullanım amacı, kullanılan sosyal medya sitesi ve sosyal medya sitesindeki arkadaş sayısı gibi değişkenler, bağımlılık düzeyi 74 puan ve üstü olan (724 kişiden oluşan) veri seti kullanılarak analiz edilmiştir (Bağımlılık Kategorileri: Sosyal medya bağımlılığı puanları şu şekilde sınıflandırılmıştır: 74-106: Az bağımlı, 107-139: Orta bağımlı, 140-172: Yüksek bağımlı, 173-205: Çok yüksek bağımlı).

Bu analiz, bağımlılık düzeylerinin sadece sosyal medya bağlanma süresi değil, aynı zamanda sosyal medya kullanım amacı ve platform tercihlerine göre de anlamlı farklılıklar gösterebileceğini ortaya koymaktadır.

SONUÇ VE ÖNERİLER

Araştırmada, lise öğrencilerinin sosyal medya bağımlılık düzeyleri çeşitli değişkenler açısından değerlendirilmiştir. Çalışmada ulaşılan bulgulara göre:

- Cinsiyet: Sosyal medya bağımlılık düzeylerinin kız öğrenciler lehine anlamlı şekilde farklılaştığı belirlenmiştir. Bu durum, kız öğrencilerin sosyal medya kullanımına daha fazla zaman ayırdığını göstermektedir.
- Sınıf Düzeyi ve Okul Türü: Sosyal medya bağımlılığı ile sınıf düzeyi ve okul türü arasında anlamlı bir farklılık bulunmamıştır.

- Sosyal Medyada Bağlanma Süresi: Günde 4-6 saat ile 7 saat ve üzeri kullanım arasında anlamlı bir fark tespit edilmezken ($p=0,07$), diğer tüm gruplar arasında bağlanma süreleri açısından anlamlı farklılıklar bulunmuştur ($F=55.268$; $p<0.05$).
- İnternet Kullanımı: İnternet erişimine sahip öğrencilerin sosyal medya bağımlılık puanlarının anlamlı derecede yüksek olduğu görülmüştür ($t(1058)=2,792$; $p<0.05$). Özellikle günde 7 saatten fazla internet kullanan öğrencilerin bağımlılık düzeyleri daha yüksek bulunmuştur.

Sosyal medya kullanım amacına göre bağımlılık puanlarında farklılık gözlenmiştir:

- Video İzleme ve Müzik Dinleme: Bu amaçlarla sosyal medya kullanan öğrencilerin bağımlılık puanları en yüksek seviyededir.
- Haber ve Duyuru: Haber ve duyuru takibi için sosyal medya kullanan öğrencilerin bağımlılık puanları diğer gruplara göre anlamlı şekilde düşük bulunmuştur.
- Arkadaş Sayısı: Sosyal medyada arkadaş sayısı ile bağımlılık düzeyi arasında anlamlı bir ilişki tespit edilmiştir. Arkadaş sayısı arttıkça, bağımlılık puanları da yükselmektedir. Özellikle 401'den fazla arkadaşı olan öğrenciler, sosyal medya bağımlılığı açısından en yüksek puana sahiptir.
- Sosyal Medya Platformları: Öğrencilerin en sık kullandığı platformlar sırasıyla Instagram, Twitter, Facebook ve YouTube'dur. Snapchat kullanıcılarının sosyal medya bağımlılık puanları diğer platform kullanıcılarına göre daha yüksek bulunmuştur.

Araştırmanın sonuçlarına göre sosyal medya bağımlılığı, gençlerin günlük yaşamlarını ve sosyal etkileşimlerini etkileyebilecek seviyelerde gözlemlenmiştir. Özellikle bazı değişkenler bu bağımlılığı daha da artırabilmektedir. Bu bulgular ışığında aşağıdaki öneriler geliştirilmiştir:

- *Öğrenciler İçin Sosyal Etkinlikler*: Sosyal medya bağımlılığı düzeylerinin yüksek olduğu öğrencilere yönelik sosyal, sportif ve kültürel etkinlikler düzenlenerek farkındalık çalışmaları yapılabilir.
- *Dijital Medyanın Eğitimde Kullanımı*: İnternet ve sosyal medya, bilgiye erişimi kolaylaştırdığı kadar doğrulanmamış bilgiler ve manipülasyonlara da ortam sağlamaktadır. Eğitimciler ve ebeveynler, öğrencilerle birlikte sosyal medyada bilgi doğrulama çalışmaları yaparak, onların eleştirel düşünme becerilerini geliştirebilir.
- *Sosyal Medya Bilinçlendirme Çalışmaları*: Sosyal medya kullanımını sınırlandırmak yerine, gençlere sosyal medyayı daha verimli kullanma yöntemleri öğretilmelidir. Milli Eğitim Bakanlığı, sosyal medya platformları üzerinden akademik çalışmalar ve projeler teşvik eden gruplar ve sayfalar oluşturabilir.
- *Rehberlik ve Psikolojik Destek*: Sosyal medya bağımlılığı ile arkadaş ve takipçi sayısının artışı arasındaki ilişki göz önüne alındığında, öğrencilerin sosyal medya kullanım alışkanlıklarına yönelik rehberlik hizmetleri sunulmalıdır. Alanında uzman kişiler tarafından bireysel danışmanlıklar yapılarak öğrencilerin farkındalık düzeyi artırılabilir.
- *Dijital Oyunlaştırma*: Oyun bağımlılığı yüksek olan öğrenciler için ders içerikleri dijital oyunlaştırma teknikleriyle sunulabilir. Bu sayede, öğrencilerin oyun alışkanlıkları daha verimli bir öğrenme sürecine dönüştürülebilir.
- *Eşitlik Temelli Etkinlikler*: Cinsiyet bazında eşit örneklemlerle yapılan çalışmalarda, iletişim becerilerini geliştirecek grup etkinlikleri planlanabilir. Bu etkinlikler, öğrencilerin sosyal medya dışı etkileşimlerini artırabilir.
- *Okul ve Rehberlik Araştırma Merkezleri İş Birliği*: Sosyal medya bağımlılığı her okulun özelliklerine göre farklılık gösterebildiği için, illerin Rehberlik Araştırma Merkezleri ile iş birliği yapılarak mikro ölçekli bilinçlendirme ve müdahale çalışmaları düzenlenmelidir.
- *Aile Katılımı*: Ebeveynler, öğrencilerle birlikte sosyal medya ve internet kullanımına yönelik çalışmalar yaparak, onların manipülatif içeriklere karşı farkındalığını artırabilir.

Bu öneriler, Z Kuşağı öğrencilerinin sosyal medya kullanımını daha bilinçli ve verimli hale getirmek, aynı zamanda olumsuz etkilerden korunmalarını sağlamak amacıyla uygulanabilir stratejiler sunmaktadır.

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INACCURACIES IN FINANCIAL REPORTS: ERROR OR MANIPULATION?

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Abstract

The study aims to identify the inaccuracies in the financial reports of public companies operating in Borsa Istanbul, published comparatively for the current and previous years, and to reveal the reasons for these inaccuracies. Within the scope of the study, important items in the financial position statement, comprehensive income statement, equity change statement and cash flow statements were examined by year. As a result of the examination, it was observed that the amounts of some items related to the same year were not the same. To investigate the reason for this difference, it was examined whether there was a change in the accounting policies of the company, whether there was a post-balance sheet event, whether there was a statement in the relevant footnotes, whether there was a statement that the financial statements were restated, the audit firm and audit opinion, and key audit issues. As a result of the study, it was determined that the inaccuracies in the financial reports mainly occurred in cash and equivalents, cash flows from operating activities, trade receivables, stocks, general administrative expenses and marketing expenses. The reason for the errors in some companies' financial statements could not be determined with the issues expressed in the research, and evaluations were made as to whether these errors were due to accounting errors or whether they were made consciously for manipulation purposes.

Keywords: Accounting Errors, Accounting Manipulation, Materiality

INTRODUCTION

According to the IAS 1: Presentation of Financial Statements Standard, comparative information regarding the previous period among the elements must be included in a complete set of financial statements (IAS 1, 2021: paragraph 10). Because businesses must include the financial position statement of the earliest comparable period in the financial statement set in order to make retrospective applications, reclassify and rewrite financial statement items due to accounting policy changes (Orten, Kaval, Kayapinar, 2012: 14).

A specific reporting format is not given in the International Accounting Standards (IAS) and the Turkish Accounting Standards (TAS), which are fully compatible with IAS. A specific reporting format has been avoided due to the different structures of each business and the differences in the information to be presented. Although accounting standards avoid a specific format, the Public Oversight Authority (KGK) has published a specific financial statement format in order to ensure comparability.

According to the standard, Public Benefit Institutions (PUBs) publish their financial reports comparatively on the "Public Disclosure Platform" and on their official websites for the current and previous years. However, the problem is that the amount of account X belonging to company A for 2020 in the 2021 annual financial reports does not match the amount of account X in the 2020 annual financial reports of the same company. To find the reason for the difference between the financial items belonging to the same periods of the same company, many issues such as whether the relevant financial statements are "Re-classification" financial statements or whether there are "Post-Balance Sheet Events" have been examined to determine the reason for the difference. The fact that the amounts related to the same year and the same item in the financial reports do not match, also brings the concept of materiality into play. It can be considered a tolerable situation if the inconsistency between the relevant accounting items of the companies is not at a level that will affect the decision of the information users and remains insignificant. Because the consolidation of the financial reports of publicly held companies, the fact that companies may have complex activities with a number of financial instruments, and the difficulty of applying international accounting standards can be considered as the main factors in tolerating them. However, the inclusion of significant inaccuracies in an audited financial report can create an intolerable situation. The important issue is to determine the level of materiality of accounting items.

Information that will change the decisions of information users is considered important information. For this reason, some evaluations have been made on whether the difference in some items is of a nature that can change the decisions of information users.

If the inaccuracies in accounting items are unintentional and an element that escapes attention, these inaccuracies are referred to as an accounting errors. Accounting errors can be corrected retrospectively. On the other hand, if the inaccuracies in accounting items are intende d to show the company differently than it should be, that is, if they are made intentionally, these inaccuracies are referred to as accounting manipulation. Accounting manipulation aims to show the information in financial reports differently than it is intentionally. However, information users can't evaluate whether the inaccuracies in financial reports are intentional or unintentional, and this evaluation can be made within the scope of independent auditing.

According to auditing standards (ISA), the auditor must take into account the concept of materiality when determining the structure, timing and scope of audit techniques and evaluating the impact of misstatements. This concept, which is closely related to audit risk, is also related to the cost of the audit and greatly affects the quality of the audit (Cömert, 2012:31).

While ISA 320 (Materiality in Planning and Performing an Audit) regulates the responsibility of the independent auditor to consider the concept of materiality in the planning and execution stages of the independent audit of financial statements, ISA 450 titled “Evaluation of Misstatements Identified During the Audit” explains how materiality will be applied in evaluating the impact of identified misstatements on the financial statements (ISA 320, paragrapy1). ISA 320 also takes into account the auditor's professional judgment when determining the level of materiality during the audit process, stating that the auditor's determination of materiality is a matter that requires the auditor to use his professional judgment, and that this judgment will be affected by the auditor's perception of the financial information needs of financial statement users (ISA 320, paragraph 4). At this point, in addition to the quantitative aspect of materiality, the qualitative aspect is also emphasized. However, the level of materiality will be calculated quantitatively in the study, and the qualitative aspect of the concept of materiality will not be discussed in the study since it belongs to the professional judgment of the auditor.

MATERIALS AND METHODS

The main purpose of the study is to determine whether the amounts in some accounting items in the financial statements of companies operating in Borsa Istanbul have been consistent over the years and to investigate the reasons for these inaccuracies. For this purpose, 2019, 2020 and 2021 period of all companies operating in Borsa Istanbul, except for the financial sector, was compiled and examined according to the information received from the Public Disclosure Platform.

The study tried to find answers to the following questions.

- Is the equity item in the financial position statement consistent with the equity item in the equity change statement?
- Are the cash and equivalents item in the financial position statement consistent with the cash and equivalents item in the cash flow statement?
- Have the Cash and Equivalents, Trade Receivables, Inventories, Tangible Fixed Assets items in the financial position statement been published correctly comparatively over the years?
- Have the Sales, Operating Expenses, and Net Profit items in the comprehensive income statement been published correctly by year?
- Have the cash flows from operating activities and cash assets items in the cash flow statement been published correctly by year?

It is possible to multiply the questions above. Only items deemed important were included in the scope of the study. It is not possible to examine all items in the financial reports one by one in terms of time, and other items were not included because it was believed that they would express unimportant details.

As a result of the examination conducted to answer the questions expressed above, in case there is a difference in the items related to the same period in the comparative tables, the following issues were examined to determine the reason for these differences.

- Is there a change in the company's accounting policies?
- Is there post balance sheet event?
- Is there an explanation in the relevant footnotes?
- Is there an explanation that the financial statements have been restated?
- What is the audit firm and audit opinion?
- Is there information about the situation on key audit issues?

If no answer can be found after the events that may be related to the reason for the difference, the materiality level of accounting inaccuracies made by publicly traded companies will be examined.

FINDINGS

The study examined three periods, namely 2021, 2020 and 2019, and inconsistencies in the specified items were determined. The inaccuracies in Table 1 are given in alphabetical order of the companies on the Public Disclosure Platform, and only the results of the first 5 companies are given for the sake of example.

Table 1: Inaccuracies in Financial Statements

Firm	Accounts	Term	Amounts Recognised	Difference (₺ and %)
AKSUE	Cash flow from operating activities	2019 amount in 2020 report 2019 amount in 2019 report	₺8.939.037 ₺576.499	₺8.362.538 (%1.450)
ANELE	Cash flow from operating activities	2019 amount in 2020 report 2019 amount in 2019 report	(₺3.258.288) ₺23.708.607	₺26.966.895 (%827)
AVGYO	Marketing Expenditures	2019 amount in 2020 report 2019 amount in 2019 report	0 ₺53.055	₺53.055 (%100)
AYEN	Trade Receivables	2019 amount in 2020 report 2019 amount in 2019 report	₺20.372.419 ₺25.056.457	₺4.684.038 (%22)
CASA	Tangible Fixed Assets	2021 amount in 2022 report 2021 amount in 2021 report	₺3.746.283 ₺5.413.316	₺1.667.033 (%30,7)
	Revenue	2021 amount in 2022 report 2021 amount in 2021 report	₺860.459.035 ₺966.102.975	₺105.643.940 (%10,9)
	Cash flow from operating activities	2021 amount in 2022 report 2021 amount in 2021 report	₺463.898 (₺551.694)	₺1.015.592 (%184)

There are some methods frequently used in the literature to determine whether the differences summarized in Table 1 are materiality level. According to Materiality Level According to the "Average Method", four or five rules are taken together to determine their proportional weights or averages are taken as basis (Cömert, 2012: 37; Inaltong and Taş, 2015:82). The formula used in the calculations is as follows:

(Profit Before Tax x 5%) + (Total Assets x 0.5%) + (Equity x 1%) + (Total Sales x 5%).

The materiality figures calculated for four different financial statement items are added and divided by four to determine the materiality amount with the simple average method (Cömert, 2012: 40; Aktaş and Acar, 2020: 195).

Accordingly, the materiality levels of the companies in the sample for 2021, 2020 and 2019 were calculated and it was determined whether the amount of inaccuracies in the financial statements was at a materiality level.

According to Materiality Level According to the "Formula Method", a mathematical formula determined by statistical analysis of materiality levels for a large sample representing businesses is used. The formula used by a large auditing company in 1998 is given below (Cömert, 2012: 41).

Materiality level = (The greater of the total assets or revenues)2/3 x 1.84

Accordingly, the materiality levels of the sample companies are summarized in Table 2.

Table 2: Materiality Level of Differences

Firm	Average Method	Formula Method	Difference	Materiality
AKSUE	₺303.823	₺325.090	₺8.362.538	important difference
ANELE	₺15.948.686	₺2.345.417	₺26.966.895	important difference
AVGYO	₺1.322.813	₺644.703	₺53.055	can be seen as unimportant
AYEN	₺12.142.435	₺3.521.395	₺4.684.038	can be seen as important
CASA	₺3.480.469	₺714.357	₺105.643.940	important difference

It can be interpreted that not only theoretically based materiality levels are decisive in selecting an account item as a key audit subject, but also subjective elements such as professional judgment, the auditor's risk perception, etc. can be decisive in terms of materiality. However, it is thought that the independent auditor should not overlook differences totaling millions of Turkish liras, no matter what.

Table 3: Possible Reasons for Amount Differences

Firm	Audit Firm	Audit Opinion	Key Audit Issues	Re-classification	Financial Statement Notes	Changes in Accounting Policy	Post Balance Sheet Events
AKSUE	FINANSAL EKSEN	Positive	unmentioned	No	unmentioned	no	no
ANELE	PWC	Positive	unmentioned	No	unmentioned	no	unmentioned
AVGYO	RYM REFORM	Positive	unmentioned	No	unmentioned	no	unmentioned
AYEN	ERNST& YOUNG	Positive	unmentioned	No	unmentioned	no	unmentioned
CASA	RUSSELL BEDFORD	Positive	unmentioned	No	unmentioned	no	no

As stated in Table 3, it is not possible to find the main reason for the significant amount differences in the financial reports. Therefore, it has been seen once again that audit reports and financial statement footnotes should contain more explanatory information.

DISCUSSION AND CONCLUSION

As a result of the study, it is determined that the most inaccuracies in financial reports occur in cash and equivalents, cash flows from operating activities, trade receivables, stocks, general administrative expenses and marketing expenses. The reason for the inaccuracies in most companies' financial statements cannot be determined with the issues stated in the study and evaluations are made on whether these inaccuracies are due to accounting errors or made consciously for manipulation purposes.

It is seen that an item that can be considered significant according to the numerical formula is not included in the key audit issue. It is not understood whether the inaccuracies were overlooked or seemed insignificant to the auditor.

As a result of the analysis conducted in the study, it is determined that the inaccuracies in the financial statements are at a significant level in terms of amount. No answer is found to the question of whether the amounts that should be considered significant are deemed insignificant according to the auditor's professional judgment. Even if the numerical inaccuracies found are insignificant on the financial statements, retrospective corrections must be made in accordance with the IAS 8: Accounting Policies, Changes in Accounting Estimates and Errors standard. Because numerical inaccuracies made in expense or income items will affect the pre-tax profit or loss item. Similarly, when the tax impact of these items is taken into account, it leads to the conclusion that retroactive correction should be made even if the numerical inaccuracies are insignificant. For future studies, it seems possible to analyze such errors on a sectoral basis, before and after Covid 19, and to reach more comprehensive conclusions.

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ÖRGÜTSEL ÇEVİKLİK MAKALELERİNİN BİBLİYOMETRİK ANALİZİ

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Özet

Bu araştırmanın amacı Web of Science veritabanında (WoS) yönetim alanında yer alan örgütsel çeviklik ile ilgili makalelerin bibliyometrik analizi yoluyla incelenmesidir. Veriler bibliyometrik analiz yöntemiyle, atıf analizi, ortak atıf analizi, bibliyografik eşleştirme, ortak yazar analizi ve ortak kelime analizleri aracılığıyla değerlendirilmiştir. WoS veri tabanı kullanılarak "Organizational Agility" anahtar sözcüğüyle 1998-2023 yılları arasında yönetim alanında tarama yapılmış ve tarama sonucunda yayınlanan 215 adet makaleye ulaşılmıştır. Araştırmada verileri analiz etmek için VOSviewer 1.6.20 yazılımı kullanılmış ve verilerle bibliyometrik ağ haritaları oluşturulmuştur. Analizler sonucunda örgütsel çeviklik ile ilgili en fazla makalenin 2023 yılında yayınlandığı tespit edilmiştir. Atıf analizlerine göre en fazla makalesi yayınlanan yazar ise Liu; en fazla atıf alan yazarlar ise Leih, Peteraf ve Teece olmuştur. En fazla atıf alan makalenin Teece vd., (2016) tarafından hazırlandığı; en fazla atıf alan ülkenin ise Amerika olduğu tespit edilmiştir. Anahtar kelime analizinde, sırasıyla en fazla örgütsel çeviklik ve çeviklik kavramları ön plana çıkmıştır. Araştırmada elde edilen bulgulardan hareketle literatürde yer alan örgütsel çeviklik değişkeninin gelişimine ilişkin bir çerçeve sunulmuştur. Bu bağlamda araştırmanın, araştırmacıların önemli kaynaklara ulaşmalarında ve gelecek araştırmalarda literatürdeki boşlukları fark edebilmelerinde yararlı olacağı ifade edilebilir.

Anahtar Kelimeler: Örgütsel çeviklik, çeviklik, VOSviewer

Abstract

The aim of this study is to examine the articles related to organizational agility in the field of management in the Web of Science database (WoS) through bibliometric analysis. The data were evaluated by bibliometric analysis method through citation analysis, co-citation analysis, bibliographic matching, co-author analysis and co-word analysis. Using the WoS database, the keyword "Organizational agility" was searched in the field of management between 1998 and 2023 and 215 articles published as a result of the search were reached. VOSviewer 1.6.20 software was used to analyze the data and bibliometric network maps were created with the data. As a result of the analysis, it was determined that the most articles on organizational agility were published in 2023. According to the citation analysis, the author with the most published articles was Liu, while the most cited authors were Leih, Peteraf and Teece. It was determined that the most cited article was prepared by Teece et al. (2016) and the most cited country was America. In the keyword analysis, the concepts of organizational agility and agility were the most prominent, respectively. Based on the findings obtained in the research, a framework regarding the development of the organizational agility variable in the literature is presented. In this context, it can be stated that the research will be useful for researchers to access important resources and to recognize gaps in the literature in future research.

Keywords: Organizational agility, agility, VOSviewer

GİRİŞ

İş ortamındaki belirsizlikler ve değişimler, uzun zamandır yönetim araştırmalarında önemli bir konu olarak işlenmektedir (Sharifi ve Zhang 1999: 7). Yaşanan değişimler ve belirsizlikler, örgütleri çevresinde yaşananları takip etmeye ve uyum sürecine zorlamaktadır. Örgütler piyasadaki talepleri gözlemlemesi ve çevrenin dinamik yapısına kısa sürede cevap verebilmesi gerekmektedir. Bu nedenle örgütlerde çeviklik kavramı artık bir tercih meselesi olmaktan öteye geçmektedir. Dolayısıyla örgütsel çeviklik ve dış çevreye hızlı yanıt verebilen örgütler olma yeteneği, başarılı örgüt olma yolunda gereklilik haline gelmektedir (Harraf vd., 2015: 675). Örgütler hayatta kalmak ve başarılı olmak için çevresel değişiklikleri önceden fark edebilme ve bunlara doğru yanıtlar verebilme yeteneğine sahip olabilme yollarını aramaktadırlar (Felipe vd., 2017: 1). Çünkü çevik bir örgütün yüksek hızlı, tutarlı ve güçlü özellikleri olduğu ifade edilmektedir (Seğmen Demirkıran ve Korkmaz, 2022: 459). Örgütler çevikliği bir dönüşüm haline getirebilmeli ve bu dönüşüm ise sürdürülebilir olabilmelidir. Bir örgütün çevikliği

sadece müşteri taleplerine hızlı cevap verebilmesi olarak değil bunu örgütünde sürekli bir dönüşüm olarak algılamasıyla değerlendirilmelidir. Bu sürekli dönüşüm algısı, örgüt kültürüne, iklimine, başarısına, hedeflerine, örgüt liderlerine, işgören bağlılığına, motivasyonuna, departmanlar arası işbirliğine ve işgören eğitimlerine kadar örgütün bütün damarlarına işlemesi olarak ifade edilebilir. Böylesine hayati bir öneme sahip olan kavram örgütler için bir iş zorunluluğu olarak görüldüğü söylenebilir.

1990'lı yıllardan itibaren araştırmalara konu olan örgütsel çeviklik kavramı ve kapsamı ile ilgili çalışmalar yapılmıştır. Örgütsel çeviklik literatüre katkı sağlayan araştırmacılardan Sharifi ve Zhang (1999: 11) örgütsel çevikliğin kavramsal bileşenleri olarak çeviklik faktörler, çeviklik yetenekleri ve çeviklik sağlayıcılar olarak açıklamaktadır. Çeviklik faktörler başlığı altında örgütlerin çevik olma isteği, niyeti ve stratejisinin belirlenmesi çevikliğin oluşumunda ilk basamak olarak anlatılabilir. Örgütün hızı, yetkinliği, esnekliği ve hızlı yanıt vermesi çeviklik kavramı kapsamında çeviklik yetenekleri olarak değerlendirilir. Çevikliğin son basamağında ise bundan önceki aşamalarda gerekli olan unsurların birleşimi sağlayıcılarla (uygulamalar, metotlar, araçlar, örgüt, teknoloji, yenilik ve insan) harekete geçebilmektedir.

Örgütsel çeviklik kavramının yönetim literatüründe yeterince veya tutarlı bir şekilde ele alınmadığını gözlemleyen Singh ve diğerleri (2013: 5), bu yapının daha iyi bir şekilde işlevselleştirilmesine ihtiyaç olduğunu savunmaktadır. Yapılan çalışmalar şu şekilde ele alınabilir; Keister (2014: 300), çeviklikle ilgili literatürde boşluk olduğunu, yani çoğu araştırmanın çevik kuruluşların özelliklerine odaklandığını, çevik yeteneklerin nasıl geliştirileceğine ve örgütün DNA'sına inilmesi gerekliliğini vurgulamıştır. Çeviklik kavramının işgörenlerin ruhuna nasıl yerleştirileceğinin yollarının aranması hususunda önem verilmesine odaklanılmasını önermektedir. Seğmen Demirkıran ve Korkmaz (2022) ise örgütsel çeviklik kavramının inşasında örgütsel zekâ ile örgütsel öğrenme kavramlarının etkili, olduğunu çalışmalarında öne sürmektedirler. Küresel bir yönetim danışmanlığı firması olan McKinsey & Company, 2006 yılında çeşitli sektörlerden işletmelerin yanı sıra kamu, sivil toplum ve kar amacı gütmeyen kuruluşlardan 1.500'den fazla yöneticinin katıldığı küresel bir ankette, örgütsel çevikliğin hızına katkı sağlayacak unsurların başında örgütün müşteri ihtiyaçlarına cevap verebilmedeki gösterdiği hassasiyet, örgüt stratejisi ve performans hedefleri arasındaki bağlantısı ve yöneticilerin örgüt içinde motivasyonu sağlaması gibi ifadelere katılımcıların gösterdiği ilgi yüksek oranda olmuştur. Diğer bir taraftan ise örgütsel çevikliğin hızını engelleyen unsurların başında, aşırı merkezileştirilmiş örgüt yapısı ve amaç duygusu, bağlılık ve motivasyondan yoksun çalışanlar ifadeleri katılımcılar tarafından yüksek oranda cevaplanmıştır (Macias-Lizaso ve Thiel, 2006: 5-6). Nafai (2016) çalışmasında örgütsel çevikliğin örgütsel başarıyı etkilediği sonucuna ulaşmıştır. Mehdibeigi vd., (2016) çalışmalarında müşteri bilgi yönetiminin örgütsel çeviklik yoluyla örgütsel etkinlik üzerinde anlamlı etkisi olduğunu tespit etmişlerdir. Bakan vd. (2017) çalışmalarında bilgi yönetimi boyutlarının, örgütsel çeviklik ve örgütsel atalet üzerinde etkisi olduğu sonucuna ulaşmışlardır. Çetinkaya ve Akkoca (2021) çalışmalarında stratejik liderlik ile örgütsel çeviklik arasında anlamlı bir ilişki olduğunu tespit etmişlerdir. Özeroğlu ve Koçyiğit (2020) ise çalışmalarında cevap verme, yetkinlik ve hız gibi örgütsel çeviklik yeteneklerini edinmekte vizyoner liderliğin önemini vurgulamaktadırlar. Basri ve Zorlu (2020) çalışmalarında işyerinde örgüt kültürü algısının örgütsel çeviklik üzerindeki etkisini araştırmışlar ve örgütsel kültür alt boyutlarının örgütsel çeviklik alt boyutlarına etkisi olduğu sonucuna ulaşmışlardır. Bu araştırmada, örgütsel çeviklik kavramının yönetim alanı kapsamında olan makalelerin bibliyometrik göstergeler üzerinden gelişimsel yapısını ve kavramın gelecekte nasıl bir değişim geçireceğini tespit edilmesi amaçlanmaktadır.

Alan yazın incelendiğinde Güler (2023) çalışmasında örgütsel çevikliği Scopus veri tabanındaki 2001-2023 yılları arasında elde edilen veriler üzerinde bibliyometrik analiz uygulamıştır. Akman ve Erdirençelebi (2023) çalışmasını Web of Science veri tabanında 2 Temmuz 2023 tarihinde organizational agility, organisational agility ve management anahtar kelimeleri; belge tipi olarak hepsi, dil olarak ise sadece İngilizce kısıtları seçilerek arama yaparak bibliyometrik analiz gerçekleştirmiştir. Bu bağlamda araştırmanın amacı doğrultusunda Türkçe alan yazında yapılmış diğer araştırmalardan farklı kılan kriterler ise Web of Science veri tabanı aracılığıyla 1998-2023 yılları içerisinde "topic" (başlık, özet ve anahtar kelime) sekmesiyle yönetim alanındaki makaleler seçilerek bibliyometrik analiz kapsamında atıf analizi, ortak atıf analizi, bibliyografik eşleştirme, ortak yazar analizi ve ortak kelime analizleri gerçekleştirilmiş olmasıdır. Bu nedenle bu araştırmanın ulusal alan yazınına katkı sağlaması düşünülmektedir.

ARAŞTIRMANIN YÖNTEMİ

Bu çalışmada örgütsel çeviklik ile ilgili yönetim alanında yapılan çalışmalar bibliyometrik analiz ile incelenmiştir. İncelemeye temel olacak şekilde aşağıdaki araştırma soruları belirlenmiştir;

1-Örgütsel çeviklik alanında yapılan WoS veri tabanında taranan yayınların yıllara göre dağılımı nasıldır?

2- Örgütsel çeviklik alanına en çok atıf alarak katkı sağlayan çalışmalar ve yazarlar hangileridir?

3- Örgütsel çeviklik alanına en çok katkı sağlayan ülkeler ve dergiler hangileridir?

4- Örgütsel çeviklik ile ilgili yayınlanan çalışmalarda sıklıkla kullanılan anahtar kelimeler nelerdir?

Araştırmanın temel amacı, Web of Science (WoS) veri tabanında, yönetim alanında örgütsel çeviklik konusuyla ilgili yazılmış makalelerin yayın yılı, yazar, atıf, dergi, ülke ve anahtar kelime gibi başlıklarda detaylı olarak incelemektir. Bu bağlamda ilgili alandaki yayınların genel profilini ortaya koyarak bu konu ile ilgili araştırmacılara genel bir çerçeve sağlayacağı düşünülmektedir. Çalışmada kullanılacak veriler, Web of Science (WoS) veri tabanından çekilerek sınırlandırılmıştır. Dünyanın en ünlü bilimsel atıf indeksi veri tabanlarından biri olan Web of Science (WoS), Clarivate Analytics'in ortaya attığı dünyanın önde gelen bilimsel alıntı arama ve analitik bilgi platformudur. Bu platform son 20 yılda hem yayınlanan binlerce akademik çalışmayı destekleyen bir araştırma aracı hem de büyük ölçekli veri seti olarak kullanılmaktadır (Wang vd., 2016: 918; Li vd., 2018:1). Aynı zamanda WoS, bibliyometrik analizler için en yaygın kullanılan veri tabanından biridir (Singh vd., 2021: 5113). Bibliyometrik analizler, incelenen değişkenin durumu anlamak için birden fazla yol sunmaktadır. Birinci olarak araştırma alanı, değişken davranışlar ve düzenlilikleri hakkında fikir vermekte ve anlayışı geliştirmekte; ikinci olarak değişkenle ilgili son eğilimleri ortaya çıkarmakta ve üçüncü olarak değişkenin ilişkilerini ve ağlarını ortaya çıkarmaktadır (Sheeraz vd., 2021: 2). Ayrıca alıntı verilerine, anahtar kelimelere ve diğer bibliyografik meta verilere dayalı olarak bilgilerin anlaşılır bir şekilde görseli temsil etmesi açısından ve bu tür yöntemlerin akademinin geleceğini şekillendirmek, tahmin etmek ve büyük veri kümelerini değerlendirmek, analiz etmek hayati öneme sahiptir (Tomaszewski, 2023: 4009). Bibliyometrik analiz; atıf analizi, ortak atıf analizi, bibliyografik eşleştirme, ortak yazar analizi ve ortak kelime analizi olarak beş yönteme ayrılmaktadır. Atıf analizi, alıntı oranları aracılığıyla belgelerin, yazarların veya dergilerin etkisini tahmin etmeyi; ortak atıf analizi, belgeleri, yazarları veya dergileri atıf listelerindeki ortak görünümlere göre birbirine bağlamayı; bibliyografik eşleştirme analizi, paylaşılan referans sayısına göre belgeleri, yazarları ve dergileri birbirine bağlamayı; ortak yazar analizi, ortak çalışmadaki yazarları birbirine bağlamayı ve son olarak ortak kelime analizi ise aynı başlıkta, özette veya anahtar kelime listesinde görülen kelimeleri birbirine birleştirmeyi amaçlamaktadır (Zupic ve Cater, 2015: 430-431).

Araştırma uluslararası veri tabanı olan Web of Science'da (WoS) endekslenen yayınlar kriter olarak ele alınmıştır. WoS'ta 25.06.2024 tarihinde, "organizational agility" anahtar sözcüğüyle "topic" (başlık, özet ve anahtar kelime) sekmesi seçilmiştir. Arama kısmına "organizational agility" (örgütsel çeviklik) anahtar sözcüğüyle arama yapılmıştır. Arama sonucunda 694 çalışmaya ulaşılmıştır. Yıllara göre en eski yayının 1998 yılında yayımlandığı gözlemlenmiştir. İlgili veri tabanında araştırmanın amacı kapsamında bazı kısıtlamalar yapılmıştır. Verilerin filtrelenme süreci 25.06.2024- 05.07.2024 tarihleri arasında yapılmıştır. Bu süreçte özellikle araştırma sonuçlarının sağlıklı olması ve araştırmanın genel bir değerlendirme sunması açısından 2024 yılı araştırma dışında tutulmuş; yayın türü olarak sadece "article" (araştırma makalesi) ve alan olarak da "management" (yönetim) kategorisi seçilerek sınırlandırılmıştır. Sınırlandırmalar sonucunda 215 adet makale tespit edilmiştir. Ulaşılan data, yıl, yazar, atıf, doküman, dergi, ülke ve anahtar sözcük analizleri bakımından incelenmiştir.

BULGULAR

Bu bölümde öncelikle Web of Science'ta yer alan ve yönetim alanında yayımlanan örgütsel çeviklik makalelerine ait istatistiki verilere daha sonra VOSviewer 1.6.20 programı kullanılarak elde edilen bibliyometrik analizlere ve görsellerine yer verilmiştir.

Tanımlayıcı İstatistikler

Örgütsel çeviklik ele alınan dönem aralığında WoS veri tabanında yayınlanan çalışmaların yıllara, yazarlara, ülkelere ve yayınevlerine göre dağılımı aşağıda yer alan Tablo 1, 2, 3 ve 4'te gösterilmiştir.

Tablo 1: Örgütsel Çeviklik Konusunda Yapılan Yayınların Yıllara Göre Dağılımı

Yayın yılı	Yayın sayısı	Yüzde(%)	Yayın yılı	Çalışma sayısı	Yüzde(%)
2023	43	20,000	**2010**	...	...
2022	37	17,209	**2009**	3	1,395
2021	32	14,884	**2008**	1	0,465
2020	28	13,023	**2007**	2	0,930
2019	18	8,372	**2006**	…	…
2018	9	4,186	**2005**	1	0,465
2017	11	5,116	**…**	...	...
2016	6	2,791	**2002**	1	0,465
2015	4	1,860	**2001**	1	0,465
2014	6	2,791	**2000**	…	…
2013	2	0,930	**1999**	1	0,465
2012	4	1,860	**1998**	1	0,465
2011	4	1,860			

Tablo 1'e göre yönetim alanında örgütsel çeviklik ile ilgili çalışmalara 1998 yılında başladığı gözlemlenmiştir. 215 adet makalenin ilki 1998 yılında yayınlandığı, ilerleyen yıllarda yavaş bir ilerlemenin gerçekleştiği hatta bazı yıllarda çalışmaların olmadığı dikkat çekmektedir. Fakat 2018 yılından sonra fark edilebilir bir ilginin arttığı ve önemli sayıda artış olduğu görülmüştür. Son üç yıl itibariyle (2021, 2022, 2023) yıllık çalışma sayısı 30'un, yüzdelik oranları da %14'ün üzerinde olduğu tespit edilmiştir. En fazla çalışma yapılan yıl 43 adet makale ile 2023 yılıdır. Bununla birlikte son beş yılda yayınlanan makale sayısındaki artışın olması, 2024 yılında çalışma sayısında artış olacağı şeklinde bir öngörü yapılabilir. 1998 yılında yayınlanan ilk makale "Journal of Organizational Change Management" dergisinde Kien Sia, S. & Siong Neo, B. tarafından yazılan "Transforming the tax collector: reengineering the Inland Revenue Authority of Singapore" adlı çalışmadır.

Tablo 2: Yayınların Yazarlara Göre Dağılımı

Yazarlar	Yayın sayısı	Yüzde(%)
1. Liu Hefu	6	2,791
2. Arias-Perez, Jose	4	1,860
3. Panda, Sukanya	4	1,860
4. Rath, Santanu Kumar	4	1,860
5. Tallon,Paul Patrick	4	1,860
6. Coltman, Tim	3	1,395
7. Levallet, Nadege	3	1,395
8. Pinsonneault, Alain	3	1,395
9. Queiroz,Magno	3	1,395
10. Rialti, Ricardo	3	1,395

Tablo 2'de yönetim alanında örgütsel çeviklik konusunda en fazla yayın yapan 10 yazara ilişkin bilgiler verilmiştir. Liu 6 makale ile yönetim alanında örgütsel çeviklik ile ilgili en fazla makale çalışması yapan yazar olmuştur. Sonrasında ise 4 makale ile Arias-Perez, Panda, Rath ve Tallon adlı yazarlar örgütsel çeviklik alanına katkı sağlamışlardır.

Tablo 3: Yayınların Ülkelere Göre Dağılımı

Ülkeler	Yayın sayısı	Yüzde(%)
1. Amerika Birleşik Devletleri	57	26,512
2. Çin Halk Cumhuriyeti	40	18,605
3. İngiltere	19	8,837
4.Hindistan	18	8,372
5. İtalya	16	7,442
6. Avustralya	13	6,047
7. Kanada	13	6,047
8. Almanya	13	6,047
9. İran	11	5,116
10. Fransa	9	4,186

Tablo 3'te yönetim alanındaki örgütsel çeviklik ile ilgili en fazla yayın yapan 10 ülke yer almaktadır. En fazla yayın yapan ülke dağılımında 57 makale ile Amerika Birleşik Devletleri; ikinci sırada 40 makale ile Çin Halk Cumhuriyeti bulunmaktadır. Türkiye ise 4 makale ile 24.sırada yer almaktadır. Yayınlanan makale sayılarının Türkiye'de az sayıda olması ulusal literatürde örgütsel çeviklik ile ilgili çalışmalara daha çok yer verilmesi gerekliliğini ortaya koymaktadır.

Tablo 4: Yayınların Yayınevlerine Göre Dağılımı

Yayınevleri	Yayın sayısı	Yüzde(%)
1. Emerald Group Publishing	75	26,512
2. Elsevier	29	18,605
3. Taylor &Francis	21	8,837
4. Wiley	16	8,372
5. IEEE	12	7,442
6. Springer Nature	11	6,047
7. Informs	6	6,047
8. Sage	6	6,047
9. Igi Global	5	5,116
10. World Scientific	4	4,186

Tablo 4'te yönetim alanında örgütsel çeviklik ile ilgili makalelerin yayınevlerine göre dağılımlarına yer verilmiştir. Yayınevlerine yönelik olarak gerçekleştirilen sorgulamada 31 yayıncının olduğu tespit edilmiştir. Makalelerinin 75 tanesinin Emerald Group Publishing, 29 tanesinin Elsevier ve 21 tanesinin de Taylor&Francis tarafından yayımlandığı sonucuna ulaşılmıştır. Diğer yayınevlerindeki yayın sayısının ise 20'inin altında olduğu görülmüştür. Aynı zamanda söz konusu makalelerin %66,047'sinin (142) Social Sciences Citation Index (SSCI)'te, %31,628'inin (68) Emerging Sources Citation Index (ESCI)'de, %21,860'ının (47) Science Citation Index Expanded (SCI-EXPANDED)'de tarandıkları tespit edilmiştir.

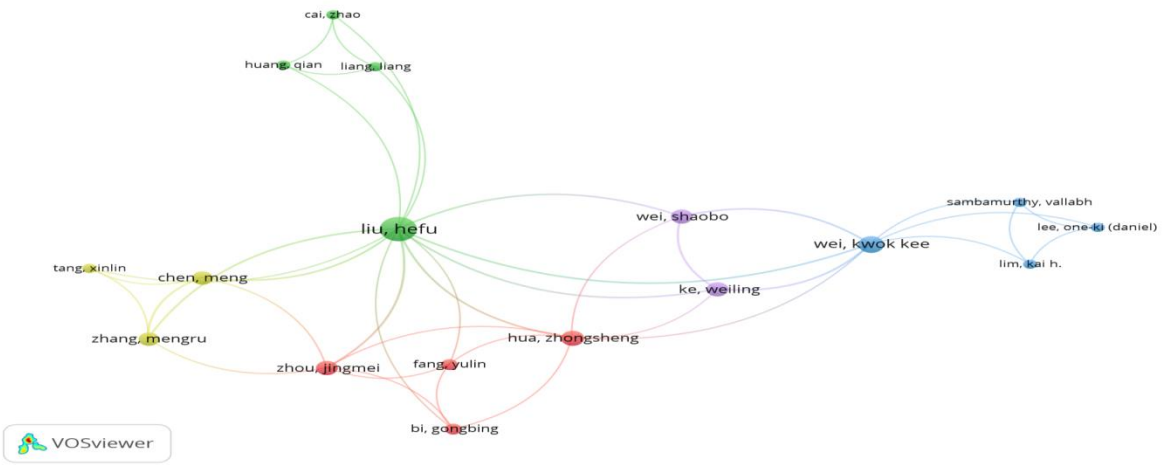
Bibliyometrik Analizler

Web of Science veri tabanı üzerinden elde edilen veri setinin bibliyometrik haritalama analizlerinin yapılabilmesi için VOSviewer programından yararlanılmıştır. Programda "ortak yazar analizi (co-authorship)", "atıf analizi (citation)", "eş dizimlilik (co-occurence)", "ortak atıf analizi (co-citation)" ve "bibliyografik eşleştirme (bibliographic coupling)" analizleri uygulanmıştır.

Ortak Yazar Analizi.

Yönetim alanında yayınlanan örgütsel çeviklik ile ilgili makalelerde en fazla bağlantıya sahip ve iş birliği içerisinde olan yazarları tespit etmek amacıyla ortak yazarlık (co-authorship-authors) analizi gerçekleştirilmiştir. Örgütsel çeviklik ile ilgili makalelerin analizinde "minimum 1 yayın" ve "minimum 1 atıf" kriterleri belirlenmiştir. Ortak yazar ağ haritasına Şekil 1'de yer verilmiştir.

Şekil 1: Yazarlar arası Ortak Yazar Ağ Analizi



Ortak yazar analizine göre aralarında en yüksek bağlantı bulunan 17 yazar, 5 küme ve 39 bağlantı bulunmuştur. Yönetim alanındaki örgütsel çeviklik makalelerinde en fazla ortak yazarlığı olan araştırmacılar Liu (toplam bağlantı gücü 20), Wei (toplam bağlantı gücü 10), Hua (toplam bağlantı gücü: 8), Wei, Zhou ve Ke Welling (toplam bağlantı gücü 7), Zhang ve Chen (toplam bağlantı gücü 6) olmuştur. Buna göre ortak çalışma yürütme açısından ağların "Liu" etrafında yoğunlaştığı görülmektedir.

Atıf Analizi

Bu bölümde yönetim alanındaki örgütsel çeviklik makalelerinin yazarlar, dokümanlar (makale), kaynaklar (dergi), kurumlar ve ülkeler özelinde atıf analizleri gerçekleştirilmiştir.

Yazarlar Düzeyinde Atıf Analizi

Yönetim alanındaki örgütsel çeviklik makalelerinin yazarlar düzeyinde atıf yapısını ortaya çıkarabilmek için yazar atıf (citation–authors) analizi gerçekleştirilmiştir. Örgütsel çeviklik konusu ile ilgili makalelerin analizinde "minimum 1 yayın" ve "minimum 1 atıf" kriterleri seçilmiştir. Bu doğrultuda toplamda 578 yazardan 518 tanesi belirlenen eşik değerini geçmiştir. En fazla atıf alan yazarlar Tablo 5'te, yazar atıf ağ haritası Şekil 2'de gösterilmiştir.

Tablo 5: En Fazla Atıf Alan Yazarlar

Yazarlar	Yayın Sayısı	Atıf Sayısı	Toplam Bağlantı Gücü
1.Leih, Sohvi	1	838	122
2.Peteraf, Margaret	1	838	122
3. Teece, David	1	838	122
4. Lu, Ying	1	688	299
5. Ramamurthy, K.(ram)	1	688	299
6. Tallon, Paul P.	4	593	247
7. Pinsonneault, Alain	3	592	217
8.Wei, Kwok Kee	3	573	145
9. Liu, Hefu	6	461	172
10. Hua, Zhongsheng	2	345	57

Tablo 5'e göre yönetim alanındaki örgütsel çeviklik ile ilgili en fazla atıf (838) alan yazarlar, Leih, Peteraf ve Teece olmuştur. İkinci olarak en fazla atıf alan yazarlar ise Lu ve Ramamurthy; üçüncülüğü ise 593 atıf ile Tallon takip etmiştir.

Şekil 2: Yazarlar Düzeyinde Atıf Ağı

Şekil 2'de yazar düzeyinde ağ analizinde atıf alan yazarlar 20 küme, 4365 bağlantı ve 4924 toplam bağlantı gücü ile bağlantılı olduğu tespit edilmiştir. Toplam bağlantı güçleri arasında Lu ve Ramamurthy (299), Tallon (247), Pinsonneault (217) ve Liu (172) ilk beşte yer almaktadır. Şekil 2'de yer alan yuvarlakların büyüklüklerinden de anlaşıldığı üzere Lu ve Leih adlı yazarların yüksek atıf aldığı ve toplam bağlantı güçlerinin de yüksek olduğu dolayısıyla ön plana çıktığı dikkat çekmektedir.

Dokümanlar (Makaleler) Düzeyinde Atıf Analizi

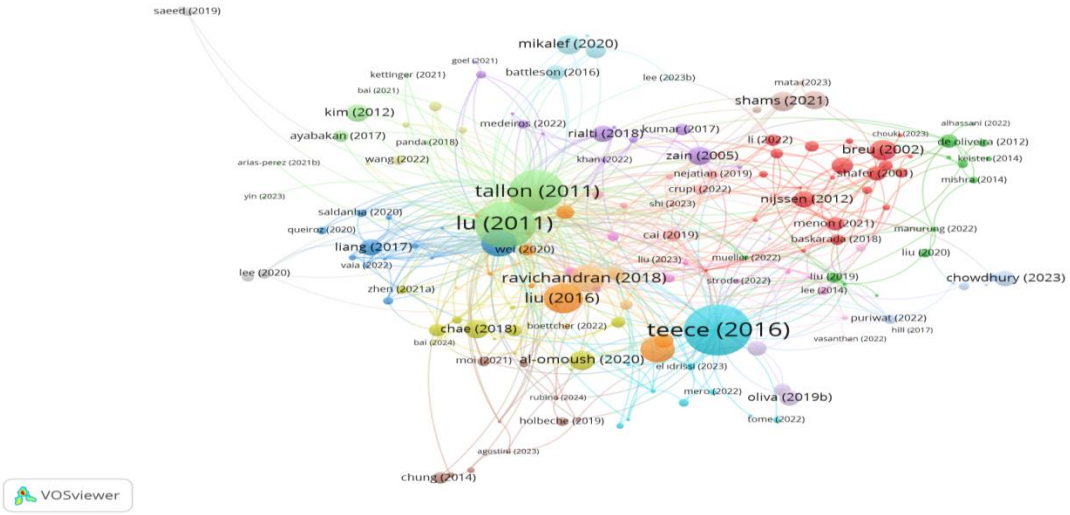
Yönetim alanındaki örgütsel çeviklik ile ilgili makalelerden en fazla atıf alan makaleleri tespit etmek amacıyla doküman atıf analizi (citation-documents) gerçekleştirilmiştir. Bu amaç çerçevesinde "minimum 1 adet atıf alan dokümanlar" analiz için kriter olarak belirlenmiştir. 215 tane makalenin içinde en az 1 atıf alma kriterini 192 adet makalenin sağladığı tespit edilmiştir. Tablo 6'da en fazla atıfa sahip ilk 10 çalışmaya ve Şekil 3'de doküman atıf analizi ağ haritasına yer verilmiştir.

Tablo 6: En Fazla Atıf Alan Dokümanlar

Yazarlar	Makale adı	Atıf sayısı
Teece D. vd. (2016)	Dynamic capabilities and organizational agility	838
Lu Y. ve Ramamurthy K. (2011)	Understanding the link between information technology capability and organizational agility: an empirical examination	688
Tallon, PP. ve Pinsonneault, A. (2011)	Competing perspectıves on the link between strategic information technology alignment and organizational agility: insights from a mediation model	568
Liu HF. vd. (2016)	The configuration between supply chain integration and information technology competency: A resource orchestration perspective	291
Chakravarty A. vd. (2013)	Information technology competencies, organizational agility, and firm performance: enabling and facilitating roles	275
Ravichandran T. (2018)	Exploring the relationships between IT competence, innovation capacity and organizational agility	246
Lee Ok. vd. (2015)	How does ıt ambidexterity ımpact organizational agility?	233
Shahzad M. vd. (2020)	Exploring the influence of knowledge management process on corporate sustainable performance through green innovation	230
Breu K. vd (2002)	Workforce agility: the new employee strategy for the knowledge economy	134
Mikalef P. ve Krogstie J. (2020)	Examining the interplay between big data analytics and contextual factors in driving process innovation capabilities	128

Teece D. vd., tarafından 2016 yılında yayınlanan "Dynamic capabilities and organizational agility" isimli makale 838 atıf ile en fazla atıf alan makale olmuştur. İkinci sırada 688 atıf ile Lu Y. ve Ramamurthy K. tarafından 2011 yılında ve üçüncü sırada 568 atıf ile Tallon, PP. ve Pinsonneault, A tarafından 2011 yılında yayınlanan makaleler yer almaktadır.

Şekil 3. Dokümanlar Düzeyinde Atıf Ağı



Şekil 3'te doküman atıf ağ haritasında makalelerin 20 küme ve 554 bağlantı oluşturduğu gözlemlenmiştir. Lu (2011) 92 bağlantı, Tallon (2011) 64 bağlantı, Chakravarty (2013) 51 bağlantı, Teece vd. (2016) 42 bağlantı ve Ravichandran (2018) 38 bağlantı ile en fazla bağlantı kurulan yazarlar olarak tespit edilmiştir. Bu bağlamda Lu, Tallon ve Teece vd. adlı yazarların çalışmaları ilgili literatürde yüksek kabul gören çalışmalar olarak ifade edilebilir.

Ülkeler Düzeyinde Atıf Analizi

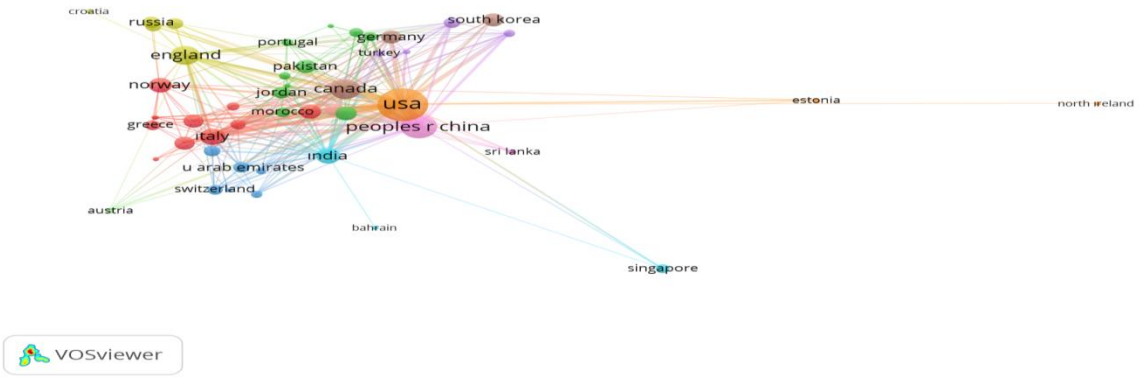
Yönetim alanındaki örgütsel çeviklik ile ilgili en fazla yayın yapan ve en fazla atıf alan ülkeleri tespit etmek amacıyla ülke atıf analizi (citation-country) gerçekleştirilmiştir. Analiz için "minimum 1 makale yayınlayan" ve "minimum 1 atıf alan" ülkeler kriteri belirlenmiş ve toplamda 55 ülke içinden 53'ünün kriterleri sağladığı tespit edilmiştir. Tablo 7'de atıf sayısına göre en fazla atıfa sahip ülkelere ve Şekil 4'te ağ haritasına yer verilmiştir.

Tablo 7: En Fazla Atıf Alan Ülkeler

Ülkeler	Yayın Sayısı	Atıf Sayısı	Toplam Bağlantı Gücü
1. Amerika Birleşik Devletleri	57	4620	631
2. Çin Halk Cumhuriyeti	40	1491	305
3. Kanada	13	797	176
4. İngiltere	19	737	115
5. İtalya	16	486	118
6. Hindistan	18	376	136
7. Norveç	6	325	28
8.Avustralya	13	274	92
9. İspanya	8	245	60
10. Pakistan	4	23	16

Tablo 7'ye göre yönetim alanında örgütsel çeviklik ile ilgili en fazla atıfa sahip ülke 4620 atıf ile ABD olmuştur. ABD'den sonra 1491 atıf ile Çin Halk Cumhuriyeti ikinci sırada; 797 atıf ile Kanada üçüncü sırada; 737 atıf ile İngiltere dördüncü ve 486 atıf ile İtalya beşinci sırada yer almıştır. Türkiye ise 21 atıfla 36. sırada bulunmaktadır.

Şekil 4: Ülkeler Düzeyinde Atıf Ağı



Şekil 4'te yer alan ülkeler düzeyi ağ haritasında 11 küme, 307 bağlantı ve 1223 toplam bağlantının olduğu tespit edilmiştir. Toplam bağlantı gücü en yüksek olan ve en fazla atfa sahip olan ülke olarak ilk sırada ABD, daha sonrasında ise sırasıyla Çin, Kanada, İngiltere ve İtalya olduğu gözlemlenmiştir. Amerika'nın yanı sıra Çin'deki makalelerin de ilgili literatürde yüksek kabul gören çalışmalar olduğu ifade edilebilir.

Dergiler Düzeyinde Atıf Analizi

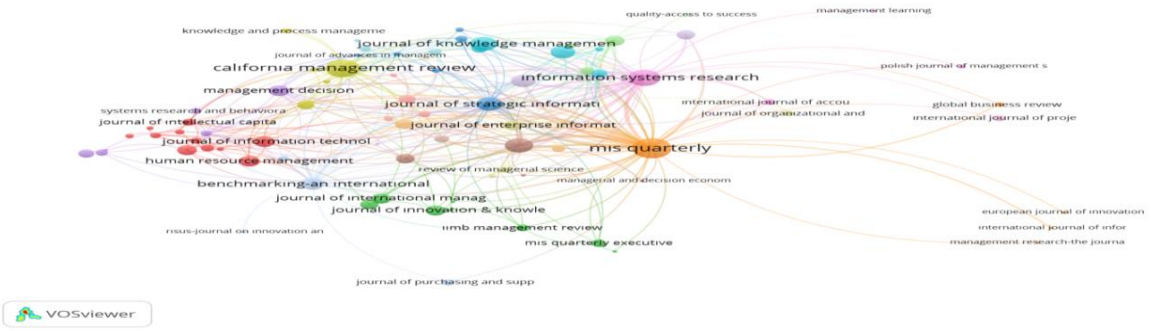
Yönetim alanındaki örgütsel çeviklik makaleleri kapsamında en çok atıf alan dergileri görebilmek için kaynak atıf (citation-sources) analizi gerçekleştirilmiştir. Atıf analizinde "minimum 1 eser yayımlanması" ve "minimum 1 atıf alınması" kriterleri belirlenmiştir. Analizde 101 dergiden 94 dergi belirlenen kriterleri sağlamıştır. Dergi atıf ağ haritasının 18 küme, 327 bağlantı ve 563 toplam bağlantı gücünden oluşan ağ haritası elde edilmiştir. En fazla atıf alan ilk 10 dergiye Tablo 8'de ve dergilerin yoğunluk haritasına Şekil 5'te yer verilmiştir.

Tablo 8: En Fazla Atıf Alan Dergiler

Dergiler	Yayın Sayısı	Atıf Sayısı	Toplam Bağlantı Gücü
1.Mis Quarterly	3	1301	167
2.California Management Review	1	838	44
3. Information Systems Research	6	640	108
4. Information & Management	8	481	52
5. Journal of Knowledge Management	4	376	10
6. Journal of Strategic Information Systems	8	340	61
7. European Journal of Information Systems	7	302	38
8.Journal of Operations Management	1	291	8
9. Benchmarking an International Journal	9	241	52
10. Human Resource Management	2	165	13

Tablo 8'de en fazla atıfa sahip ilk on dergiye yer verilmiştir. En fazla atıf alan dergi toplamda 1301 adet atıf (3 makale) ile Mis Quarterly olmuştur. İkinci sırada 838 atıf ile (1 makale) California Management Review; üçüncü sırada 640 atıf (6 makale) ile Information Systems Research; dördüncü Journal of Knowledge Management yer almıştır. Yüksek atıf alan ve bağlantı gücü yüksek olan dergiler incelendiğinde yönetim ve bilgi sitemleri başlıklı dergilerin tabloda ağırlıklı olduğu gözlemlenmiştir.

Şekil 5: Dergiler Düzeyinde Atıf Ağı



Şekil 5'te toplam bağlantı gücü açısından ise en fazla bağlantıya sahip ilk beş derginin Mis Quarterly (167), Information Systems Research (108) ve Journal of Strategic Information Systems (61), Information & Management ve Benchmarking an International Journal (52) ve California Management Review (44) olduğu tespit edilmiştir.

Eşdizimlilik Analizi

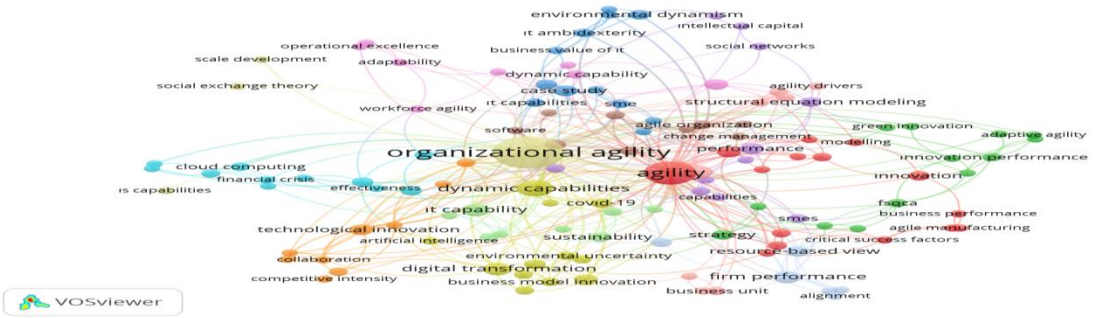
Yönetim alanındaki örgütsel çeviklik makalelerinde eşdizimlilik (co-occurence) analizi ile anahtar sözcük analizi uygulanmıştır. Söz konusu makalelerde kullanılan anahtar sözcükler arası ilişkiler, anahtar sözcüklerin birlikte kullanılma durumları ve ele alınan konuların içerikleri hakkında bilgi elde edilmek istenmiştir. Örgütsel çeviklik ile ilgili makalelerde en sık kullanılan anahtar sözcüklerin tespiti için "minimum 2 defa görülme" kriteri seçilmiş ve 726 anahtar sözcükten 126'sı bu kriteri sağlamıştır. 126 anahtar sözcük ile 13 küme, 429 bağlantı ve 519 toplam bağlantı gücü oluşmuştur. Analiz sonucunda en fazla kullanılan 10 anahtar sözcüğe Tablo 9'da ve anahtar sözcükler ağ haritasına Şekil 6'da yer verilmiştir.

Tablo 9: En Fazla Kullanılan Anahtar Sözcükler

Anahtar Sözcükler	Görülme Sayısı	Toplam Bağlantı Gücü
1. Organizational Agility	76	133
2. Agility	35	62
3. Dynamic Capabilities	14	32
4. Strategic Agility	9	10
5. Digital Transformation	7	18
6. It Capability	7	13
7. Firm Performance	7	10
8. Technological Innovation	5	21
9. Organizational Performance	5	11
10. Performance	5	11

Tablo 9'da görüldüğü üzere en fazla tekrar eden anahtar sözcük 76 tekrar ile organizational agility (örgütsel çeviklik) yer almıştır. Daha sonra ise 35 tekrar ile agility (çeviklik); 14 tekrarla dynamic capabilities (dinamik yetenekler); 9 tekrarla strategic agility (stratejik çeviklik) ve 7 tekrarla digital transformation (dijital dönüşüm) kelimeleri en fazla kullanılan anahtar sözcükler olmuşlardır. Bağlantı gücü açısından ise en çok tekrar edilen "organizational agility", "agility" ve "dynamic capabilities" sözcükleri üst sıralarda yer almaktadır. Örgütsel çeviklik değişkeninin en az görülme sıklığı 5 tekrar ile teknolojik inovasyon, örgütsel performans ve performans gibi değişkenlerle birlikte incelenen çalışmaların literatürde yer alması dikkat çekmektedir.

Şekil 6: Anahtar Sözcükler Ağ Haritası



Şekil 6'da sarı kümede covid 19, dijital dönüşüm, bilgi aktarımı, liderlik ve yapay zekâ; mavi kümede iş birliği, vaka analizi, küçük ve orta ölçekli işletme, bilgi teknolojisi, işbirliği yapma; yeşil kümede uyumsal çeviklik, yeşil yenilik, yenilik performansı, tedarik zinciri ve strateji; kırmızı kümede iş performansı, örgütsel öğrenme, çeviklik, kritik başarı faktörleri, çift yeteneklilik ve çevik üretim; mor kümede sosyal ağlar, işgücü çevikliği, entelektüel sermaye, operasyonel mükemmellik ve uyumluluk; turuncu kümede birlikte çalışma, rekabet yoğunluğu, yöneticiler, kadınlar, çalışma saatleri; kahverengi kümede örgüt, örgütsel esneklik, değişim yönetimi ve çevik örgüt anahtar sözcükleri dikkat çekmektedir. Dolayısıyla örgütsel çeviklik konusunun tüm bu kavramlarla ilişkilendirilerek çalışıldığı anlaşılmaktadır.

Yazarların Ortak Atıf Analizi

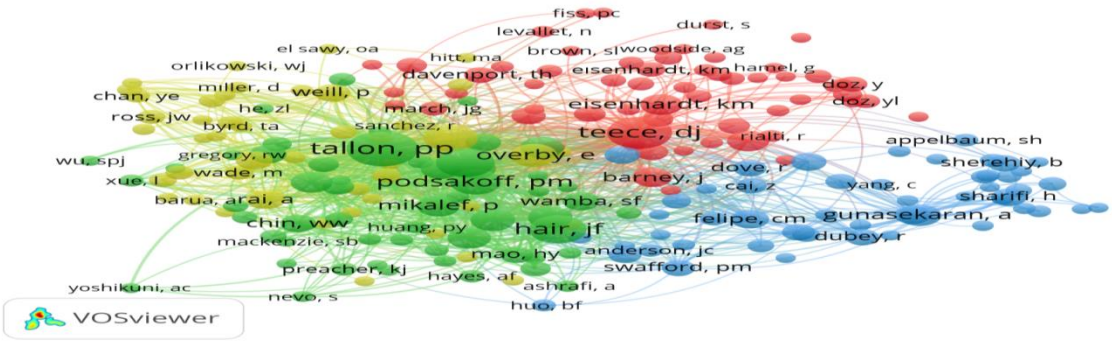
Yönetim alanındaki örgütsel çeviklik makaleleri kapsamında birlikte atıf yapılan yazarların kaynakları ile birlikte diğer kaynakları analiz edebilmek için ortak atıf analizi (co-citiaiton – cited authors) uygulanmıştır. Analiz için "minimum 10 atıf sayısı" seçilmiş ve 8468 yazardan 213'ü eşiği geçmiş ve toplamda 4 küme, 14215 bağlantı ve 64904 toplam bağlantı gücü olduğu görülmüştür. En fazla ortak atıf alan 10 yazara Tablo 10'da ve yazar ortak atıf ağ haritasına Şekil 7'de yer verilmiştir.

Tablo 10: En Fazla Ortak Atıf Alan Yazarlar

Yazarlar	Atıf Sayısı	Toplam Bağlantı Gücü
1. Tallon, PP.	158	4712
2. Teece, DJ.	129	3276
3. Lu, Y.	105	2915
4. Hair, JF.	101	2813
5. Sambamurthy, V.	91	2716
6. Podsakoff, PM.	78	2407
7. Overby, E.	63	1862
8. Chen, Y.	58	1917
9. Fornell, C.	57	1601
10. Ravichandran, T.	55	1719

Çalışmalarda en fazla ortak atıfta yer alan yazar ise 158 atıf ile Tallon olmuştur. Daha sonra sırasıyla Teece 129 atıf; Lu 105 atıf; Hair 101 atıf ve 91 atıfla Sambamurthy en fazla ortak atıfta yer alan yazarlar olarak tespit edilmiştir. Şekil 7'de gösterildiği üzere söz konusu yazarlar genel olarak ortak atıf analizi ağ haritasında bulunan dört kümenin merkezlerinde yer almaktadır.

Şekil 7: Yazarların Ortak Atıf Ağı Haritası



Yazarların Bibliyografik Eşleşme Analizi

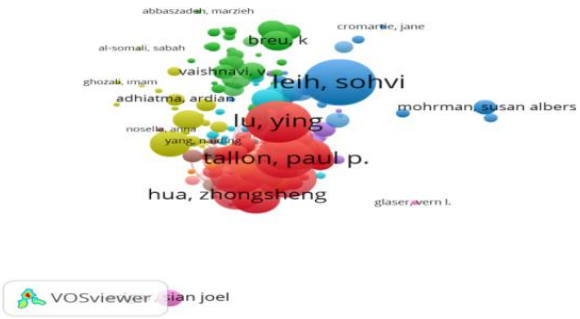
Yazarların bibliyografik eşleşme analizi, iki farklı makalenin referans listesinde bir ya da daha fazla ortak yazarın ortaya çıkartılması amacıyla gerçekleştirilmiştir (Ertürk, 2024: 301). Analiz için "minimum 1 eser yayınlanması" ve "minimum 1 atıf alınması" kriteri belirlenmiştir. İlgili 578 yazardan 518'i belirlenen eşiği geçmiş ve 13 küme, 80961 bağlantı, 400105 toplam bağlantı gücü elde edilmiştir. En fazla bibliyografik eşleşmeye sahip yazarlara Tablo 11'de ve yazarların bibliyografik eşleşme ağ haritasına Şekil 8'de yer verilmiştir.

Tablo 11: En Fazla Bibliyografik Eşleşmeye Sahip Yazarlar

Yazarlar	Atıf Sayısı	Yazarlar	Toplam Bağlantı Gücü
1.Leih, Sohvi	838	Liu, Hefu	11252
2.Peteraf, Margaret	838	Tallon,Paul P.	8274
3. Teece, David	838	Panda, Sukanya	7744
4. Lu, Ying	688	Rath, Santanu K.	7744
5. Ramamurthy, K (Ram)	688	Coltman, Tim	6607
6. Tallon, Paul P.	593	Queiroz, Magno	6607
7. Pinsonneault, Alain	592	Pinsonneault, Alain	6003
8. Wei, Kwok Kee	573	Wei, Kwok Kee	5701
9. Liu, Hefu 10. Hua, Zhongsheng	461 345	Gong, Yeming Mao, Hongyi	5343 5343

En fazla bibliyografik eşleşmeye sahip olan yazarlar 838 alıntı ve 631 toplam bağlantı gücü ile Leih, Peteraf ve Teece olmuştur. Daha sonra ise sırayla 688 alıntı ve 1890 toplam bağlantı gücü ile Lu ve Ramamurthy izlemiştir. Toplam bağlantı gücü açısından en yüksek toplam bağlantı gücü olan yazarlar 11252 ile Liu; 8274 ile Tallon; 7744 ile Panda ve Rath olmuştur.

Şekil 8: Yazarların Bibliyografik Eşleşme Ağ Haritası



Dokümanların Bibliyografik Eşleşme Analizi

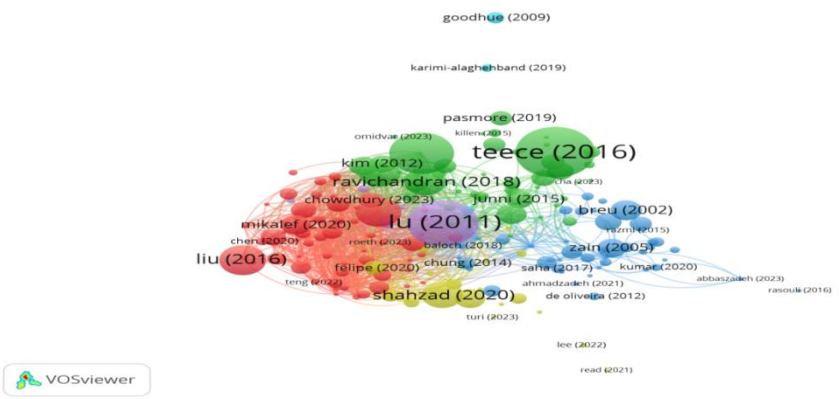
Doküman bibliyografik eşleşme analizi, paylaşılan referans sayısına göre dokümanları birbirine bağlamayı amaçlamaktadır. Analiz için "minimum 1 atıf alınması" kriteri belirlenmiştir ve 215 dokümandan 192'ı belirlenen eşiği geçmiştir. 6 küme, 10837 bağlantı ve 34971 toplam bağlantı gücü elde edilmiştir. En fazla bibliyografik eşleşmeye sahip dokümanlara Tablo 11'de ve dokümanların bibliyografik eşleşme ağ haritasına Şekil 9'da yer verilmiştir.

Tablo 11: En Fazla Bibliyografik Eşleşmeye Sahip Dokümanlar

Yazarlar	Atıf Sayısı	Yazarlar	Toplam Bağlantı Gücü
1.Teece (2016)	838	Felipe (2020)	1005
2. Lu (2011)	688	Mikalef (2021)	984
3. Tallon (2011)	568	Ilmudeen (2022)	912
4. Liu (2016)	291	Nazir (2021)	887
5. Chakravarty (2013)	275	El Idrissi (2023)	876
6. Ravichandran (2018)	246	Saldanha (2020)	829
7. Lee (2015)	233	Mao (2023)	823
8. Shahzad (2020)	230	Liang (2022)	819
9. Breu (2002) 10. Mikalef (2020)	134 128	Manurung (2022) Khan (2022)	812 792

Tablo 11'e göre en fazla bibliyografik eşleşmeye sahip olan doküman 838 alıntı ile Teece (2016), 688 alıntı ile Lu (2011) ve 568 alıntı ile Tallon (2011) tarafından hazırlanan yayınlar olmuş ve bu kümeler Toplam bağlantı gücü açısından bakıldığında ise toplam bağlantı gücü en yüksek olan eserler ise 1005 toplam bağlantı gücü ile Felipe (2020), 984 toplam bağlantı gücü ile Mikalef (2021) ve 912 toplam bağlantı gücü ile Ilmudeen (2022) olmuştur.

Şekil 9: Dokümanların Bibliyografik Eşleşme Ağ Haritası



SONUÇ

Bibliyometri araştırmalarının hız kazandığı günümüzde, araştırmacılar bu analiz türüne yoğun ilgi göstermektedir. Bu analiz araştırmacılara yeni araştırma alanları sunarken, yayın trendleri, en fazla atıf alan yazarları ve çalışmaları belirlemek gibi birçok amaç için kullanılan fonksiyonel bir analiz türüdür. Bu araştırmada bibliyometrik analiz yöntemiyle yönetim alanındaki örgütsel çeviklik ile ilgili makalelelerin yayın yılı, yazar, atıf, dergi, ülke ve anahtar kelime başlıkları çatısı altında incelenmiştir. Web of Science (WoS) veri tabanı aracılığıyla bibliyometrik haritalama için VOSviewer programı kullanılmıştır. VOSviewer ile ortak yazarlık, atıf analizleri, eşdizimlilik ve bibliyografik eşleşme analizleri uygulanmış ve ağ haritaları görsellerle yansıtılmıştır. Örgütsel çeviklik konusu hakkında çalışma yapacak araştırmacılara önemli bir çerçeve sunulmuştur. Wos'ta 25.06.2024 tarihinde arama kısmına "organizational agility" anahtar sözcüğüyle başlık, özet ve anahtar kelime sekmesi seçilmiş ve 694 çalışmaya ulaşılmıştır. 2024 yılı tamamlanmadığı için 2024 yılı analiz dışı tutulmuş, yönetim kategorisi, doküman tipi araştırma makalesi seçilerek kısıtlamalar sonucunda 215 adet yayına ulaşılmıştır. Makaleler yıllara göre değerlendirildiğinde örgütsel çeviklik konusunun 2019 yılından günümüze kadar artış gösterdiği özellikle COVID-19 salgınının yaşanmasıyla yeni bir çalışma yaşamına geçiş gibi birçok alanı etkilemesi sebebiyle bu konuya olan ilginin artışına neden olduğu söylenebilir. İlk yayın 1998 yılında "Journal of Organizational Change Management" dergisinde Kien Sia, S. & Siong Neo, B. tarafından yazılan "Transforming the tax collector: reengineering the Inland Revenue Authority of Singapore" adlı çalışmadır. En fazla yayının olduğu yıl ise 43 yayın ile 2023 yılı olmuştur. En fazla yayın yapan yazar Liu (6) olurken; en fazla yayın yapan ülke Amerika Birleşik Devletleri (57) olmuştur. Yayınevleri tarafından yayımlandığı yayın sayısı en fazla olan yayınevi ise 75 yayın ile Emerald Group Publishing'tir. Aynı zamanda söz konusu makalelerin %66,047'sinin (142) Social Sciences Citation Index (SSCI)'te tarandıkları tespit edilmiştir.

Ortak yazarlık analizine göre en fazla ortak yazarlığı olan Liu; en fazla atıf alan yazarlar 838 atıf ile Leih, Peteraf ve Teece; 838 atıf ile en fazla atıf alan doküman Teece vd., tarafından 2016 yılında yayınlanan "Dynamic capabilities and organizational agility" adlı yayın; 4620 atıf ile en fazla atıf alan ülke ABD; 1301 atıf ile en fazla atıf alan dergi Mis Quarterly; en fazla kullanılan anahtar sözcük "organizational agility"; en fazla ortak atıfta yer alan yazar 158 atıfla Tallon; en fazla bibliyografik eşleşmeye sahip olan yazarlar Leih, Peteraf, Teece ve bağlantı gücü en yüksek olan yazar ise Felipe ve son olarak en fazla dokümanların bibliyografik eşleşmeye sahip olan doküman yazarı Teece vd. ve bağlantı gücü en yüksek olan dokümanın yazarı ise Felipe olmuştur.

Söz konusu araştırmada WoS veritabanında yönetim alanında yer alan makaleleri üzerinden bir analiz uygulanmış, diğer veri tabanlarında yer alan araştırmalara yer verilmemiştir. Örgütsel çeviklik konusuna yönelik sadece makalesi olan yayınlar analize dahil edilmiştir. Gelecek çalışmalarda araştırmacılar örgütsel çeviklik ile farklı değişkenleri birlikte ele alan yayınların analizi farklı veri tabanlarında, farklı ölçme araçları ve yöntemlerle incelenebilir. Örgütsel çeviklik WoS ya da farklı veri tabanlarında farklı kategorilerde, dillerde, araştırma alanlarında, birden çok anahtar kelimeler eklenerek ve bütün doküman tiplerinde araştırılabilir.

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FROM GOVERNANCE TO PERFORMANCE: HOW FINTECH TRANSFORMS EUROPEAN BANKING

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Abstract

This study investigates the moderating effect of fintech on the relationship between corporate governance and bank performance in the context of European banking. Utilising PLS-SEM analysis on panel data from 326 commercial banks across 27 European countries between 2010 and 2019, we find that fintech significantly enhances the positive impact of corporate governance on bank performance. Specifically, banks that integrate fintech solutions not only improve their governance practices but also attract more external capital and retain customers more effectively. These findings have substantial policy implications, suggesting that increased investment in fintech can bolster bank performance while maintaining robust corporate governance standards. This research contributes to the literature by providing a comprehensive analysis within the banking context and employing advanced methodological techniques.

Keywords: *Corporate Governance, Bank Performance, fintech, Commercial Banks, Europe, PLS-SEM*

INTRODUCTION

The dynamic nature of corporate governance within the banking sector is a subject of considerable academic and practical interest. Policymakers, regulators, bank managers, academics, and stakeholders have paid significant attention to corporate governance and banks' financial efficiency (Aslam et al.,2024). Unlike non-financial firms, banks face unique challenges that necessitate distinctive governance mechanisms. As highlighted by Bhatia and Gulati (2021), the complexities of bank activities, regulatory frameworks, and the inherent opacity in banking operations make corporate governance in this sector particularly critical. Laeven (2013) argues that these unique characteristics elevate agency costs in banks, further complicating governance structures compared to other industries.

The importance of robust corporate governance in banking cannot be overstated. Effective governance can bolster bank performance, ensuring stability and soundness, whereas poor governance can lead to destabilisation and significant financial instability (Brogi and Lagasio, 2021). The rigorous scrutiny of banking institutions, as evidenced by extensive research initiated by Eugene Fama in 1985, underscores the sector's vital role in the global economy (John et al., 2016). Despite this scrutiny, many studies on board effectiveness exclude financial institutions, leaving a gap in our understanding of governance efficacy in the banking industry (Adams and Mehran, 2012).

In recent years, the banking landscape has undergone significant transformations driven by globalisation, technological advancements, and evolving customer expectations. This evolution has increased competition and necessitated innovation in financial products and services. Fintech, defined by the Financial Stability Board (2017) as a broad range of financial technology applications. Fintech has emerged as a rapidly evolving topic in the financial industry in recent years (Tang et al., 2024). From online banking to automated investment management, fintech is reshaping financial services, offering new cost-effective solutions that enhance efficiency and expand traditional financial boundaries (Lee et al., 2021; Demertzis et al., 2018). Fintech combines innovation and technology to enhance financial inclusion for stakeholders by offering a range of new products and services, including those involving the metaverse and artificial intelligence (Aloulou et al., 2024)

Despite the acknowledged potential of fintech, empirical evidence on its role in moderating the relationship between corporate governance and bank performance remains sparse. Previous studies have predominantly focused on the direct impacts of corporate governance on performance, often overlooking the moderating effects of technological innovations such as fintech. This study aims to fill this gap by exploring how fintech influences the governance-performance nexus in European commercial banks.

Our research makes several contributions to literature. Firstly, it investigates the relationship between corporate governance and bank performance across 326 commercial banks in 27 European countries from 2010 to 2019, providing a comprehensive analysis within the European banking context. Prior studies have largely focused on other regions or used smaller samples, leaving a need for broader, more inclusive research on European banks. The European banking sector is one of the world's largest and is an integral part of the global financial system while also incorporating some of the world's largest economies (Batten et al., 2022). Understanding this research by analysing this market will bring a good perspective. Secondly, this study employs advanced methodological techniques, namely partial least squares structural equation modelling (PLS-SEM), to offer robust insights into the governance-performance relationship. This approach addresses limitations in previous research that relied on first-generation methods like GMM and OLS regression.

Additionally, our study broadens the traditional metrics of bank performance beyond ROA, ROE, and Tobin's Q to include efficiency, liquidity, and leverage, providing a more holistic view of bank health. Finally, by examining fintech as a moderating factor, this research highlights its critical role in enhancing the effectiveness of corporate governance practices, offering practical implications for bank managers and policymakers aiming to leverage technological advancements for improved performance.

The remainder of this paper is structured as follows: Section 2 reviews the existing literature on the link between corporate governance and bank performance. Section 3 outlines the methodology, including sample selection, data sources, hypotheses generation, and model specification. Section 4 presents the empirical findings on the association between corporate governance and bank performance as well as the moderation effect of fintech. The final section concludes the study and discusses the implications of our findings for the banking industry.

THEORY AND HYPOTHESES

Corporate governance, defined as the system of rules, practices, and processes by which a company is directed and controlled (Du Plessis et al., 2018), plays a pivotal role in ensuring the success and sustainability of banks. Effective governance mechanisms are crucial for mitigating management's misuse of corporate governance codes and reducing agency problems, as highlighted by Jensen and Meckling's agency theory (1976). Good governance practices, such as minimising risk, generating value, and enhancing public accountability, are essential for improving operational efficiency and attracting more capital (Rashid et al., 2020).

Despite extensive research on corporate governance, the evidence on its relationship with bank performance remains mixed (Bhatia and Gulati, 2021). Various studies have explored this relationship in different contexts and regions. For example, Salim et al. (2016) examined the efficiency of Australian banks and found that board size and committee meetings significantly impact bank performance. Ullah (2016) investigated the implications of ownership structure in Japan, revealing that private and foreign ownership transfers enhance market value and efficiency. Bhagat and Bolton (2019), in their comprehensive study, demonstrated that director stock ownership positively influences corporate performance.

In the banking sector, the role of corporate governance extends beyond traditional metrics. Haris et al. (2019) found that board independence and director compensation positively impact bank profitability in Pakistan. Similarly, Aslam and Haron (2020) showed that corporate governance mechanisms significantly affect intellectual capital in Islamic banks, enhancing performance. Fiador and Sarpong-Kumankoma (2020) reported that good governance practices improve loan quality in emerging economies, while Başar (2021) highlighted a positive correlation between governance structure and return on assets in banks from Turkey and the MENA region.

Given this backdrop, we hypothesise the following:

Hypothesis 1: *There is a positive relationship between corporate governance and bank performance.*

However, the evolving landscape of financial technology, or fintech, introduces a new dimension to this relationship. Technological advancements in banking, such as online banking, mobile payments, and robo-advisors, are reshaping the industry. Fintech not only automates financial tasks but also enhances transparency and efficiency, expanding the boundaries of traditional banking (Lee et al., 2021; Demertzis et al., 2018).

Lasak and Gancarczyk (2022) discuss how fintech technologies, termed as Financial Technology Enabling Mechanisms (FTEMs), impact the governance and scope of banking activities. They highlight three effects of FTEMs—preservation, modification, and creation—that reshape the traditional hierarchical governance of banks into more modular, hybrid, and networked structures. Their research uses transaction cost economics to analyse how different fintech solutions influence the decision-making processes and the internal vs. external governance of various banking functions.

Crowdfunding and blockchain, as highlighted by Zhao et al. (2023), disrupt traditional financial intermediation by enabling decentralised finance. This disruption presents regulatory challenges and reshapes the financial landscape by allowing more direct and efficient transactions. The regulatory implications and potential risks of these technologies necessitate a balanced approach to foster innovation while ensuring financial stability.

In the context of SME financing, fintech has proven to be transformative. Yang et al. (2022) investigates the impact of fintech on banks' credit provision to small and medium-sized enterprises (SMEs) in China. Their findings indicate that fintech significantly improves the efficiency and accessibility of credit for SMEs by reducing information asymmetry and transaction costs. This complements the traditional banking services and highlights the challenges and potential of integrating fintech solutions into existing banking frameworks.

Furthermore, the application of fintech in supply chain finance is explored by Singh et al. (2022), who present a decision-making framework for implementing Industry 4.0 technologies. Their focus on fintech and sustainable supply chain finance for SMEs underscores the role of these technologies in enhancing efficiency, transparency, and sustainability in supply chain operations. This framework provides a comprehensive analysis of the factors influencing fintech adoption and its benefits.

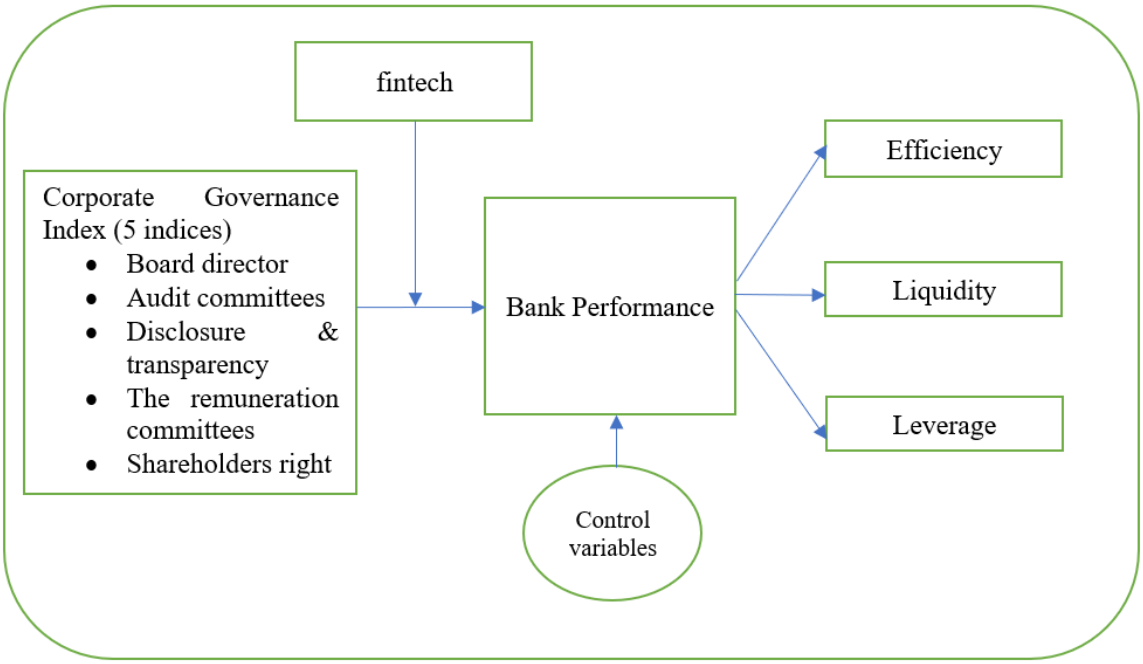
Blockchain technology, another critical component of fintech, is transforming corporate banking, particularly in risk management, regulatory compliance, and reporting. Kumar et al. (2022) discuss how blockchain can streamline processes, enhance transparency, and reduce operational risks in corporate banking. They also examine the regulatory implications and challenges associated with blockchain adoption in the banking sector.

Given this backdrop, we hypothesise the following:

Hypothesis 2: *Fintech positively moderates the relationship between corporate governance and bank performance.*

Our conceptual model, illustrated in *Figure 1*, captures these hypotheses, positioning fintech as a moderating variable that influences the effect of corporate governance on bank performance. This model incorporates five indices of corporate governance: board director, audit committees, disclosure and transparency, remuneration committees, and shareholders' rights. By examining these components, we aim to provide a comprehensive analysis of how fintech enhances the governance-performance nexus in the banking sector.

Figure 1 Theoretical Framework



METHODOLOGY

Data Collection

This study utilises secondary data sourced from the financial and annual reports of commercial banks across 27 countries in European banking from 2010 to 2019. The European banking industry has undergone significant reorganisation, particularly with the consolidation efforts in the region (Kasman et al., 2010). Data from the European Banking Federation (EBF) indicates a growing emphasis on electronic payments and digital banking services in the European region by 2019 (EBF, 2020). Consequently, our analysis focuses exclusively on commercial banks, excluding bank holding companies, investment banks, savings banks, mortgage banks, non-banking credit institutions, and other specialised governmental credit institutions. To measure fintech adoption, we sourced additional information on banks' strategies and investments from Orbis Bank. This data includes R&D investments, digital banking expenses, and fees paid to third-party fintech companies.

VARIABLES AND MEASUREMENT

We include eight variables in the empirical study to analyse the determinants of commercial bank performance, with three dependent variables to measure performance: efficiency, liquidity, and leverage (*Table 1*). Efficiency is measured by net interest margin (NIM), defined as the ratio of net interest income to total assets, which is a critical indicator of a bank's efficiency in earning interest. Liquidity is assessed by the ratio of liquid assets to total assets, indicating the bank's capacity to absorb liquidity shocks. Leverage is evaluated as the ratio of total equity to total assets, providing insights into the bank's capital structure.

Table 1 Definition of Variables

Variables	Definition	Sources
Corporate Governance index (CG)	Corporate Governance Index (5 indices) • Board director • Audit committees • Disclosure & transparency • The remuneration committees • Shareholders right	Orbis Bank Focus
Bank Size (BK_SZ)	Natural Log of Total Asset for Bank (in Million USD)	Orbis Bank Focus
Country (COUN_T)	Dummy variable of 1 for European United Country	
Bank Growth (BK_growth)	Percentage of growth in Total Asset	Orbis Bank Focus
EFFICIENCY	Net interest margin	
LIQUIDITY	The ratio of Liquidity Asset / Total Asset	Orbis Bank Focus
LEVERAGE	The ratio of Total Equity / Total Asset	Orbis Bank Focus
Fintech (FIN_T)	The ratio of expenses and investment in Fintech, digitalization including third party fees and commission over total operating expenses	Orbis Bank Focus

The independent variable is the Corporate Governance Index (CGI), composed of five sub-indices: board director, audit committees, disclosure and transparency, remuneration committees, and shareholders' rights. This comprehensive index is designed to capture the overall quality of governance practices (Munisi et al., 2013; Bebchuk et al., 2009). Fintech is measured as a moderating variable by the percentage of commercial banks' expenses and investments in financial innovation, including digital banking expenditures and third-party fintech fees.

Control variables include bank size (BK_SZ), measured by the logarithm of total assets; bank growth (BK_GROWTH), measured by the annual percentage growth in total assets; and country (COUN_T), a dummy variable indicating the European country in which the bank operates.

Our descriptive data presented in *Table 2* shows the percentage of banks from each country that participated in our study. According to the data, Austria has the highest representation, with its commercial banks accounting for 11.7 percent of the total sample. The United Kingdom follows with 10.4 percent, and France with 10.1 percent. In contrast, Estonia and Bulgaria have the lowest representation, at 0.3 percent and 0.6 percent, respectively.

Table 2 Descriptive Data (Country) (Source: Authors' calculation 1)

COUNTRY	Frequency	Percent	COUNTRY	Frequency	Percent
Austria	38	11.7	Ireland	7	2.1
Belgium	8	2.5	Italy	20	6.1
Bulgaria	2	0.6	Latvia	5	1.5
Croatia	4	1.2	Lithuania	3	0.9
Cyprus	6	1.8	Luxembourg	21	6.4
Czech Republic	11	3.4	Netherlands	17	5.2
Denmark	16	4.9	Poland	15	4.6
Estonia	1	0.3	Portugal	7	2.1
Finland	5	1.5	Romania	4	1.2
France	33	10.1	Slovakia	8	2.5
Germany	13	4.0	Slovenia	7	2.1
Greece	8	2.5	Spain	19	5.8
Hungary	9	2.8	Sweden	5	1.5
Ireland	7	2.1	United Kingdom	34	10.4
			Total	326	100.0

This distribution highlights the variability in data availability and participation across different European countries, which is crucial for understanding the regional differences in corporate governance and bank performance. The detailed country-wise distribution ensures that our analysis captures a broad spectrum of the European banking landscape, providing a comprehensive understanding of the governance-performance dynamics influenced by fintech adoption.

CORPORATE GOVERNANCE INDEX AND COMPLIANCE

Table 3 illustrates the extent to which each sub-index of "strong corporate governance practices" is adhered to by the banks in our study. We created the Corporate Governance Index (CGI) by combining five sub-indices: Board Director, Audit Committee, Disclosure and Transparency, Remuneration Committee, and Shareholders' Rights. Each sub-index measures the percentage of adherence to corporate governance practices based on the bank's annual financial reports. Each checklist statement is scored with a 'yes' equalling one and a 'no' equalling zero. These scores are then aggregated to form the CGI (Bebchuk et al., 2019; Munisi and Randoy, 2013; Basar et al., 2021).

Table 3 Corporate Governance Index: Adapted from (Munisi & Randay, 2013)

N	*STATEMENTS*	*AVERAGE*
	SUB INDEX BOARD	**96.45**
1	Chairperson of board and CEO are two different individuals	94.00
2	Chairperson is a non-executive director	93.00
3	Company indicates classes of directors	98.00
4	Non-executive directors make up at least two thirds of the board	98.00
5	Company indicates number of meetings held by board	99.00
6	Board has a corporate governance committee	96.00
7	Board has a nominating committee	97.00
	SUB INDEX AUDIT	90.06
8	Company has an audit committee	100.00
9	Chairperson of committee is a non-executive director	100.00
10	All members of committee are non-executive directors	97.00
11	Chairperson of the board is not the chairman or a member of the audit committee	82.00
12	Company indicates number of meetings held by committee	100.00
	SUB INDEX DISCLOSURE AND TRANSPARENCY	94.40
13	Company use IFRS	100.00
14	Company discloses composition of remuneration committee	80.00
15	Company discloses composition of audit committee	63.00
16	Company discloses total remuneration of each director	95.00
17	Company discloses remuneration of CEO	99.00
18	Company discloses work/professional qualifications of its senior officers	99.00
19	Company discloses academic qualifications of its senior officers	98.00
20	Company discloses remuneration of senior management team	99.00
21	Company discloses work/professional qualifications of directors	99.00
22	Company discloses academic qualifications of directors	99.00
23	Company discloses ages of directors	100.00
24	Company discloses date on which each director was appointed	100.00
25	Company uses a "big four" audit firm as external auditor	100.00
26	Company releases its annual reports within 3 months of year-end	100.00
27	Company reports stock prices and stock market performance	62.00
28	Company discloses share ownership	98.00
29	Company states its commitment to effective corporate governance	98.00
30	Company discloses a commentary on its financial results	99.00
31	Company discloses a summary of five-year financial trends	100.00
32	Company reports on CSR activities	99.00

	SUB INDEX REMUNERATION	76.00
33	Company has a remuneration committee	68.00
34	Chairperson of committee is a non-executive director	67.00
35	All members of the committee are non-executive directors	69.00
36	Company indicates number of meetings held by committee	100.00
	SUB INDEX SHARE	**88.75**
37	Company uses one-share-one-vote principle	68.00
38	Company elects all directors every year	100.00
39	Company indicates that it allows proxy voting	98.00
	CGI_INDEX	**89.13**

Overall, the mean CGI score is 89.13 percent across all sub-indices, where 100 percent would imply full compliance. This indicates that, on average, commercial banks in the European Union are approaching "perfection" in terms of effective corporate governance standards.

The sub-index for Board Director has a mean compliance rate of 96.45 percent. This high score suggests that, on average, banks have implemented 96.45 percent of acceptable governance standards in terms of board membership and function. Specifically, over 94 percent of organisations segregate the roles of chair of the board and CEO, ensuring a clear separation of decision-making and monitoring functions. Non-executive directors serve as chairmen in 93 percent of the banks, highlighting robust governance structures.

Similarly, the Audit Committee sub-index has a mean value of 90.06 percent. Our findings show that all banks have an audit committee, and all audit committees are chaired by non-executive directors. Additionally, 97 percent of audit committees consist entirely of non-executive directors. These high scores suggest that nearly all commercial banks in the European Union are aware of and adhere to strong governance processes related to audit committee recruitment and functions.

The Disclosure and Transparency sub-index has a mean value of 94.40 percent. Many banks express their commitment to good corporate governance and provide extensive commentary on their financial results. This compliance is likely driven by stringent regulations requiring comprehensive disclosure following financial mishaps and crises. Meanwhile, the Remuneration Committee sub-index shows a compliance rate of 76.00 percent, indicating relatively strong governance practices concerning remuneration policies.

Lastly, the Shareholders' Rights sub-index has an average compliance rate of 88.75 percent. Most banks hold annual board elections, allowing shareholders to replace the entire board if necessary. Additionally, most banks permit proxy voting, ensuring shareholder representation even in their absence.

SUMMARY STATISTICS AND CORRELATION

The summary statistics for the non-governance variables used in the analysis are presented in *Table 4*. The average bank size, measured as the natural log of total assets, is 0.1374. The average rate of bank growth is 0.2056, indicating a reasonably good profitability performance with an average growth rate of 20.56 percent. The average liquidity ratio is 0.5356, reflecting good liquidity performance across European banks. Leverage has a mean value of 0.0869. The average efficiency ratio is 0.0185, while the average fintech investment ratio is 17.3313, and the average country dummy variable value is 0.2700.

Table 4 Correlations of Subindex (Source: Author's calculation 2)

	BOARD_INDEX	*AUD_INDEX*	*DIS_INDEX*	*REM_INDEX*	*SHARE_INDEX*	*CG_INDEX*
BOARD_INDEX	1					
AUD_INDEX	.262**	1				
DIS_INDEX	.122*	0.066	1			
REM_INDEX	-0.011	-.466**	.198**	1		
SHARE_INDEX	.157**	0.092	.290**	.365**	1	
CG_INDEX	.375**	.137*	.458**	.687**	.799**	1
*** Correlation is significant at the 0.01 level (2-tailed).*						
** Correlation is significant at the 0.05 level (2-tailed).*						

The pairwise correlation matrix for the overall corporate governance index and its sub-indices, shown in *Table 5*, indicates that the CGI and all its sub-indices are positively and significantly correlated. This is expected, as banks that perform well in one sub-index are likely to perform well in others, demonstrating overall strong governance practices.

Table 5 Summary of non-governance variables (Source: Authors' calculation 2)

	Minimum	Maximum	Mean	Std. Deviation
Bank Size	0.0008	2.4220	0.1374	0.3564
Growth	-0.1860	50.3567	0.2056	2.7927
Liquidity	0.0334	0.9509	0.5356	0.1954
Leverage	0.0151	0.3488	0.0869	0.0463
Efficiency	-0.0029	0.0750	0.0185	0.0112
Fintech	0.0001	93.0146	17.3313	15.3552
Country	0.0000	1.0000	0.2700	0.3200

Model Specification

To explore the impact of corporate governance on bank performance and the moderating role of fintech, we employ Partial Least Squares Structural Equation Modelling (PLS-SEM). This second-generation analytical technique is suitable for our study due to its ability to handle complex models and small sample sizes, as well as its robustness in the face of non-normal data distributions (Wold, 1985; Hair et al., 2019).

The specified model is as follows:

$$\textbf{Bank Performance} = \beta_0 + \beta_1 (CGindex) + \beta_2 (BK_size) + \beta_3 (BK_growth) + \beta_4 (Country) + \beta_5 (Fin) + \beta_6 (CGIndex*Fin) + \varepsilon$$

PLS-SEM Methodology

We utilised the SmartPLS software (Ringle et al., 2015) to conduct the PLS-SEM analysis, adopting a path weighting scheme with a maximum of 300 iterations. The bootstrapping procedure involved 1000 resamples with a bias-corrected and accelerated (BCa) bootstrap to assess the significance of path coefficients at a 10% significance level (one-tailed). The assessment process includes evaluating the reliability and validity of the formative constructs by assessing outer weights, collinearity (VIF < 3.3), and significance (T-value). Additionally, we tested the relationships between exogenous and endogenous variables, assessing path coefficients, effect sizes (f^2), and predictive relevance (Q^2).

Robustness Checks

To ensure the robustness of our results, we performed additional analyses using Ordinary Least Squares (OLS) regression. The OLS results corroborated our PLS-SEM findings, reinforcing the reliability of our model.

RESULTS

The results of our Partial Least Squares Structural Equation Modelling (PLS-SEM) analysis are presented in *Table 6*. We assessed the reflective and formative models by measuring outer weights, evaluating collinearity (VIF < 3.3), and assessing the significance and relevance of outer weights (T-value) (Hair et al., 2019). The data analyses show that the majority of the constructs had AVE values greater than 0.5, confirming the robustness of our data.

Table 6 PLS-SEM Results

VARIABLES	*EFFICIENCY*		*LIQUIDITY*		*LEVERAGE*	
	Model A	***Model B***	***Model A***	***Model B***	***Model A***	***Model B***
CGI_{t-1}	0.211*** (0.000) *4.528* *0.042*	0.246*** (0.000) *4.855* *0.056*	0.087* (0.095) *1.311* 0.012	0.091* (0.128) *1.134* *0.014*	-0.108 (0.117) *1.190* *0.007*	0.125** (0.020) *2.059* *0.008*
Board_index	0.214*** (0.000) *3.321* *0.025*	0.205** (0.008) *2.416* *0.017*	0.012 (0.373) *0.323* *0.001*	0.027 (0.303) *0.515* *0.001*	0.751*** (0.000) *16.471* *0.477*	0.768*** (0.000) *14.317* *0.367*
Audit_index	0.934*** (0.001) *3.092* *0.206*	0.933*** (0.001) *3.065* *0.205*	0.336* (0.086) *1.365* *0.107*	0.338* (0.083) *1.388* *0.108*	0.414*** (0.000) *6.673* *0.063*	0.416*** (0.000) *6.548* *0.064*
Disc_index	-0.025 (0.258) *0.560* *0.001*	-0.025 (0.257) *0.652* *0.001*	0.012 (0.373) *0.323* *0.002*	-0.020 (0.208) *0.812* *0.002*	0.751*** (0.000) *16.471* *0.016*	-0.083** (0.026) *1.938* *0.016*
Rem_index	-0.088 (0.213) *0.797* *0.006*	-0.086 (0.218) *0.780* *0.005*	0.078 (0.114) *1.205* *0.018*	0.075 (0.125) *1.151* *0.016*	-0.008 (0.411) *0.225* *0.016*	-0.011 (0.377) *0.312* *0.001*
Share_index	-0.054 (0.107) *1.240* *0.005*	-0.053 (0.113) *1.208* *0.004*	0.012 (0.316) *0.480* *0.001*	0.010 (0.347) *0.934* *0.001*	-0.131*** (0.000) *4.046* *0.044*	-0.134*** (0.000) *3.974* *0.044*
BK_SZ	-0.245*** (0.000) *7.496* *0.062*	-0.244*** (0.001) *7.212* *0.063*	-0.172*** (0.000) *3.438* *0.095*	-0.298*** (0.001) *8.304* *0.095*	-0.298*** (0.000) *8.227* *0.029*	-0.172*** (0.000) *3.460* *0.030*
BK_GROWTH	-0.058 (0.182) *0.908* *0.004*	-0.053 (0.188) *0.884* *0.003*	-0.049* (0.083) *1.385* *0.002*	-0.043 (0.116) *1.194* *0.002*	-0.033 (0.277) *0.591* *0.001*	-0.031 (0.287) *0.562* *0.001*
COUNTRY	-0.053 (0.142) *1.073* *0.003*	-0.056 (0.125) *1.149* *0.003*	-0.084* (0.066) *1.510* *0.007*	-0.087* (0.055) *1.600* *0.007*	0.017 (0.379) *0.308* *0.001*	0.015 (0.388) *0.286* *0.001*
FINTECH	0.086* (0.065) *1.516* *0.008*	0.120** (0.010) *2.922* *0.015*	-0.068 (0.127) *1.142* *0.005*	-0.030* (0.098) *0.860* *0.001*	0.032 (0.261) *0.641* *0.001*	0.048 (0.191) *0.759* *0.002*
*CGIt-1 *FINTECH*		0.144** (0.006) *2.531* *0.022*		0.155** (0.005) *2.572* *0.024*		0.069 (0.174) *0.939* *0.005*
Q^2	0.539	0.536	0.843	0.831	0.719	0.692
R^2	0.590	0.590	0.898	0.898	0.738	0.738
Adjusted R^2	0.577	0.576	0.895	0.894	0.730	0.729
Observations	326					
Year dummies	yes					
Industry dummies	yes					

*Standard errors in parentheses. *** p<0.01, ** p<0.05,* p<0.1.*

The primary findings from our PLS-SEM analysis are as follows: Corporate governance has a significant positive impact on bank efficiency, with a path coefficient of 0.246 ($p < 0.001$), indicating that improved corporate governance leads to greater efficiency in European banks. The relationship between corporate governance and liquidity is positive but only marginally significant, with a path coefficient of 0.091 ($p = 0.128$), suggesting that while there is a positive trend, the impact on liquidity is less pronounced. Corporate governance also positively affects leverage, with a path coefficient of 0.125 ($p < 0.05$), indicating that better governance practices lead to a more optimal capital structure.

Among the control variables, larger banks tend to have lower efficiency and liquidity but higher leverage, as reflected in the negative path coefficients for efficiency (-0.244, $p < 0.001$) and liquidity (-0.298, $p < 0.001$), and a positive coefficient for leverage (0.172, $p < 0.001$). The country variable negatively impacts efficiency and liquidity, although these effects are not strongly significant, implying that national differences within the European banking sector do not substantially alter the governance-performance relationship. Growth rates have a minimal and statistically insignificant impact on efficiency, liquidity, and leverage.

Regarding fintech as a moderating variable, it significantly moderates the relationship between corporate governance and efficiency, with a path coefficient of 0.144 ($p < 0.01$), meaning that the presence of fintech amplifies the positive effects of corporate governance on efficiency. Similarly, fintech enhances the impact of corporate governance on liquidity, with a path coefficient of 0.155 ($p < 0.01$). However, the moderating effect of fintech on the relationship between corporate governance and leverage is positive but not significant, with a path coefficient of 0.069 ($p = 0.174$). These findings support our hypotheses that corporate governance positively influences bank performance and that fintech serves as a significant moderator in this relationship.

Predictive Relevance and Robustness

We utilized the predictive sample reuse technique (Q^2) to evaluate the model's predictive validity. All Q^2 values were greater than zero, indicating good predictive relevance. Specifically, the values suggested minor to medium relevance for efficiency and liquidity and high relevance for leverage. To ensure robustness, we conducted additional tests using Ordinary Least Squares (OLS) regression. The OLS results in *Table 7* aligned with the PLS-SEM findings, further validating the reliability of our model.

Table 7OLS Results

VARIABLES	*EFFICIENCY*		*LIQUIDITY*		*LEVERAGE*	
	Model A	***Model B***	***Model A***	***Model B***	***Model A***	***Model B***
CGI_{t-1}	7.881*** (0.000)	0.140** (0.004)	0.624* (0.133)	-0.160 (0.681)	0.104* (0.054)	0.126 (0.652)
BK_SZ	-0.463*** (0.000)	-0.066* (0.090)	0.8370*** (0.002)	0.023 (0.228)	- 0.0310*** (0.000)	-0.039 (0.328)
BK_GROWTH	0.056 (0.308)	0.354** (0.001)	0.044 (0.418)	0.665*** (0.001)	0.039 (0.465)	-0.653*** (0.001)
COUNTRY	0.007 (0.895)	-0.401 (0.001)	0.002 (0.146)	-0.295*** (0.001)	0.013 (0.801)	-1.217*** (0.001)
CGI_{t-1} **FINTECH*		0.101* (0.064)		0.060* (0.061)		0.031** (0.032)
Constant	14.236	21.267	18.834	0.221	0.609	0.932
R^2	0.553	0.574	0.8565	0.854	0.738	0.737
Adjusted R^2	0.539	0.573	0.851	0.853	0.730	0.734
F	38.990	11.080	88.856	18.89	88.856	19.98
p-value (f)	0.000	0.001	0.013	0.001	0.000	0.000
Observations	326					
Year dummies	yes					

*Standard errors in parentheses. *** p<0.01, ** p<0.05,* p<0.1.*

DISCUSSION

The results highlight the critical role of corporate governance in enhancing bank performance across various dimensions. Effective governance practices are shown to significantly improve efficiency, liquidity, and leverage, supporting the existing literature (Salim et al., 2016; Bhagat and Bolton, 2019; Haris et al., 2019). This underscores the importance of implementing robust governance frameworks within the banking sector to drive performance improvements.

Our study also reveals the transformative impact of fintech. By acting as a moderating variable, fintech enhances the positive effects of corporate governance on bank performance. This finding aligns with previous research on the disruptive potential of fintech in the financial industry (Haddad and Hornuf, 2019; Phan et al., 2019). The integration of fintech solutions facilitates more systematic and transparent transactions, thereby boosting efficiency and liquidity.

The implications of these findings are significant for both practitioners and policymakers. Banks should consider increasing their investments in fintech to leverage its benefits fully. Policymakers, on the other hand, should create an enabling environment that supports fintech innovation while ensuring robust governance practices.

Overall, this study provides a comprehensive analysis of the governance-performance dynamics in European banks, enriched by the moderating role of fintech. Future research could extend this analysis to other regions or explore additional variables that may influence this relationship. Also, considering that the data has been analysed at the pre-COVID era, it is worth exploring the current impact of fintech after the post-pandemic to see if the significance of fintech is increasing or declining.

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DOES FISCAL DECENTRALIZATION IMPROVE ENVIRONMENTAL QUALITY IN OECD COUNTRIES? EMPIRICAL EVIDENCE

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Abstract

The debate regarding whether fiscal decentralization can effectively increase or mitigate carbon dioxide (CO2) emissions has gained increasing attention, although there is little empirical evidence to support this issue (Khan et al.,2021). To provide empirical evidence in support of the theoretical argument, this study investigates the effect of fiscal decentralization on CO2 emissions by using a balanced panel dataset of 22 OECD countries between 2010 and 2018. Further, I explore the role of the income level of the country on the effect of fiscal decentralization on Co2 emissions. The results revealed that there is a negative effect of fiscal decentralization on co2 emissions and this effect depends on the country level of income.

Keywords: Fiscal decentralization- Environmental quality- Fixed and random effect.

INTRODUCTION

In recent times, climate change and global warming have become among the most controversial challenges in the world, and there is a growing consensus that these challenges need to be addressed urgently. Accordingly, the global community has started to pay attention to environmental problems associated with carbon emissions and other greenhouse gases (Ma et al., 2019). In this context, many nations around the world have implemented a series of measures to address climate change and global warming. Fiscal decentralization is considered one of the most effective measures used in improving environmental quality. Some governments and scholars believe that fiscal decentralization is an effective pathway for mitigating co2 emissions and argue that fiscal decentralization can improve environmental quality through setting strict environmental regulations by local governments in order to decrease pollution in affected areas (Chen and Chang, 2020). Hence, the effect of fiscal decentralization on environmental quality has been given a great attention in the agenda of policymakers, academia, and research institutes. Previous empirical studies have arrived at a disagreement on whether fiscal decentralization leads to a rise in environmental pollution, i.e. a race to the bottom or a reduction in it, i.e. a race to the top (Elheddad et al., 2020).

This study aims at investigating the effect of fiscal decentralization on co2 emissions in OECD countries. OECD economies are considered as the optimal context of study due to several reasons: First, CO2 emissions from Organization for Economic Cooperation and Development (OECD) countries account for half of global co2 emissions, yet CO2 emissions in OECD countries have been reduced significantly after the signature of the Kyoto Protocol after 2008 which targeted mitigating carbon emissions and other greenhouse gases (Saidi and Omri, 2020, Wang et al., 2019). In this context, Co2 emissions in OECD countries have been decreased from 12976000 Kt in 2008 to 11998460 Kt in 2018, implying a decrease with 7.53 percent in co2 emissions in the OECD area (World Bank, 2020). Second, although reforms that have changed the institutional set-up of fiscal decentralization are rare and confined to a few countries only, the OECD area has become more decentralized over the last two decades, (Hansjörg and Junghun, 2016). In addition to that, the central governments in the Organization for Economic Cooperation and Development countries (OECD) countries have passed on their responsibilities in terms of environmental policies to local government (Khan et al., 2021). Italy and Spain, for example, embarked on a decentralization process, with Spain, one of the most centralized OECD countries, becoming one of the most decentralized in 20 years. Hence, the study aims at investigating the effect of fiscal decentralization on environmental quality in the OECD countries (Hansjörg and Junghun, 2016).

The rest of the study is structured as follows. Section 2 gives an overview of the theoretical and empirical arguments on the effect of fiscal decentralization on environmental quality, the methodology and data. Section 3 reports and discusses the empirical results. Section 5 presents the conclusion and policy implications.

MATERIAL AND METHODOLOGY

Literature review

Decentralization is the process of rearranging authority in order to establish a system of shared accountability between national, regional, and local governance institutions in accordance with the subsidiarity principle. There are three types of decentralization: political, administrative, and financial (El Hag, 2015). They include the following:

Political decentralization is the transfer of political power to locally elected councils that represent their local constituency and have the authority and power to hold local administrative officials accountable for the implementation of locally determined policies (Mayfield, 1996).

Administrative decentralization is the transfer of authority, responsibility, and financial resources for providing public services from the central government and its agencies to field units of government, agencies, subordinate units, or levels of government (Treisman, 2008).

Administrative decentralization can be divided into two main categories: vertical and horizontal. The vertical one occurs when the government transfers authority to local authorities at the local level, and the horizontal one occurs through restructuring administration among the various ministries (El Hag, 2015).

Fiscal decentralization entails assigning lower levels of government some of the expenditures and/or revenue responsibilities. There are two levels of fiscal decentralization. The first is concerned with sharing revenue and spending responsibilities among the various governmental levels (national, regional, local, etc.). The second is the degree of autonomy given to regional and local governments to determine their expenditures and revenues (Treisman, 2008).

Since Tiebout (1956) proposed the “voting by foot” mechanism, which is the ability of the people to choose the political regime under which they wish to live, the environmental effects of fiscal decentralization have gained attention, and thus some academics have begun to look into how fiscal decentralization affects CO2 emissions as the public can reveal their preferences for public welfare through this mechanism, and hence local governments are confronted with a greater supply of public goods and better environmental quality (Somin, 2012; Chen and Chang, 2020).

Fiscal decentralization may affect environmental pollution in a direct and indirect way. The direct effect of fiscal decentralization on CO2 emissions has gained great attention in the literature recently. The evidence concerning this effect is mixed and can be easily categorized into two main categories depending on the type of model: linear and non-linear models (Khan et al., 2021). The first category represents studies that employ linear models. These studies concluded that there is conflicting evidence regarding this effect, producing both positive and negative outcomes. They also concluded that the effects of fiscal decentralization on environmental pollution are negligible.

The linear modeling studies can be categorized into three main strands. The first strand of the literature The first body of research suggests that reducing CO2 emissions and controlling pollution are better achieved with a greater level of fiscal decentralization, i.e., the phenomenon of a ‘race to the top’. This phenomenon can be justified on the ground that higher fiscal decentralization leads to a decrease in environmental degradation (Chen and Chang, 2020). Fiscal decentralization, according to proponents of this line of thinking, can assist local governments in meeting citizen demand preferences and improving the efficiency of resource allocation., while also setting off a ‘race to the top’ among local governments through the nimbyism effect. The nimbyism effect is defined as the social rejection of certain essential environmental and social services proposed by public administration entities and private organizations, as local residents only get part of the profits of the enterprise, but they bear the total pollution costs if the level of regional openness is high, prompting local governments to raise environmental standards while preserving economic development goals (Pol et al., 2006). (Khan et al., 2021). Chen and Chang (2020), Hao et al. (2020), and Cheng et al. (2020) concluded the ‘race to the top’ phenomenon.

The second line of research proposes that fiscal decentralization has a positive impact on CO2 emissions. This opinion has been backed by numerous academics who assert that local governments are more likely to participate in a "race to the bottom," which entails promoting economic development by undermining local environmental laws and regulations and thereby encouraging an increase in CO2 emissions. (Khan et al., 2021). In addition, the institutional set-up required for fiscal decentralization may not be achieved very well, and hence fiscal decentralization may increase CO2 emissions (Hansjörg and Junghun, 2016). Supporters of this view argue that as environmental governance has a high degree of positive externality and environmental pollution that can cross administrative boundaries easily, local governments are more likely to choose to build up higher pollution enterprises and impose lower environmental standards to attract foreign direct investment as the evaluation mechanism is mainly based on economic growth. Levinson (2003) and Woods (2006) concluded the 'race to the bottom' phenomenon.

The third line proposes that there are insignificant effects of fiscal decentralization on environmental pollution, as indicated by He (2015). This insignificant effect of fiscal decentralization on environmental pollution can be justified on the ground that local officials are not elected by local constituents. Rather, they are appointed by upper-level officials depending on certain criteria, such as their success in achieving economic development. In addition to that, the promotion of local officials does not depend mainly on the environmental performance of local units but on the economic development of these local units. Hence, it seems rational for these local governments to exert high efforts to raise growth or fiscal revenue but not to control pollution (He, 2015).

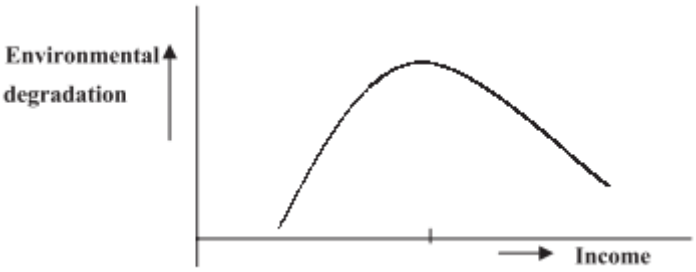
On the other hand, non-linear studies find that fiscal decentralization and pollution have a U-shaped relationship, which means that FD loses its usefulness after a certain point, and these studies represent the second category (Khan et al., 2021). Many scholars have supported this opinion and insisted that the effect of fiscal decentralization on CO2 emissions should be studied using nonlinear models (Hao et al., 2020). The empirical equation of carbon emissions was enhanced by the inclusion of a non-linear term for fiscal decentralization by Hao et al. (2020), Cheng et al. (2020), and Chen and Chang (2020) in the literature.

In addition to the direct effect of fiscal decentralization on CO2 emissions, the indirect effect of fiscal decentralization on CO2 emissions has gained little attention in the recent literature (Khan et al., 2021). Fiscal decentralization would influence environmental pollution indirectly through intermediate channels such as pollution abatement spending, pollution discharge fees, and economic growth. Fiscal decentralization may affect pollution abatement spending and pollutant discharge fees positively, contributing to environmental protection (He, 2015).

Fiscal decentralization would also influence environmental pollution through its effect on economic growth. Economic growth may be related to environmental pollution, as the Environmental Kuznets Curve, or EKC for short, demonstrates (Hao et al., 2020). The logic of the Kuznets curve hypothesis was first applied to the environment in the early 1990s, as the EKC first appeared in the Grossman and Krueger working paper on the environmental impacts of the North American Free Trade Agreement (Grossman and Krueger, 1991). The Environmental Kuznets Curve (EKC) postulates an inverted-U-shaped relationship between environmental pollutants and income per capita as indicated in figure 1, i.e., environmental degradation increases as income per capita increases until a turning point is reached; after that, it decreases (Dinda, 2004).

Grossman and Krueger (1991) believed that economic growth affects the quality of the environment in three different ways: scale effects, technique effects, and composition effects. The scale effect postulates that economic growth affects the environment negatively as increasing output causes more utilization of natural resources, waste, and emissions. However, economic growth has also had a positive effect on environmental quality through the composition effect and the technique effect. The composition effect postulates that as the structure of the economy changes, the economy tends to increase cleaner activities producing less pollution (Komen et al., 1997; Panayotou, 1993). The technique effect of economic growth postulates that technological progress associated with economic growth enables dirty and obsolete technologies to be replaced with upgraded, new, and cleaner technology, improving environmental quality (Grossman and Krueger, 1991; Dinda, 2004).

Figure 11:Environmental Kuznets Curve



Source: Dinda article, 2004.

Although a growing body of studies has investigated the effect of fiscal decentralization on environmental pollution, certain research gaps still exist. First, despite the fact that many scholars have started to focus on the effect of fiscal decentralization on CO2 emissions, it is still insufficient, especially for OECD countries .Second, the previous literature on the effect of fiscal decentralization on co2 emissions , the potential cross-sectional dependence and heterogeneity that may exist within the panel data are often ignored and, thus, may result in misleading estimations. Third, very few studies tackled the issue of the indirect effects of fiscal decentralization on co2 emissions (Khan et al., 2021).

METHODOLOGY

This section starts with description of the sample. Then, model specification, variables and data description are presented. Finally, the estimation method is discussed.

Sample Description

According to the World Bank classification of countries by region, the OECD region includes 38 countries which are Australia, Austria, Belgium, Canada, Chile, Colombia, Costarica, Czech republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea republic, Latvia, Lithuania, Luxembourg, Mexico, Netherlands, Newzealand , Norway, Poland ,Portugal, Slovak republic, Slovenia, Spain, Sweden, Swizerland , Turkey, United Kingdom and united states.

The OECD countries are considered as the optimal context of study, as most of the OECD economies have targeted lowering co2 emissions. In this context, Co2 emissions in OECD countries decreases from 12976000 Kt in 2008 to 11998460 Kt in 2018 implying a decrease with 7.53 percent in co2 emissions in the OECD area (World bank, 2020). In addition to that, The OECD area has become more decentralized over the last two decades and their central governments have passed on their responsibilities in terms of environmental policies to local government. Accordingly, it is crucial for the OECD region policymakers to investigate the effect of fiscal decentralization on reducing Co2 emissions in their countries (Khan et al., 2021).

The study uses panel data not cross section as the panel data may have many appealing features that are summarized in the following points. First, our panel data allows us to control for unobserved characteristics, and consequently avoid the bias from omitting such characteristics. Second, the panel data specification allows us to deal with the potential endogeneity of fiscal decentralization that arises because of, for instance, reverse causality (He, 2015). The empirical analysis includes panel data on years from 2010 to 2018 based on the availability of data. The sample includes 22 countries excluding Costarica, Czech republic, Denmark, Finland, France, Greece, Ireland, Italy, Korea republic, Lithuania, Luxembourg, Mexico, Poland, Portugal, Slovak republic and Slovenia according to data availability. This makes a total of 198 country-year observations.

Model Specification

As concluded by several researchers in the previous literature review that technological innovation, energy consumption, and economic growth may be considered the main contributors to environmental degradation, so the

study will consider these variables as control variables. Hence, The effect of fiscal decentralization on environmental quality will be examined using the following model(model I):

$CO2,_{i,t} = (FD_{i,t}, RGDP_{i,t}, TI_{i,t}, EC_{i,t})$ (1)

Where CO2 represents the amount of CO2 emissions; FD indicates fiscal decentralization; RGDP denotes gross domestic product. Patent denotes technological innovation, EC denotes energy consumption (Khan et al.,2021, Ibrahiem, 2020) .

The log transformation is used for all variables meaning that these variables are expressed in natural logarithm. There are several advantages of using the log transformation First, it helps when the variable bas large values or is skewed making it more normally distributed Second, the log transformation tends to stabilize the error variance helping in solving the heteroskedasticity issue. In addition, the interpretation in this case is easy and straightforward representing percentage change (elasticity) (Ng and Cribbie, 2019)

The log transformation of the model is as follows:

$\ln CO2,_{i,t} = \ln A + \propto 1 \ln RGDP_{i,t} + \propto 1 \ln FD_{i,t} + \propto 2 \ln TI_{i,t} + \propto 3 \ln EC_{i,t} + u_{i,t}$ (2)

$\ln CO2,_{i,t} = a + \propto 1 \ln RGDP_{i,t} + \propto 1 \ln FD_{i,t} + \propto 2 \ln TI_{i,t} + \propto 3 \ln EC_{i,t} + u_{i,t}$ (3)

where $\ln Co2_{i,t}$, $\ln RGDP_{i,t}$, $\ln FD_{i,t}$, $\ln TI_{i,t}$, $\ln EC_{i,t}$are the natural logarithm of carbon dioxide emissions, Real gross domestic product, Fiscal decentralization, Technological innovations and Energy consumption respectively. $u_{i,t}$ is the error term.

In order to account for the EKC hypothesis, this suggests that there is a nonlinear quadratic relationship between income and environmental pollutants. The first and second order of real GDP is used in the second model. Also, an interaction term between fiscal decentralization and real Gross domestic product is added to the model in order to account for the indirect effects of fiscal decentralization on co2 emissions through economic growth (Iwata et al., 2012). Hence, the log transformation of the new model (Model II) will be:

$\ln CO2,_{i,t} = \ln A + \propto \ln RGDP_{i,t} + + \propto 1 (\ln RGDP_{i,t})\text{^}2 + \propto 2 \ln FD_{i,t} + + \propto 3 \ln RGDP_{i,t} \ln FD_{i,t} \propto 4 \ln TI_{i,t} + \propto 5 \ln EC_{i,t} + \varepsilon_{i,t}$ (4)

$\ln CO2,_{i,t} = \ln A + \propto \ln RGDP_{i,t} + \propto 1 (\ln RGDP_{i,t})\text{^}2 + \propto 2 \ln FD_{i,t} + + \propto 3 \ln RGDP_{i,t} \ln FD_{i,t} + \propto 4 \ln TI_{i,t} + \propto 5 \ln EC_{i,t} + \varepsilon_{i,t}$ (5)

Where $\ln Co2_{i,t}$, $\ln RGDP_{i,t}$, $\ln FD_{i,t}$, $\ln TI_{i,t}$, $\ln EC_{i,t}$, $(\ln RGDP_{i,t})\text{^}2$, $\ln RGDP_{i,t} \ln FD_{i,t}$ are the natural logarithm of carbon dioxide emissions, Real gross domestic product, Fiscal decentralization, Technological innovations, Energy consumption, the squared natural logarithm of Real gross domestic product and the interaction term between the natural logarithm of Real gross domestic product and the natural logarithm of Fiscal decentralization respectively, $\varepsilon_{i,t}$ is the error term.

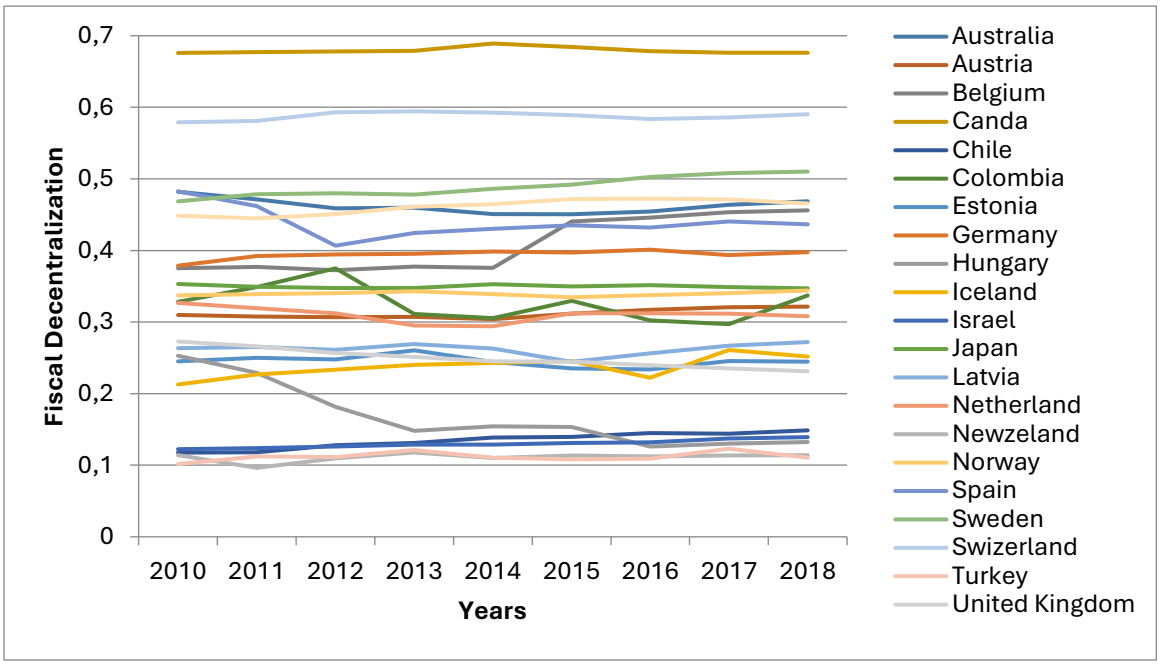
Variables and Data

The previously mentioned model is used to investigate the effect of fiscal decentralization on environmental quality. Fiscal decentralization is defined as the transfer of some responsibilities for expenditures and/or revenues and other responsibilities from the central government level to lower state levels. Some studies view this transfer as an important way that brings stronger economic growth, better efficiency and greater equality (Elheddad et al.,2020). Fiscal decentralization has different indicators such as expenditure fiscal decentralization and revenue fiscal decentralization. Expenditure decentralization is the indicator that is used for fiscal decentralization in the analysis data were obtained from IMF database. Expenditure decentralization has the advantage of varying over time, allowing analyses with fixed effects. However, expenditure decentralization is not consistently available, with much sparser coverage in lower-income and nonfederal countries (Sigman, 2014).

Figure 2 provides summary information on expenditure decentralization by country to illustrate the range of values across countries and over time. The ranges are presented for those countries that are the basis of the fixed effects equations. The values appear to be fairly stable in most countries. The countries experiencing the greatest changes over time are Belgium, Colombia and Hungary. Hungary experienced the greatest change, an increase followed

by stabilization in the later part of the period. The limited number of countries exhibiting large changes in decentralization means that results of fixed-effects equations should be interpreted with caution and are at best suggestive (Sigman, 2014).

Figure 2: Expenditure sub-national fiscal decentralization in different OECD countries



Source: Constructed by the author using Excel.

In addition, environmental quality has many indicators, such as carbon dioxide (Lee et al. 2008 ,Wei et al. 2019), PM2.5 (Zheng et al., 2005 , Dominici and Schwartz ,2019) and wastewater and sulfur dioxide (Zhang et al. 2014 , Xia et al., 2017).However, carbon dioxide emissions is the indicator that is used in our analysis due to data availability and it is also considered as the most commonly used indicator in the literature (Chen and Chang,2020).

Number of patents applications by residents is used as a proxy for technological innovation (Ibrahem,2020, Samargandi, 2017, Yii and Geetha , 2017), Energy consumption (Shahbaz et al.,2013 and Iwata et al., 2012) and Gross domestic product (Iwata et al. 2012, Meyer et al.2003 and Ibrahiem ,2016), are considered as important variables that affects environmental pollution in the literature.

Co2 emissions, Gross domestic product, Number of patents applications by residents' data are obtained from the World Bank data, 2021. Co2 emissions are expressed in kiloton and Gross domestic product data is expressed in constant 2017 national prices (in mil. 2017US$) and Patents applications by residents are expressed in units. Expenditure decentralization data were obtained from IMF database. Energy consumption data were obtained from BP statistical review of world energy, and its values are expressed in million tones oil equivalent. All variables have also been converted to natural logarithm in order to obtain consistent and efficient results. Table 1 shows the variables' names, definitions and sources.

Table 1: Variables' names, definitions and sources

Variable	Definition	Source
Co2 emissions	Carbon dioxide emissions are those stemming from the burning of fossil fuels and the manufacture of cement. They include carbon dioxide produced during consumption of solid, liquid, and gas fuels and gas flaring.	World Bank
Real Gross domestic product (RGDP)	Real GDP at constant 2017 national prices (in mil. 2017US$)	Penn World Tables version 10.0
Fiscal decentralization (FD)	Expenditure decentralization is the indicator that is used in our study and it is defined as the ratio of subnational (state, provincial, and local) government spending to total governmental spending, netting out intergovernmental transfers.	IMF database
Energy consumption (EC)	Energy consumption expressed in Million tonnes oil equivalent	British Petroleum statistical review of world energy
Patent	Number of patents applications by residents	World Bank

It should be noted also that the summary statistics for each variable is presented in table 2 but it should be noted that the summary statistics is calculated for our complete data.

Table 2: Descriptive statistics for complete data

Variable	Observations	Mean	Standard Deviation	Min	Max
Co2 emissions	198	441338	1047595	1860	5392870
Fiscal Decentralization	198	.3276635	.1517398	.0963861	.6891105
Real GDP	198	1778204	3791290	13011.12	2.01e+07
Energy consumption	198	201.0655	457.8183	3.457587	2300.64
Patent	198	29040.82	78399.23	20	295327

Source: Calculated by the author using Stata.

Estimation Method

In panel data analysis, unobserved heterogeneity across units is an integral part. This is sometimes called the unobserved individual-specific effect or the fixed effect and is taken to be constant over time (Greene, 2002). Applying pooled OLS that ignores the panel structure of data yields biased and inconsistent estimators (Greene, 2002; Wooldridge, 2012). Two commonly used approaches of controlling for this time-constant unobserved effect are fixed effects (FE) and random effects (RE). In the fixed effects model, the unobserved heterogeneity can correlate with the explanatory variables. Fixed effects method solves this by using transformation that removes the unobserved effect prior to estimation. However, one limitation of the fixed effects model is that it cannot examine the effect of time-invariant explanatory variable since time-constant variables are cancelled by the fixed effects transformation (Wooldridge, 2012). Unlike the fixed effects, the random effects suppose that the unobserved effect is random and is not correlated with the independent variables (Greene, 2002). If the control variables in our equation are good, any remaining heterogeneity that are not accounted for can be assumed to only cause serial correlation in the composite error term, but it does not induce correlation between the composite errors

and the regressors (Wooldridge, 2012). In practice, both techniques are applied then statistically significant differences in the coefficients of regressors are tested using the Hausman test (Wooldridge, 2012).

Empirical Results

In this section, the estimation results of the linear model are presented and discussed. Then, the estimation results of the second model after adding the second order of real gross domestic product and the interaction term between fiscal decentralization and real gross domestic product are presented and discussed.

Model I estimates

Pooled OLS, FE, RE are estimated. At first, the existence of individual-specific effect is tested to decide whether to use panel data models or pooled OLS. Breusch and Pagan's (1980) Lagrange multiplier (LM) test is used to test for random effects and choose between RE and OLS. It examines if individual-specific variance components are zero. The null hypothesis is rejected. Accordingly, the random effects model is the appropriate model. In order to determine which estimation model to use in estimating the panel data the Hausman test is run to choose between the fixed effect (FE) and random effect (RE) models. The null hypothesis is rejected at 1 percent significance levels le revealing that the fixed effect model is the appropriate model.In addition to that, The F-test reported at the bottom of FE estimates table is then used to test for fixed effects. The null hypothesis is that fixed effect does not exist. The null hypothesis is rejected which indicates that FE should be used (Torres,2007, Cameron and Trivedi,2010) .

Cross section dependence, serial correlation and heteroskedasticity are then tested for the fixed effect model, cross-sectional dependence is tested using the pesaran CD test. It suggests that the null hypothesis that there is no cross-sectional dependence is not rejected at 1 percent significance level. Thus, there is no cross-section dependence problem (De Hoyos and Saratidis. 2006). Also, a modified Wooldridge test for serial correlation is employed. The null hypothesis of no serial correlation is rejected at 1 percent significance level, implying that serial correlation problem is detected (Drukker. 2003). The modified Wald test for groupwise heteroskedasticity by Greene (2000) is then used. It suggests that the null hypothesis that residuals are homoskedastic is rejected at percent significance level implying that hetroskedasticity problem exists. The diagnostic tests regarding heteroskedasticity and serial correlation reveal the presence of both issues. When heteroskedasticity and/or serial correlation exist in panel data models, estimates produced are consistent but the standard errors are biased and the results are inefficient (Drukker, 2003).Accordingly, robust standard errors are calculated to get accurate and valid statistical inference and the fixed effect model with robust standard error is the model to be used in the analysis (Arellano,1987).The diagnostic tests results for this model can be found in table 1 in the appendix.

As shown in Table (1), For FE estimates, magnitudes, signs and significance differ from RE and OLS estimates. For Real Gross Domestic Product coefficients, the magnitude as well as the signs is different, but the GDP coefficient is significant in the three model. For fiscal decentralization coefficients and patent coefficients, the magnitude, the signs and significance are different in the three models, in addition, for energy consumption coefficients, only the magnitude is different, but the sign and significance are the same in the three models. Since the FE model suffers from heteroskedasticity, FE model with cluster- robust SE is the model to be used in the rest of analysis. Fiscal decentralization indicator is found to possess a statistically insignificant effect on co2 emissions. This result supports the insignificant effect of fiscal decentralization on co2 emissions as indicated by He (2015). This insignificant effect might be due to the fact that the institutional set-up of fiscal decentralization are rare and confined to a few countries only in OECD countries (Hansjörg and Junghun,2016).

Regarding Real GDP, it has a significant negative effect on co2 emissions with .320 percent decrease in co2 emissions as Real GDP increases by one percent. This result is consistent with the results of Liu (2005) and can be justified on the ground the composition and the technical effect may outweigh the scale effect. Since OECD countries have witnessed a structural change from energy intensive industry to technology intensive industry since they have excessive technological progress at the same time, hence the composition effect and technical effect reduce co2 emissions in a way that outweighs the opposite scale effect (Komen et al., 1997, Panayotou, 1993, Iwata et al., 2021).

Energy consumption is found to have a statistically significant positive effect on co2 emissions with .879 percent increase in co2 emissions as energy consumption increases by one percent. This result is consistent with the findings of Salari et al. (2021), Shahbaz et al.(2013),and Iwata et al.(2021).

Patent is found to have a statistically significant positive effect on co2 emissions with .036 percent increase in co2 emissions as patent increase by one percent. This result is consistent with the results of Wang and Wei (2020) and can be justified on the ground that OECD countries are at a level of excessive technological progress, which will have a rebound effect and increase CO2 emissions (Wang and Wei, 2020).

Table 3: Model I estimates of the effect of fiscal decentralization on co2 emissions (OLS,FE,RE)

Dependent Variable: Ln CO2 emissions	OLS	FE	RE	FE (Cluster-robust SE)
Ln (RGDP)	.4234831*** (.0628157)	-.3202435*** (.0554497)	-.2243017*** (.0586217)	-.3202435** (.1125759)
Ln (FD)	-.3001118*** (.0560871)	.0049431 (.0491879)	-.0366151 (.0526094)	.0049431 (.0609241)
Ln(Patent)	-.0281305 (.0292007)	.0360947** (.0170794)	.0454764** (.0185597)	.0360947* (.0194184)
Ln (EC)	.7584432*** (.0713863)	.879071*** (.0823853)	1.054979*** (.079534)	.879071*** (.1556573)
Constant	2.690701*** (.5644681)	11.93868*** (.6231605)	9.824134*** (.607119)	11.93868*** (1.291561)

Source: Calculated by the author using Stata.

Standard errors in parentheses

*** P<0.01, ** P<0.05,*P<0.1

Model II estimates

Pooled OLS, FE, RE are estimated also for model II. At first, Breusch and Pagan's (1980) Lagrange multiplier (LM) test is also implemented, and the null hypothesis is rejected. Accordingly, the random effect model is the appropriate model. In order to determine which estimation model to use in estimating the panel data, the Hausman test is also run for model II and the null hypothesis is rejected at 1 percent significance level revealing that the fixed effect model is the appropriate model. In addition to that, The F-test reported at the bottom of FE estimates table is then used to test for fixed effects. The null hypothesis is rejected at1 percent significance level which indicates that FE should be used (Torres,2007, Cameron and Trivedi,2010).

Cross sectional dependence, serial correlation and heteroskedasticity are then tested for the fixed effect model, cross-sectional dependence is tested using the pesaran CD test. It is found that the null hypothesis is not rejected, thus there is no cross-sectional dependence problem (De Hoyos and Saratidis. 2006). Also, a modified Wooldridge test for serial correlation is employed. The null hypothesis is also rejected at 1 percent significance level, implying that serial correlation problem is detected (Drukker. 2003). The modified Wald test for groupwise heteroskedasticity by Greene (2000) is then used. It suggests that the null hypothesis that is also rejected at 1 percent significance level implying that hetroskedasticity problem exists. The diagnostic tests regarding heteroskedasticity and serial correlation reveal the presence of both issues. When heteroskedasticity and/or serial correlation exist in panel data models, estimates produced are consistent, but the standard errors are biased and the results are inefficient (Drukker, 2003). Accordingly, robust standard errors are calculated to get accurate and valid statistical inference and the fixed effect model with robust standard error is the model to be used (Arellano,1987). The diagnostic tests results for this model can be found in table 2 in the appendix.

As shown in Table (2), For FE estimates, magnitudes, signs and significance differ from RE and OLS estimates. For Real Gross Domestic Product coefficients, the magnitude, the signs and the significance are different, As the RGDP coefficient is significant only in the pooled regression model. For the second order of GDP, the magnitude as well as the sign is different, but the second order of RGDP is not significant in the three models. For energy

consumption coefficients, only the magnitude is different, but the sign and significance are the same in the three models. In addition, for fiscal decentralization coefficients, patent coefficients and the interaction term coefficients, the magnitude, the signs and significance are different in the three models. Since the FE model suffers from heteroskedasticity and serial correlation, FE model with cluster- robust SE is the model to be used in the rest of analysis.

Fiscal decentralization indicator is found to possess a statistically insignificant effect on co2 emissions. This result supports the insignificant effect of fiscal decentralization on co2 emissions, and this result is consistent with the results of He (2015).

Regarding the first order and the second order of Real GDP, they have insignificant effects on co2 emissions. Hence, there is no evidence of the existence of the EKC. This result is consistent with the results of Iwata et al. (2012), Meyer et al. (2003) and Ibrahiem (2016) .

The interaction term between fiscal decentralization and Real Gross Domestic Product is added to investigate the role of the indirect channel through which fiscal decentralization affects economic growth and hence co2 emissions. The interaction term coefficient is found to be insignificant, and its insignificance indicates that the effect of fiscal decentralization on co2 emissions does not depend on the level of income in OECD countries.

Energy consumption is found to have a statistically significant positive effect on co2 emissions with .850 percent increase in co2 emissions as energy consumption increases by one percent. This result is consistent with the findings of Salari et al.(2021), Shahbaz et al.(2013) and Iwata et al. (2012).

Patent is found to have a statistically significant positive effect on co2 emissions with .037 percent increase in co2 emissions as patent increase by one percent. This result is consistent with the results of Wang and Wei (2020).

Table 4: Model II estimates of the effect of fiscal decentralization on co2 emissions (OLS,FE,RE)

Dependent Variable: Ln CO2 emissions	OLS	RE	FE	FE (Cluster-robust SE)
Ln (RGDP)	.9036092*** (.2525172)	-.0249011 (.3897487)	-.5577402 (.4042446)	-.5577402 (.8469584)
(Ln (RGDP))^2	-.0096857 (.0085935)	-.0084403 (.0140542)	.0047261 (.0145529)	.0047261 (.0296711)
Ln (FD)	-2.250143*** (.7775623)	.0842594 (.5829791)	1.041141 (.5670754)	1.041141 (1.241806)
Ln(Patent)	-.0323185 (.029669)	.0493069** (.0195351)	.0376589** (.0183234)	.0376589** (.0165588)
Ln (EC)	.7141742*** (.079549)	1.046147*** (.0799527)	.8504201*** (.0838977)	.8504201*** (.1745878)
Ln (FD*RGDP)	.1467397** (.0583655)	-.0094428 (.0458535)	-.0819619* (.0446757)	-.0819619 (.0993071)
Constant	-1.783407 (2.04381)	8.689639*** (2.756066)	14.31209*** (2.87289)	14.31209** (6.19098)

Source: Calculated by the author using Stata.

Standard errors in parentheses

*** P<0.01, ** P<0.05,*P<0.1

Testing for endogeneity

An issue commonly related to panel data models is endogeneity. If it exists, estimates are inconsistent. The standard technique to correct for endogeneity is instrumental variables or two-stage least-squares. A good instrument must satisfy two main requirements: (1) the instrument must be correlated with the endogenous explanatory variable i.e. the instrument must be relevant and (2) the instrument cannot be correlated with the error term in equation. i.e. the instrument must be exogenous (Wooldridge, 2012)

There is a possibility that fiscal decentralization proxies are endogenous variables (He, 2015). In addition, fiscal decentralization may also influence environmental pollution via other channels. To overcome this issue, we applied the 2SLS estimations, which are commonly used in these cases. To do so, we used two instrumental variables based on the previous literature in this field. It is well known that finding a valid instrument in panel data is a challenge. Therefore, we used lagged fiscal decentralization proxies as an instrument. The lagged value is arguably more exogenous (Perez-Sebastian and Raveh, 2016). The lagged real gross domestic product was used also as an instrument since it is highly correlated with fiscal decentralization as indicated by Davoodi and Zou (1998) , Lin and Liu(2000) and Martinez-Vazquez and McNab(2003).

In the first model, endogenity of fiscal decentralization is tested using Durbin-Wu-Hausman endogeneity test, the null hypothesis for which states that the variables are exogenous. A rejection of the null indicates that endogenous regressors' effects on the estimates are meaningful, and instrumental variables techniques are required (Baum et al.,2007). The results revealed that variables are exogenous due to the rejection of the alternative hypothesis when considering lagged decentralization and lagged gross domestic product as instruments. Hence there is no need to use the two stages least squares.

In the second model, endogenity of fiscal decentralization is tested using Durbin-Wu-Hausman endogeneity test when considering lagged decentralization and lagged gross domestic product as instruments. The null hypothesis is rejected indicating that there is endogeneity problem. thus, the two stage least squares is the best model to be used in the analysis. Table 4 provides the estimates of the two stage least squares models when considering lagged decentralization and real gross domestic product as instruments.

Table 5: Two stages least squares estimates

Dependent Variable: Ln CO2 emissions	2SLS (lagged decentralization and real gross domestic product as instruments)
Ln (RGDP)	1.491025*** (.3634723)
(Ln (RGDP))^2	-.019491** (.0097774)
Ln (FD)	-4.977321 (1.413505)
Ln(Patent)	-.039966 (.0302596)
Ln (EC)	.6398657*** (.0855368)
Ln (FD*RGDP)	.350617*** (.1059159)
Constant	-7.553023** (3.25512)

Source: Calculated by the author using Stata.

Standard errors in parentheses

*** P<0.01, ** P<0.05, *P<0.1

Fiscal decentralization indicator is found to possess a statistically significant negative effect on co2 emissions with 4.97 percent decrease in co2 emissions as expenditure fiscal decentralization increases by one percent. This result supports the results of Chen and Chang (2020), Hao et al. (2020) and Yang et al. (2020) and can be justified on the ground that competition among lower state level may lead to excessive environmental protection and hence lower co2 emissions (Wellisch ,1995).

Regarding the first order of Real GDP, it has a significant positive effect on co2 emissions. The second order of Real GDP has a significant negative effect on co2 emissions.Hence, there is an evidence of the existence of the EKC. This result is consistent with the results of Shafik and Bandyopadhyay (1992), Panayotou (1993) and Holtz-Eakin and Selden (1995).The existence of the environmental Kuznets curve in OECD can be justified on the ground that the increase in GDP is associated with the increase in co2 emissions at early stages of growth as the

scale effect outweighs the composition and technical effect . In advanced stages of economic growth, the opposite is true as OECD countries have witnessed a structural change from energy intensive industry to technology intensive industry and they have excessive technological progress at the same time (Komen et al., 1997, Panayotou, 1993, Iwata et al., 2021).

The interaction term coefficient is found to be significant, and its significance indicates that the effect of fiscal decentralization on co2 emissions depends on the level of income in OECD countries. The effect of fiscal decentralization on Co2 emissions is negative but this effect is reduced as the level of income increases.

Energy consumption is found to have statistically significant positive effect on co2 emissions with .639 percent increase in co2 emissions as energy consumption increases by one percent. This result is consistent with the findings of Salari et al.(2021), Shahbaz et al.(2013) and Iwata et al. (2012).

Patent is found to have a statistically significant negative effect on co2 emissions with .039 percent decrease in co2 emissions as patent increase by one percent. This negative effect result is consistent with the results of Ali et al. (2016), Ahmed et al. (2016) and Ibrahiem (2020) .This result can be justified on the ground that the concentration of environment related technologies in OECD countries have been shifted from improving energy efficiency to reducing carbon emissions directly despite their level of excessive technological progress, which will have a rebound effect and increase CO2 emissions (Wang and Wei, 2020).

CONCLUSION AND POLICY IMPLICATIONS

The debate regarding whether fiscal decentralization can effectively increase or mitigate carbon dioxide (CO2) emissions has gained increasing attention, although there is little empirical evidence to support this issue. Different studies on this effect concluded different results and hence the effect of fiscal decentralization on environmental quality can be positive, negative or insignificant. The positive effect (i.e., the phenomenon of a 'race to the top') can be justified on the ground that a high degree of fiscal decentralization improves environmental quality due to the excessive environmental protection imposed by lower units of the state due competition among them (Chen and Chang,2020).On the other hand, The negative and insignificant effect of fiscal decentralization on environmental quality (i.e., the phenomenon of a 'race to the bottom) can be justified on the ground that local governments are more inclined to create more space for economic development by weakening local environmental regulations and, thus, promoting the increase of CO2 emissions and the inefficient institutional set-up required for fiscal decentralization (Hansjörg and Junghun,2016 , Khan et al., 2021).

This paper is regarded as a first attempt to investigate the effect of fiscal decentralization on environmental quality in 22 OECD countries over the period from 2010 to 2018. The paper also tried to investigate this effect of fiscal decentralization on environmental quality through economic growth as indirect channel.

The empirical evidence in this paper does not suggest higher overall pollution levels with greater decentralization. Thus, the results do support the existence of competition among local governments in realizing environmental protection. The negative effect of fiscal decentralization on co2 emissions does depend on the level of income in OECD countries and this effect is reduced as the level of income increases. I t is also found that energy consumption decreases environmental quality while technological innovation improves environmental quality.

On the basis of these conclusions, some important and straightforward policy implications are as follows. First, at the current stage of OECD countries' economic growth, policy makers should promote the level of fiscal decentralization is beneficial to the environment. However, at higher stages of economic growth, promoting fiscal decentralization will not be necessary since it effect in mitigating co2 emissions is reduced with economic growth (Hoa et al.,2019). Second, policy makers should focus on improving institutional quality required for fiscal decentralization as it guarantees the 'race to the top' generated by an increase in the level of fiscal decentralization (Khan et al., 2021). Third, a high level of investment in R&D and the environment related technologies in OECD countries should be kept directed to reducing carbon emissions and improving energy efficiency at the same time (Wang and Wei, 2020).

Future research should focus on giving much attention to investigating the effect of fiscal decentralization on environmental quality through different indirect channels. Future research should also focus on adding other control variables in the model such as institutional quality and human capital as these variables may have an

important effect on environmental quality and on investigating this effect on different groups of countries such as G7,G8 and G20 (Khan et al.,2021).

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Appendix

Table 1: Model I diagnostic tests

Test	Test statistic	P-Value
Pesaran CD test	-1.491	0.1360
The modified Wald test for groupwise heteroskedasticity	1191.74	0.0000
The modified Wooldridge test for serial correlation	25.129	0.0001
Breusch and Pagan Lagrangian multiplier test for random effects	728.35	0.0000
Hausman test	40.17	0.0000
Durbin-Wu-Hausman endogeneity test	.309448	0.5787

Source: Calculated by the author using Stata.

Table 2: Model II diagnostic tests

Test	Test statistic	P-Value
Pesaran CD test	-1.463	0.1434
The modified Wald test for groupwise heteroskedasticity	1269.71	0.0000
The modified Wooldridge test for serial correlation	24.735	0.0001
Breusch and Pagan Lagrangian multiplier test for random effects	718.54	0.0000
Hausman test	50.83	0.0000
Durbin-Wu-Hausman endogeneity test	5.69516	0.0180

Source: Calculated by the author using Stata.

A STUDY OF AN AWARENESS OF BANKING RELATED KNOWLEDGE AND UTILITY AMONG SELECTED COMMUNITY GROUPS IN YEMEN

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Abstract

Focusing on the Hadramout Governorate, this study explores the banking-related habits and knowledge of a chosen number of Yemeni community groups. The study intends to accomplish two main goals: to evaluate the level of banking awareness across various community groups and to examine how age, income, and educational attainment affect the comprehension of banking ideas. Respondents to the survey include self-employed people, university students, and labourers in both urban and rural areas. Purposive sampling is used in the study technique, and 260 completed questionnaires were gathered through stakeholder conversations and follow-up meetings. This research aims to improve banking accessibility and knowledge in Yemen by offering insightful information on the financial practices of various community groups. According to the hypothesis, there may not be a significant relationship between banking knowledge and characteristics like age, income, or educational background among specific population groups. The analysis suggests a positive correlation between educational qualifications and having a bank account among selected community groups in Yemen.

Keywords: ***Banking awareness, Financial inclusion, Digital banking, Financial literacy.***

INTRODUCTION

The financial industry, namely banking establishments, consistently adjusts to the dynamic socio-economic landscape. This dynamic demands a thorough comprehension of banking-related information and capabilities. Banks have been present on college and university campuses in recent years, providing a physical presence to ease financial transactions, particularly fee payments. Concurrently, marketing campaigns, which frequently take the form of canopies, highlight how crucial it is strategically to interact with the tech-savvy population in these educational districts. These programmes reflect the banks' dedication to staying relevant in an increasingly digital environment. The smooth incorporation of technology into day-to-day operations is a noteworthy advancement in financial services. Formerly dependent on in-person meetings, bank statements now operate beyond conventional boundaries. ATMs and net banking have become essential to obtaining financial data, demonstrating a paradigm shift favouring digitalisation. This confluence of technologies makes it easier for people to handle transactions from a distance, greatly influencing the traditional way of doing things. The modern banking industry provides various accounts designed to meet certain requirements. The introduction of smartphones has further transformed financial transactions. People may now transfer money, settle debts, and perform transactions while on the road. The services' adaptability shows a deliberate connection with the needs of a changing audience.

Since financial education affects labour patterns, income policies, and the general wellbeing of society, it is seen as essential for effective engagement in modern society. It is described as the capacity to comprehend and assess financial goods available on the market, especially regarding risks and rewards, to make well-informed decisions. Growing economies and emerging nations alike emphasise the importance of financial education because of the rise in complicated financial products and personal social security responsibilities. Financial education is seen from a regulatory standpoint as a way to encourage responsible banking and financial behaviours, which lessens the impact of market failure and empowers individuals. Financial education is presented as a driver of bettering people's lives, encouraging integrity in the market, and advancing economic growth via competitive and educated engagement. (Vaibhav Kumar Singh, 2022)

REVIEW OF LITERATURE

(Dr. Binod Pratap Singh, 2017) This article delves into the enhancement of both physical and intangible aspects surrounding banking products. The authors aim to raise awareness and create value beyond the core product by conducting research based on public knowledge of a primary bank scheme. The focus is cultivating relationships extending beyond basic offerings by incorporating tangible and intangible elements. Nidhi Gupta stresses the significance of measurement and control technology in ensuring the quality and value of these augmented services. Despite the availability of various facilities, the study reveals that limited awareness and hesitancy to utilise these services persist among people due to paperwork and record-keeping challenges. The paper underscores the need for banks to establish relationships that transcend core products and emphasises the role of measurement and control technology in ensuring service quality. Overall, the study seeks to increase public awareness of key bank schemes, addressing challenges related to low awareness and reluctance to avail of these services.

(Amutha, 2016) E-banking is seen as an advanced upgrade from previous electronic delivery systems, offering new business opportunities for banks. Key issues addressed in the research paper on e-banking include customer acceptance and satisfaction, services rendered, value added for consumers and banks, privacy concerns, profitability, operational risks, and competition from non-banking institutions. The study collected data from both primary and secondary sources in Tuticorin District of Tamilnadu. Primary data collected from the respondents, then analysed to derive insights and conclusions about consumer perceptions and expectations towards e-banking. whereas Secondary data collected from sources such as books, journals, newspapers, internet, and periodicals to supplement the primary data analysis. The study found that most bank customers in the Tuticorin District of Tamilnadu know all the banking services the banks offer. The main difficulties reported by respondents in using e-banking were a lack of knowledge about banking operations (50%), complexity of e-banking services (30%), and concerns about the risk associated with e-banking (12.22%). The researcher suggests that banks should take necessary steps to educate customers about new technologies and services offered by the banks, extend customer meeting time with bank officials, and adopt a friendly approach to retain existing customers and attract new ones. Moreover, banks should take necessary steps to educate customers about new technologies and services offered by the banks, extend customer meeting time with bank officials, and adopt a friendly approach to retain existing customers and attract new ones.

(Ágnes Csiszárik-Kocsir, 2017) The significance of financial knowledge and awareness cannot be overstated in the intricate landscape of globalised financial markets. The paper delves into the aftermath of the economic crisis, attributing a substantial role to borrowers lacking sufficient financial acumen. Their choices, often influenced by a lack of understanding, played a pivotal role in the crisis. Navigating the plethora of banking products requires stable financial knowledge, a facet underscored throughout the paper. The paper recognises the dual role played by the education system and financial institutions, particularly banks and central banks, in cultivating financial literacy. The Hungarian study is pertinent to gauge financial knowledge concerning banking products. The findings illuminate the need for enhanced financial literacy among individuals, a point where the education system and financial institutions can collaborate for substantial improvement. The paper draws compelling conclusions by examining the relationship between bank products and financial knowledge. The survey's results offer a snapshot of the financial knowledge landscape in Hungary, showcasing the need for improvement. The paper emphasises the joint responsibility of the education system and financial institutions in promoting financial literacy, a factor vital for success in the economic realm. Authored by Ágnes Csiszárik-Kocsir and János Varga, the paper elegantly weaves the intricate relationship between financial knowledge, banking products, and their broader implications. It is a testament to the importance of informed decision-making in an ever-evolving economic landscape.

Objectives of the Study

1. To know the banking-related knowledge of selected community groups in Yemen
2. To figure out the age, income and educational qualification impact on knowledge of banking concepts in selected community groups

RESEARCH METHODOLOGY

The study mainly focused on the community groups in Yemen Country. The research area of the study is Hadramout Governorate in Yemen. The study has chosen some rural and urban workers, boys and girls from

university, and some self-employed as respondents. Initially, the researcher called to all society stakeholders to discuss an important issue of financial inclusion. Then, the questionnaire was given to each person and taken back after the meeting. 260 respondents have refunded the questionnaire by putting answers in it. The purposive sampling method was used to find respondents from community groups. The study used the Chi-test for analysis of the data.

Hypothesis of the Study: There is no association of the Impact of age, income and education qualification factor on knowledge of banking concepts to selected community groups

Understanding Financial Literacy and Its Dimensions

A vital element of both individual and community financial wellbeing is financial literacy. It includes all of the information, abilities, and conduct needed to successfully manage finances, make wise financial decisions, and handle the intricacies of today's financial environment. This essay examines the various facets of financial literacy and how they affect people as individuals, groups, and economies. The following list includes the most well-liked Financial Literacy Dimensions:

Financial Knowledge

Financial literacy begins with a foundation of financial knowledge. This dimension encompasses understanding fundamental financial concepts such as budgeting, saving, investing, debt management, interest rates, and risk diversification. Individuals with firm financial knowledge are better equipped to make sound financial decisions and evaluate financial products and services. Having sufficient knowledge about banking services is essential for individuals to make informed decisions regarding their financial matters. Understanding key aspects such as interest rates, fees, terms, and conditions enables individuals to choose suitable products that align with their goals and preferences. It also helps them manage risks associated with borrowing or investing money effectively. (Shinde, 2013)

Financial Skills

Financial literacy goes beyond information to include using financial skills in practical situations. This dimension encompasses the aptitude for budget creation and adherence, financial product comparison, opportunity analysis, and risk management. People with financial skills can turn their knowledge into actionable financial decisions.

Financial Behavior

Individuals' decisions and actions about their financial knowledge and abilities are reflected in their financial behaviour. This dimension includes smart spending, consistent saving, on-time bill payments, and long-term financial planning, among other responsible financial practices. It also entails abstaining from excessive debt buildup and imprudent spending that might put one in financial hardship.

Financial Attitudes and Beliefs

Attitudes and beliefs significantly influence financial decisions and behaviours. This aspect of financial literacy includes people's perspectives on risk, money, and financial planning. An individual's overall financial wellbeing is influenced by their positive views about investing, saving, and long-term financial stability.

Implications of Financial Literacy Dimensions

High financial literacy puts one in a better position to accumulate money, attain financial stability, and weather financial shocks. They are more likely to make wise choices when borrowing money, investing, saving for retirement, and purchasing insurance. Furthermore, increased financial literacy promotes higher financial stability, less economic inequality, and increased general economic resilience, benefiting economies and communities. It is imperative to comprehend the multifaceted nature of financial literacy to create successful financial education efforts, strategies, and successful financial education programmes. Through tackling the aspects of financial knowledge, abilities, conduct, and mindsets, interested parties may foster a financial literacy culture that enables people to make knowledgeable financial choices and bolster the overall financial stability of the community. Knowing how to manage money well is one of the most crucial components of the need for financial education. People may easily accomplish their financial objectives by building a solid financial foundation by learning about

personal budgeting, saving, and investing. Furthermore, financial education may assist in avoiding the pitfall of unmanageable debt by teaching responsible debt management techniques. Additionally, financial education may contribute to raising knowledge of the need of future planning and financial sustainability. People may reduce financial risk and guarantee their long-term financial stability by knowing ideas like insurance and retirement planning. Communities and societies may become active participants in attaining economic development through financial healthcare, rather than only being consumers of financial services. Additionally, you may learn how to help lower poverty and unemployment rates by assisting people to manage their finances wisely and make profitable investments, leading to sustainable development. It is generally true that economic empowerment, economic inadequacy, unemployment, and a lack of economic supplies may all be attributed to education, especially financial education. Ongoing efforts must be made to improve this culture and allow everyone to acquire and hone their financial literacy. (R.Tiffany, 2018)

Financial education and sustainable development:

Financial education may support sustainable development in addition to monetary stability. Comprehensive development and sustained economic growth can be encouraged when people and communities are well-versed in wise financial resources and investment management. Consequently, financial education may benefit long-term social and environmental development and economic opportunity. One may argue that attaining financial stability and sustainable development requires financial education, which should be a crucial component of national and international economies and social policies. (D, 2016)

Financial wisdom and financial planning

Achieving one's and an organisation's financial objectives requires sound financial judgment and strategy. Some of their significances are as follows:

1. Reaching financial objectives: People and organisations may create sound plans and make prudent financial decisions.
2. Provide financial stability: Planning and using sound monetary judgment will help you stay out of trouble financially.
3. Lower debt and raise wealth: People and organisations may lower debt and raise wealth by practising sound financial management and financial literacy.
4. Achieving Financial Independence: The capacity to make unrestricted financial decisions and financial independence can be attained through financial knowledge and preparation.
5. Reducing financial stress: People and organisations may lessen financial stress and concern about financial problems by creating sound financial planning.
6. First, attaining financial objectives and guaranteeing stability and freedom from debt depend heavily on sound monetary judgement and preparation. (Binod Pratap Singh, 2017)

Understanding Banking Products

A range of banking products are offered, such as certificates of deposit (CDs), savings accounts, checking accounts, and loans. People may earn interest while safely storing their money in savings accounts. Funds for regular transactions can be easily accessed through checking accounts. Through loans, people can borrow money for various needs, such paying for schooling or a home. Every banking product has unique features and benefits to meet various demands. Savings accounts, for example, offer liquidity, while certificates of deposit (CDs) yield better returns over time. People must comprehend all of the terms and circumstances related to these products, including interest rates, minimum balance requirements, fees, and withdrawal limits. To get the most out of banking products, people should choose the best solutions for their requirements and financial objectives. This necessitates comparing several banks' or financial institutions' customer service standards, interest rates, fees, and fund accessibility. It is important to compare interest rates since small variations can greatly impact loan repayments or long-term savings. Comparing fees also avoids extra costs, which might reduce the possible benefits of utilising the product. For those looking to succeed financially, it is essential to understand the various banking products. It gives students the information they need to make wise choices about managing their finances by

saving, earning interest, establishing credit, and accomplishing particular goals. Through comprehension of the benefits and characteristics of each product and a comparative analysis of interest rates and fees across various banks or financial institutions, consumers may optimise their gains and eventually augment their financial prosperity. People are urged to learn about the items to make wise choices that may result in financial success. (Saniya Ansar, 2023)

Data Analysis

The questionnaire presented here serves as a vital instrument for conducting a comprehensive study on the awareness of banking-related knowledge and utility among selected community groups in Yemen. By targeting diverse demographic segments such as rural workers, urban workers, university students, and self-employed individuals, the questions aim to unravel nuanced insights into how these distinct groups approach and utilise banking services. Through a meticulous analysis of responses, the study endeavours to illuminate the varying degrees of awareness and utilisation of financial tools, from basic banking services to emergency funding strategies. This questionnaire lays the groundwork for a detailed exploration into the financial behaviours of the selected community groups, contributing valuable data to enhancing banking awareness and accessibility within the Yemeni context.

General Banking Awareness

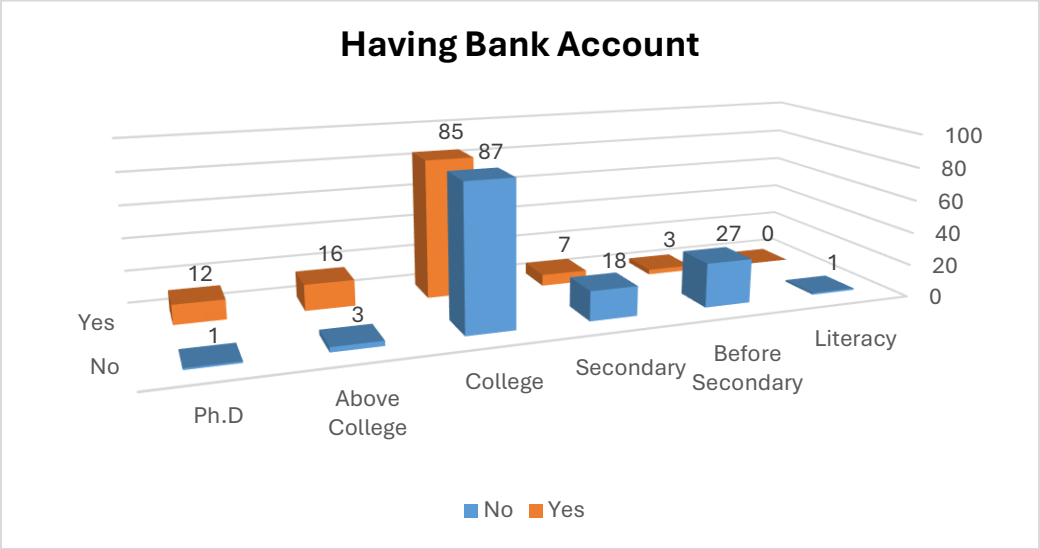


Figure 12: Having Bank Account

Factor	Calculated X2 Value	Table Value	D.F	Remarks
Having Bank Account	42.635	11.070	5	Significant at 5%

The data indicates a positive correlation between educational qualifications and bank accounts. As the level of education increases, the likelihood of having a bank account also increases. The highest number of individuals with a bank account is observed in the "College" category, followed by "Above College" and "Ph.D." The "Before Secondary" category has fewer individuals with bank accounts than higher educational levels but still shows a majority with bank accounts. The possession of a bank account is correlated with the level of education. The null hypothesis is rejected, and the alternative hypothesis is accepted, therefore; the P-value is (0.0**00**), which is significant at 5%.

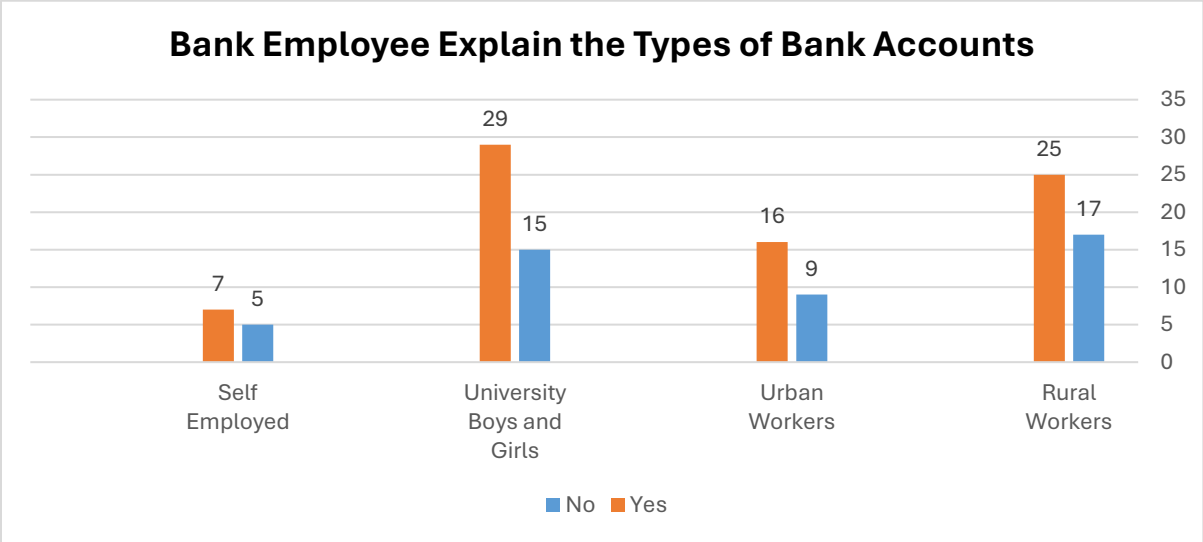


Figure 2: Bank Employee Explain the Types of Bank Accounts

Factor	Calculated X2 Value	Table Value	D.F	Remarks
Bank Employee Explain the Types of Bank Accounts	0.490	7.815	3	Not Significant at 5%

The data suggests a relatively lower proportion of self-employed individuals reporting that bank employees explain the types of bank accounts. Across all community groups, most respondents report that bank employees explain the types of bank accounts. The highest proportion of respondents indicating that bank employees explain the types of bank accounts is observed in the "University Boys and Girls" category, followed by "Rural Workers" and "Urban Workers." The "Self-Employed" category has a lower proportion, suggesting there might be room for improvement in communication about bank account types for this group. The statement "bank employees explaining the types of bank accounts" with community groups are unrelated. Consequently, the null hypothesis is accepted; at 5%, the P-value of 0.9021 is not significant.

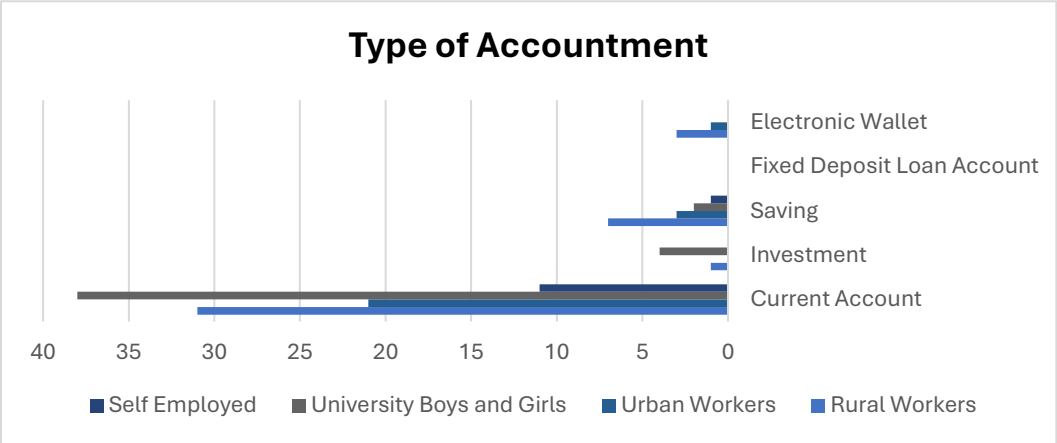


Figure 13: Type of Accountment

Factor	Calculated X2 Value	Table Value	D.F	Remarks
Type of Accountment	12.037	21.026	12	Not Significant at 5%

In analysing the data on the type of accounts held by diverse demographic groups, a clear pattern emerges, shedding light on distinct financial preferences and behaviours. Current accounts are universally prevalent, with university

students exhibiting the highest usage, emphasising the importance of convenient day-to-day transactions. Interestingly, rural workers show a heightened engagement in fixed deposit/loan accounts, suggesting a financial strategy distinct from other groups. Investment/saving accounts find favour among university students, indicating a focus on long-term financial planning. However, electronic wallets appear underutilised across all surveyed groups, signalling an opportunity for increased awareness and adoption. This comparative analysis not only provides insights into the financial habits of various segments but also suggests potential areas for targeted financial services and educational campaigns to better align with the needs and preferences of each demographic. It is observed that the kind of account and the community group do not correlate. Consequently, the null hypothesis is accepted; at 5%, the P-value of (0.211) is not significant.

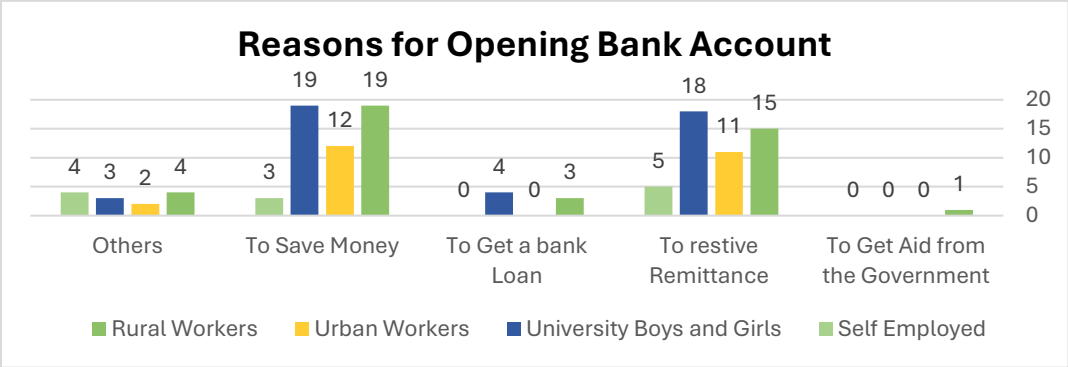


Figure 14: Reasons for Opening Bank Account

Factor	Calculated X2 Value	Table Value	D.F	Remarks
Reasons for Opening Bank Account	13.159	21.026	12	Not Significant at 5%

The reasons for opening bank accounts exhibit diverse patterns across various occupational groups. While saving money emerges as a standard and significant motivation among Rural Workers, Urban Workers, University Boys and Girls, and Self-employed individuals, the emphasis on receiving remittances is notably higher among University Boys and Girls. Additionally, the motivation to open a bank account to obtain a loan is more prevalent among Rural Workers and University Boys and Girls, suggesting varying financial needs and aspirations. The "Others" category reflects additional reasons not explicitly specified, with Rural Workers and self-employed individuals showing higher counts. Overall, this comparative analysis highlights the nuanced financial inclinations of different occupational groups, emphasising the multifaceted nature of motivations for engaging with banking services in this context. The community group and the motivations behind getting a bank account are unrelated. As a result, the null hypothesis is accepted; the P-value, at 5%, is (0.358), not significant.

Financial Inclusion and Accessibility

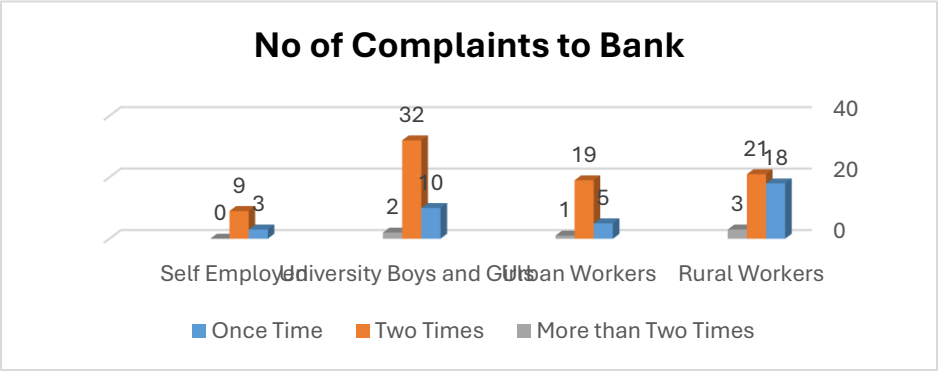


Figure 15: No of Complaints to Bank

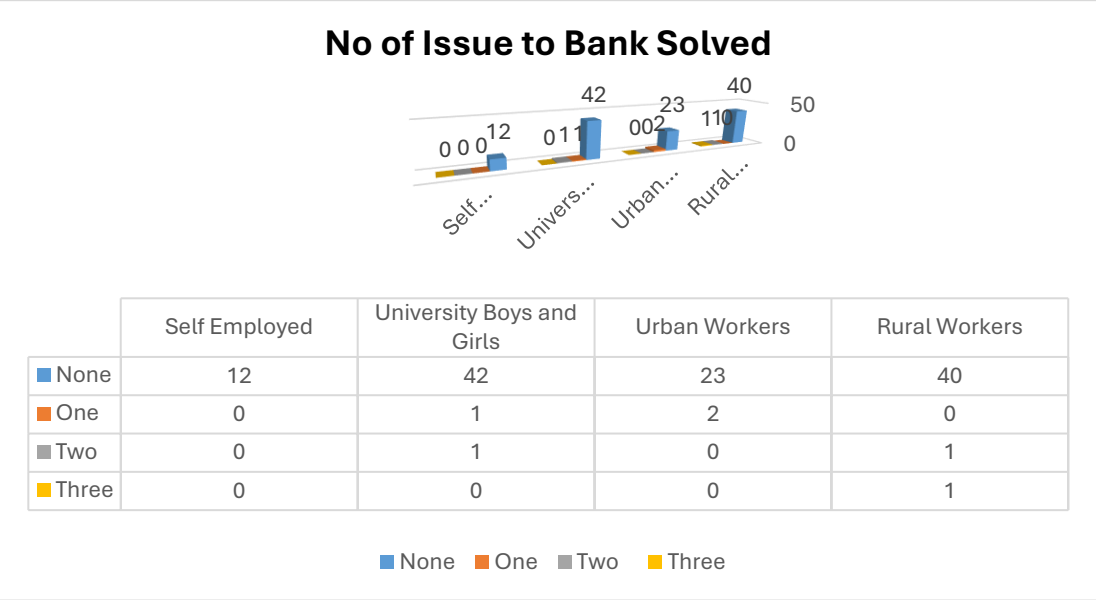
Factor	Calculated X2 Value	Table Value	D.F	Remarks
No of Complaints to Bank	7.640	12.592	6	Not Significant at 5%

Self-employed individuals have fewer complaints overall, with no reporting more than twice.

Urban workers and university boys and girls tend to have higher frequencies of complaints compared to rural workers and self-employed individuals.

- The "Two Times" category consistently shows the highest frequency of complaints across all groups.

- Self-employed individuals have the lowest overall complaints, with none reporting more than two times. The data suggests that specific challenges or issues faced by urban workers and university students might lead to more complaints. As a result, there is no association between the community group and the number of complaints to the bank. Therefore, the null hypothesis is accepted; the P-value is (0.266), insignificant at 5%.



	Self Employed	University Boys and Girls	Urban Workers	Rural Workers
None	12	42	23	40
One	0	1	2	0
Two	0	1	0	1
Three	0	0	0	1

Figure 16: No of Issue to Bank Solved

Factor	Calculated X2 Value	Table Value	D.F	Remarks
No of Issue to Bank Solved	16.919	12.592	9	Not Significant at 5%

Self-employed individuals reported the least number of complaints, with 12 reporting none. - The data suggests that many individuals across all groups reported no complaints to the bank. - Rural workers and university boys and girls have the highest number of individuals reporting no complaints. Urban workers have a slightly higher number reporting one complaint than other groups. Self-employed individuals have the least number of reported complaints overall. The P-value is (0.602), which is not significant at the 5% level, indicating no correlation between the community group and the complaints that the bank resolves. As a result, the null hypothesis is accepted.

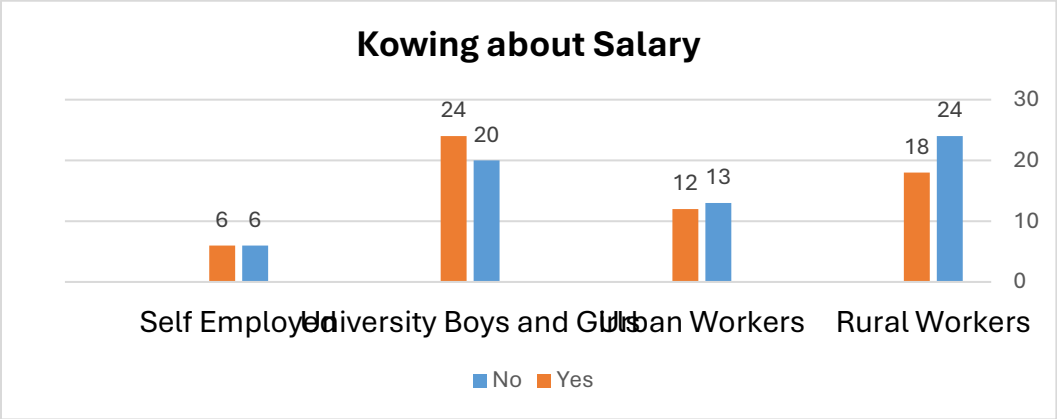


Figure 7: Kowing about Salary

Factor	Calculated X2 Value	Table Value	D.F	Remarks
Kowing about Salary Account Benefit	**1.188**	7.815	**3**	Not Significant at 5%

Among the different groups, university boys and girls have the highest awareness of salary and non-salary account benefits. Rural and urban workers show varied levels of awareness, with rural workers having more awareness than urban workers. Self-employed individuals exhibit an equal distribution of awareness and non-awareness.

Educational background (as seen in the university group) seems to influence awareness of salary account and non-salary account benefits positively. The null hypothesis is accepted, so the P-value is (0.756), which is not significant at the 5% level, indicating no correlation between community group and knowledge of salary account benefits.

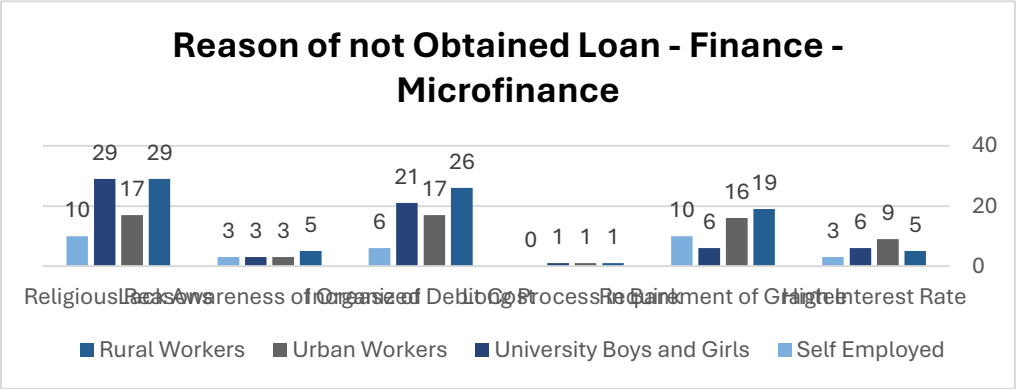


Figure 8: Reason of not Obtained Loan - Finance - Microfinance

Factor	Calculated X2 Value	Table Value	D.F	Remarks
Reason of not Obtained Loan - Finance - Microfinance	15.394	24.996	15	Not Significant at 5%

The data indicates that many individuals from all categories did not obtain loans due to concerns about high-interest rates. The requirement of a guarantee is a prominent reason for not obtaining loans, with a higher count in the Urban Workers category. The data suggests that the length of the process in the bank is not a major barrier for most categories. Many individuals, especially Rural Workers and University Boys and Girls, did not obtain loans due to concerns about increased debt costs. Many individuals cited a lack of awareness of organised financial systems, particularly in the Rural Workers category. Religious reasons are significant for not obtaining loans, particularly among Rural Workers and University Boys and Girls. There is no link between the community group

and the cause for not getting a loan from the bank. As a result, the null hypothesis is accepted; the P-value, at 5%, is (0.423), not significant.

Digital Banking Usage

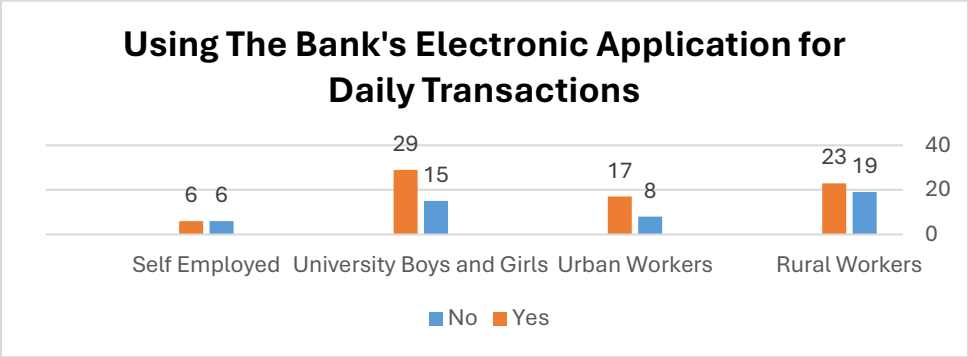


Figure 9: Using The Bank's Electronic Application for Daily Transactions

Factor	Calculated X2 Value	Table Value	D.F	Remarks
Using Wallet Based Digital	6.35	12.592	6	Not Significant at 5%

Among the different groups, university boys and girls have the highest usage of the bank's electronic application for daily transactions (Yes: 29). Urban workers also show a substantial usage of electronic applications compared to rural workers. Self-employed individuals have equal users and non-users of the bank's electronic application for daily transactions. There is no connection between using the bank's electronic application for daily transactions and community groups. The P-value is (0.521), which is not significant at 5%, indicating that the null hypothesis is accepted.

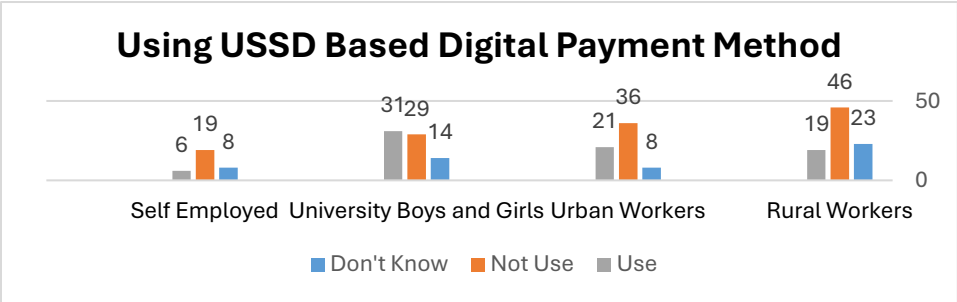


Figure 10: Using USSD Based Digital Payment Method

Factor	Calculated X2 Value	Table Value	D.F	Remarks
Using USSD Based Digital Payment Method	13.699	12.592	6	Significant at 5%

The analysis suggests variations in the awareness and usage of USSD-based digital payment methods across different demographic groups. While university students show a higher level of awareness and usage, rural and self-employed individuals exhibit lower levels of adoption. Many rural workers (46 out of 88 respondents) don't seem to be aware or familiar with USSD-based digital payment methods. Only 19 out of 88 respondents from rural areas actively use USSD-based digital payment methods. Similar to rural workers, a noteworthy number of urban workers (36 out of 65 respondents) are unfamiliar with USSD-based digital payment methods. There is a relatively higher level of awareness among university boys and girls compared to the previous groups, with 31 out of 74 actively using USSD-based digital payment methods. Among self-employed individuals, a lower proportion actively uses USSD-based digital payment methods, with only 6 out of 33 respondents. There is an association between the type of income and the use of the USSD-based digital payment method. The null hypothesis is rejected, and the alternative hypothesis is accepted. Therefore, the P-value is (0.007), significant at 5%.

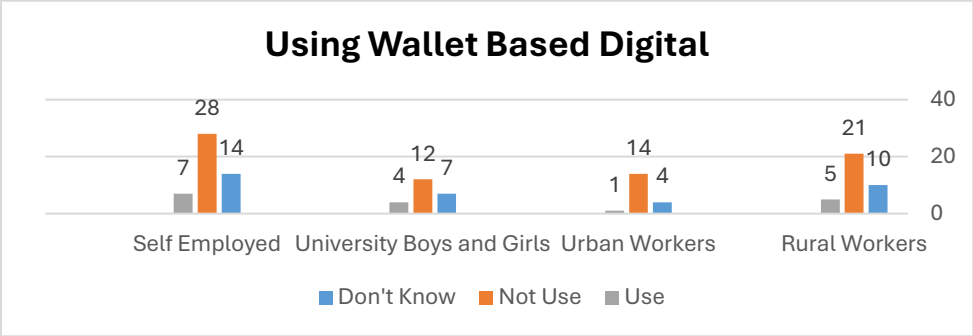


Figure 11: Using Wallet Based Digital

Factor	Calculated X2 Value	Table Value	D.F	Remarks
Using Wallet Based Digital	6.35	12.592	6	Not Significant at 5%

The self-employed group has a comparatively higher usage rate than other groups. Awareness and usage among university boys and girls are relatively better than among workers. The majority of rural workers either do not use wallet-based digital services (21) or are unsure about them (10), while a smaller group (5) actively uses such services. Urban workers also show a trend similar to rural workers, with a significant portion not using (14) or being unsure (4) about wallet-based digital services. Only a minimal number (1) actively use these services. A relatively higher number of university boys and girls are aware of or using wallet-based digital services than the workforce. However, a significant portion (12) still does not use them. Like other groups, self-employed individuals have a considerable portion that does not use (28) or is unsure (14) about wallet-based digital services. However, a relatively higher number (7) actively uses these services. The community group and wallet-based digital payment systems aren't related. Since the null hypothesis is accepted, the P-value is (0.385), which is not significant at 5%.

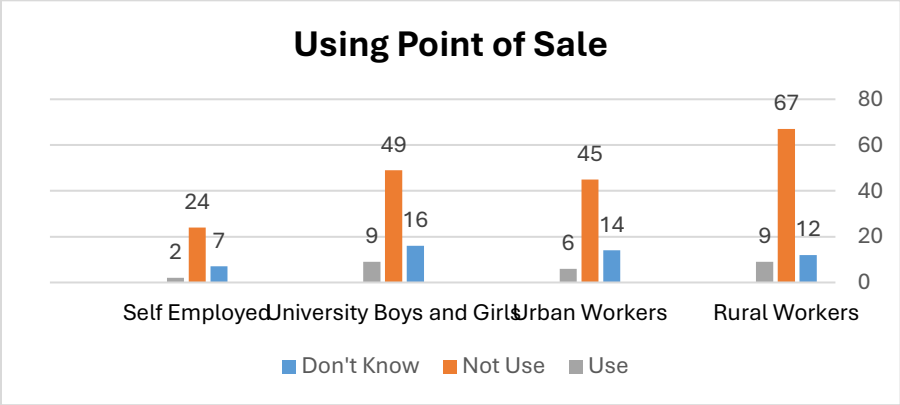


Figure 12: Using Point of Sale

Factor	Calculated X2 Value	Table Value	D.F	Remarks
Point of Sale	3.425	12.592	6	Not Significant at 5%

The majority of rural workers (67%) do not use Point of Sale, while 9% actively use it. A notable percentage (12%) is unsure or doesn't know about POS. Like rural workers, a significant portion of urban workers (45%) do not use Point of Sale. The usage rate is relatively low at 6%, and 14% are unsure or don't know about POS. Most university students (49%) do not use Point of Sale, while 9% actively use it. A notable percentage (16%) is unsure or doesn't know about POS. Self-employed individuals show a relatively low usage of Point of Sale, with 24% not using it. Only 2% actively use POS, and 7% are unsure or don't know about it. The highest usage is among university boys and girls (9%), while the lowest is among self-employed individuals (2%). There is no correlation between the Point-of-Sale users and the community group. Since the null hypothesis is accepted, the P-value is (0.754), which is not significant at 5%.

Financial Savings and Emergency Funding

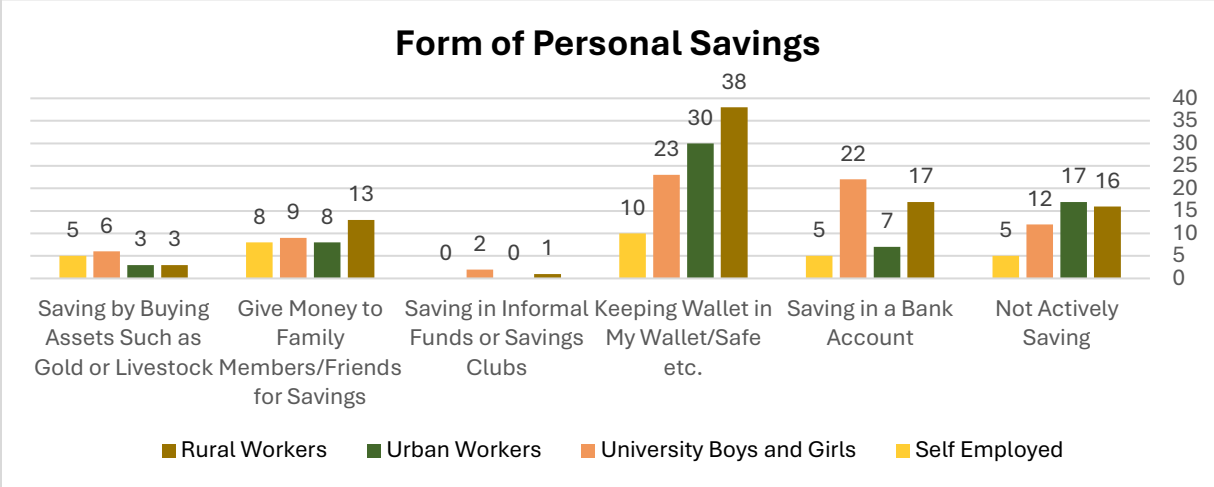


Figure 13: Form of Personal Savings

Notable patterns emerge when examining the forms of personal savings among different groups in Yemen. Rural workers exhibit a significant proportion of not actively saving, relying on traditional methods such as wallets or safes, and displaying minimal participation in informal funds. Urban workers, though sharing similarities with rural workers, show a slightly lower use of bank accounts for savings. University boys and girls demonstrate a higher awareness of formal financial channels, with a substantial percentage utilising bank accounts for savings and showing an inclination towards tangible assets like gold or livestock. Self-employed individuals showcase a balanced approach to savings, with moderate usage of bank accounts and a notable reliance on traditional methods. Across all groups, collaborative financial management through contributions to family or friends for savings remains a common practice. These findings underscore the diverse financial behaviors shaped by cultural, educational, and occupational factors within the Yemeni context. The type of personal savings and the community group are observed to be unrelated. Consequently, the null hypothesis is accepted; at 5%, the P-value of (0.080) is not significant.

RESULTS AND DISCUSSION

General Banking Awareness

The information suggests that bank accounts and educational attainment are positively correlated. The probability of possessing a bank account rises with education level. The group labelled "College" has the greatest proportion of people holding bank accounts, followed by "Above College" and "Ph.D."

According to the survey, a comparatively smaller percentage of self-employed people said that bank workers describe the different kinds of bank accounts. There may be space for improvement in how bank account types are communicated to the "Self-Employed" group, as evidenced by the lower representation of this group. A different pattern reveals itself via data analysis on the types of accounts owned by various demographic groups, providing insight into their unique financial preferences and habits. Current accounts are widely used, with university students using them the most, highlighting the significance of easy daily transactions.

Financial Inclusion and Accessibility

Self-employed individuals have fewer complaints overall, with no reporting more than twice. Urban workers and university boys and girls tend to have higher frequencies of complaints compared to rural workers and self-employed individuals. Self-employed individuals reported the least number of complaints, with 12 reporting none. Among the different groups, university boys and girls have the highest awareness of salary and non-salary account benefits.

Digital Banking Usage

Among the different groups, university boys and girls have the highest usage of the bank's electronic application for daily transactions.

The analysis suggests variations in the awareness and usage of USSD-based digital payment methods across different demographic groups. While university students show a higher level of awareness and usage, rural and self-employed individuals exhibit lower levels of adoption.

The majority of rural workers do not seem to be aware or familiar with USSD-based digital payment methods.

Financial Savings and Emergency Funding

Notable patterns emerge when examining the forms of personal savings among different groups in Yemen. Rural workers exhibit a significant proportion of not actively saving, relying on traditional methods such as wallets or safes.

The data illustrates diverse strategies that distinct groups employ—rural workers, urban workers, university students, and self-employed individuals—to obtain financing during emergencies.

CONCLUSION

The study provides valuable insights into the awareness of banking-related knowledge and utility among selected community groups in Yemen. Educational qualifications play a significant role in banking awareness, with a positive correlation between higher education and bank accounts. The study highlights areas for improvement in communication about bank account types, especially among self-employed individuals. Digital banking usage varies across demographic groups, indicating the need for targeted awareness campaigns. The findings underscore diverse financial behaviours shaped by cultural, educational, and occupational factors. Additionally, the study reveals distinct patterns in emergency funding strategies employed by different groups. Overall, the results contribute to a nuanced understanding of financial inclusion and accessibility in Yemen.

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GENERAL CONSIDERATIONS ON THE LEGAL FRAMEWORK GOVERNING AQUATIC RESOURCES

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Abstract

The legal framework of water use and protection is a complex and evolving field that encompasses various national and international frameworks aimed at ensuring sustainable management and safeguarding of water resources. These abstract outlines the aim, methods, and expected outputs of the study presented to Congress.

Aim The primary aim of this study is to analyze the existing legal frameworks governing water use and protection at both national and international levels. It seeks to evaluate their effectiveness in promoting sustainable water management, protecting aquatic ecosystems, and ensuring equitable access to water resources.

- **Methods** The study employs a multi-faceted approach, including:
    - Literature Review: Comprehensive analysis of existing legal documents, including the EU Water Framework Directive, the UN Watercourses Convention, and national water laws.
    - Comparative Analysis: Examination of different legal regimes across various jurisdictions to identify best practices and gaps in current legislation.
    - Stakeholder Interviews: Engaging with policymakers, legal experts, and environmental organizations to gather insights on the practical implementation of water laws and their impact on water resource management.
    - Case Studies: Detailed examination of specific instances where legal frameworks have successfully or unsuccessfully addressed water-related issues, such as pollution control and transboundary water disputes.
- **Output**s The expected outputs of this study include:
    - Policy Recommendations: Development of actionable recommendations for improving existing legal frameworks to enhance water protection and sustainable use.
    - Guidelines for Implementation: Practical guidelines for stakeholders on how to effectively implement water laws and policies at local, national, and international levels.
    - Awareness Raising: Increased awareness among policymakers and the public about the importance of legal frameworks in water resource management and protection.
    - Research Publication: A comprehensive report detailing the findings of the study, which will be disseminated to relevant stakeholders and published in academic journals to contribute to the ongoing discourse on water law and policy.

This study aims to provide a thorough understanding of the legal mechanisms in place for water use and protection, ultimately contributing to more effective governance of water resources in the face of growing environmental challenges.

Key words: aquatic resources. legal framework, environmental control measures

INTRODUCTION

As a renewable, vulnerable and limited natural resource, water is an indispensable element for society, a raw material for productive activities, a source of energy and a means of transportation, and a determining factor in maintaining ecological balance, for the existence of life and the performance of all human activities (Marinescu,2008).

The Encyclopedic Ecological Dictionary (Dediu,1990) identifies the abiotic component of water as the main component found in living organisms. *First living environment. The main determining characteristic of the behavior of the steppe.* It can act positively (under normal conditions) and negatively (under conditions above or below normal limits) on biotic components. According to art. 4 paragraph 1 of Law no. 272/2011, water is a renewable, vulnerable and limited natural resource, an indispensable element for life and society, a determining factor in maintaining the ecological balance, a raw material for productive activities, a source of energy and a transportation route. The main biotop of the Earth, occupying 70% of its surface. Long regarded as nature's inexhaustible resource, water is not, however, available in sufficient quantities and of a quality that meets the needs of use at certain times and in certain regions of the Earth (Minea,2010)

Our planet contains about 1400 ml km' of water, of which:

97% is the salt water of the seas and oceans.

3% is fresh water:

77.2% are the polar ice caps.

22.4% are underground spaces.

0.35% are lakes and swamps.

0.01% are rivers and surface springs.

These 0.01% are used in various fields: industry, agriculture, transport, for household needs, for curative-sanitary purposes, for dumping residues, etc.

It is obvious that in the last century demographic growth and advanced technological development are the main factors that have negatively influenced the balance between rational consumption and industrial development without taking into account the laws of nature, which are usually in the position of supremacy in relation to the economic interests of mankind. Excessive consume of water, being permanently determined by the needs of the technological process, and more importantly, by industrial consumption, results from current realities that reflect the sometimes-unjustified trends of society.

So, for example, 100 tons of water is needed to produce 1 ton of sugar. 200 tons of water are needed to produce 1 ton of paper. Moreover, every 15 years the consumption of water on the globe doubles. A person, on average, uses 1.3 - 2.3 m of water per day. In highly industrialized regions, several hundred or even a thousand times more water is consumed annually than the local amount of precipitation.

Thus, excessive and unplanned consumption, sometimes out of control, endangers the quality of water, and sometimes even the possibility of using it.

The sources of water pollution are diverse. Almost 70% of maritime pollution is caused by terrestrial sources following industrial activity. An important source of pollution is navigation and waste thrown into the sea. Annually, about 700,000 tons of oil products are spilled into the sea as a result of navigation.

According to a study carried out by the representatives of the Ministry of Health and the Ministry of the Environment, in accordance with the methods developed by the UN Environment Program, the main sources of water supply of the Republic of Moldova are the Dniester River, which covers about 54% of the total amount of water, the Prut River - 16%, other surface water sources - 7% and underground water sources - 23%. The water supply also takes place from about 5000 boreholes and from 132 thousand wells fed from the phreatic aquifer. The multiannual average stock of the country's rivers is estimated at 13.2 billion m3. The underground water reserve is estimated at around 2.8 billion m3. So, theoretically, the water potential is about 16 billion m3, which means

3700 m3/inhabitant per year. However, the available potential is approximately 1100 m3/inhabitant per year, which places the Republic of Moldova among the countries with relatively poor water resources. (Report on Environmental Health in Moldova,2010).

All these conditions as a whole demand the establishment of a legal regime for the use and protection of water.

Water pollution

The international conference on the situation of water pollution in Europe (Geneva, 1961) defines water pollution as

•" any direct or indirect modification of the composition or state of the waters of a certain source, as a result of human activity to the extent that they become less suitable for all or only some of the uses they can have in a normal state".

Thus, we determine four degrees of water pollution:

1) change in water composition, as a result, it becomes less suitable for some uses.

2) modification of the water composition, as a result, it becomes unsuitable for some uses.

3) change in water composition, as a result, it becomes less suitable for all uses.

4) change in the composition of the water, as a result, it becomes unsuitable for all uses.

Also, other definitions of the notion of water pollution are presented in the specialized literature, and in the Romanian legislation(Annex nr.1 on Water Law nr.107/Romania of 25.09.96), pollution means "the direct or indirect introduction, as a result of human activity, of substances or heat into the air, water or soil, which may harm human health or the quality of aquatic or terrestrial ecosystems dependent on aquatic ones, which may lead to damage property materials, or that may damage or obstruct services or other legal uses of the environment"

According to the national legislation (Water Law nr.272 of 23.11.11 Official Gazette of The Republic of Moldova), the notion of "water pollution" is defined as: "the direct or indirect introduction, as a result of human activity, of substances or heat into the air, water or soil that may present risks for human health or for the quality of aquatic or terrestrial ecosystems, which directly depend on aquatic ecosystems, which leads to the deterioration of material goods or which damages or negatively affects the services and other legal uses of the environment". In the above context, we note that the definition of the notion of water pollution it is largely inspired by Romanian legislation due to the same trends, of aligning national legislation with European Parliament and Council directive no. 2000/60/CE of October 23, 2000 regarding the establishment of a community policy framework in the field of water resources.

in the content of art. 2 of Law no. 272/2011, the notion of "wastewater" is also defined, according to which it is "water originating from domestic, social and economic activities, containing pollutants or residues that alter its initial physical, chemical and bacteriological characteristics"

This last notion, although it does not fully reflect the characteristics of water pollution activities, is apparently very similar to the notion of "aquatic pollution", only in the part that reflects the altered composition (contains pollutants and residues) that is specific to both notions. Thus, we consider that between the notions of "water pollution" and "wastewater" (respectively, the use of water), there is an essential difference. In the first case, water pollution consists in the commission of acts with a harmful effect that consists in the direct or indirect modification of the state of the water to the extent that they become unfit for normal use, i.e. the modification of the water composition takes place by the introduction of pollutants (wastewater, see art. 229 Criminal Code) through prohibited actions that negatively affect the services and other legal uses of the environment, and in in the second case, the water becomes altered (used) and contains pollutants after its use under normal conditions allowed by law, i.e. it becomes used already after using its qualities, being synonymous with the term "wastewater".

Therefore, if the water quality becomes altered and contains pollutants due to social and economic activities, the activities that generated this condition of the water cannot be sanctioned, because one of the signs of the contravention or crime component is missing, i.e. the objective side. However, the solution is different in case the

water has altered content due to illegal actions (infecting the water with wastewater) that led to the distortion of the water quality, the latter being liable to punishment.

THE HISTORY OF REGULATIONS

The first regulations that highlight some aspects related to the regime of water use and protection date back to the early days of existence of Ancient Rome and which were formed in a period of approximately one thousand years, from the kingship (500 B.E.) until the destruction of the empire (565 B.E.) The Law of the 12 Tables (488-45 B.E.) contains the first known reference to the rights of water users (the notion of private water), and The Lex Agraria (by 112 B.E.) shows the influence of the legal regime of land on that of water (Dutu,2010). Another older provision that prohibited water pollution is found in the Swedish Code from 1734 and refers to the fact that the owner of a mechanical saw had to ensure that the the wooden gusset should not block the water course"(Marinescu,2008). More recently, after the union of the Romanian States in 1918, the regulations in the field of the water regime, valid for Bessarabia as well, experienced a wider development with the adoption on 27th union 1924 of the first special law in field, the Water Regime Law, which declares all waters that can produce motive forces as public goods, as well as those that can be used in the public interest, regulates the use of waters and their arrangement, and as the administrative structure, in this sense, is created a water department within the Ministry of Public Works.

In the Republic of Moldova, the most advanced regulations in the field of the use and protection of aquatic resources date back to the end of the 50s - the beginning of the 60s. The regulations from the Law on the Protection of Nature and the Rational Use of Natural Resources (January 1959) are significant, then the subsequent regulations from November 1962 that concerned the field of water use in improvement, in 1966 when the law on some measures to prevent the pollution of water basins is issued. Such regulations were adopted during the years 1969, 1974, 1975, 1976. In 1973, on December 21, the Supreme Soviet of the USSR adopted the Water Code.

This moment is significant from the considerations that the respective legislative act establishes the bases of the regulations of a field considered separately, even more, it constituted a unification of all the regulations in the field related to the use and protection of waters. With the transition of the Republic of Moldova to a new stage of development, the declaration of independence and sovereignty, the recognition of the Republic of Moldova as a subject of international law, the accession to a series of international acts, including in the field of environmental protection, conditions were created for the need to change ecological legislation, including that in the field of water protection and use. Thus, on June 22, 1993, the Parliament of the Republic of Moldova adopted the Water Code, in force until 10/26/2013, being repealed by the entry into force of Water Law no. 272/2011.

Ownership. Administration and control of water use and protection. Evidence of aquatic resources

Property regime in the field of water

Currently, due to the specific property regime in the field of water assigned by the legislator, public opinion remains confused in this chapter, a fact confirmed by the confusion and controversies expressed, both among specialists in the field and in civil society.

Considering the fact that water is an indispensable source for humans in the development of all processes, starting from the vital ones to the economic ones, the legal regime that determines the "fate" of this resource is a very special one, a fact that makes us interpret carefully the norms of the legislation adopted in this regard, starting from article 4 of Law no. 272/2011.

Thus, according to the provisions of art. 4 para. 2 of the Law in question, "water is not just any commercial product, but a natural heritage, which must be protected, treated and defended as such", and according to paragraph 3, "water is part of the public domain of the state"

At the same time, these rules do not fall within the limits of the constitutional provisions, especially with article 127 of the Constitution of the Republic of Moldova, according to which: "wealth of any nature of the subsoil, air space, waters and forests used in the public interest, resources, natural areas of the economic zone and of the continental plateau, the communication routes, as well as other assets established by law, are the exclusive object

of public property." In this sense, the Basic Law indicates as the exclusive object of public property only waters used in the public interest. As a result, waters used in private interest cannot form the object of public property.1

The problem that, in our opinion, is to be solved by the legislator is the one related to the identification of the object of the right of aquatic benefit. In this sense, we consider that quite successfully in the old legislation - the Water Code, abrogated, the term "aquatic objective" was used, which implied the identification of a separate objective made up of the land sector, hydrotechnical constructions, water itself and other elements which formed the aquatic objective. The water law in force, regrettably, does not identify such an object of aquatic amenity as "aquatic objective".

If we are to look at the provisions of Article 2 of the Water Law, then it assigns the content of the term "pond", "river", "lake", "pond", the water body as well as the area of land on which the water body is accumulated. In the event of a systemic interpretation of the law, also taking into account the provisions of Article 127 of the Constitution, which implicitly states that waters used for private purposes are subject to private ownership, it would be difficult to apply to any extent the provisions of Article 4 para. 3 of the Water Law, it is very clear that this rule is to be examined with reservations from the point of view of its compliance with the Constitutional provisions.

But, referring to the existing regulations, analyzing the ones mentioned above, we will find that water, as a separate body from the land and hydrotechnical constructions that form the pond, lake, river and other aquatic objectives, needs to be considered as a category of the natural resources that belong exclusively to the public domain, and according to the specialized legal literature, as well as some laws2, the legal regime of public domain goods is governed by the principle of inalienability, imprescriptibility and imperceptibility.

At the same time, the state guarantees free and equal access to these resources, which are an indispensable necessity for man, by including them in the category of goods affected by the public interest, a fact that finds confirmation in the series of provisions included in art. 4 of the Water Law, namely para. 4, according to which "any natural or legal person has the right to use water under the conditions of this law".

Also, a very important and essential aspect for the property regime in the field of water, which deserves special attention, can be deduced from the content of paragraph 5 of the same rule, according to which "the land under the water of the pond can be part of the public domain, as well as from the private domain. Any natural person or legal entity can build a pond on the land that belongs to him by right of ownership, under the conditions of the law." This legal provision comes to bring clarity to this chapter by delimiting the water property regime, as a body distinct from that of the water fund lands, a fact that should not be confused.

So, in the first case, when we talk about the property regime over water, we say that it, as a distinct body belongs to the public domain according to paragraph 3 of article 4 of the Water Law, and therefore, it cannot serve as the object of an act of alienation, and in the second case, when we talk about the lands of the water fund forming the bed of the body of water (pond), they can therefore serve as the object of the act of encroachment.

Therefore, in the second case, the lands of the water fund, which constitute the basis of an integral aquatic objective (consisting of land and water), fall under the incidence of another property regime when it is built on privately

[1] It should be mentioned that in the old legislation on the use and protection of waters - the Water Code of 1993, a regulation had also crept in, which established the exclusive right of the state over waters, but considering that this was in contradiction with the provisions of Article 127 of the Constitution, it was later amended, expressly declaring the possibility of private ownership of waters.

[2] Paragraph (5) of Article 4 of the Water Law no. 272 of 23.12.2011, stipulates that any natural or legal person may build a pond on the land belonging to him/her by right of ownership, in accordance with the law.

224 According to the provisions of Art. 75 para. 3 of the Law on Local Public Administration, the goods of the public domain of local interest are inalienable, imprescriptible and non-assessable, and according to Art. 10 para. 2 of the Law on the Administration and De-establishment of Public Property No 121 of 04.05.2007:"The goods of the public domain are inalienable, non-assessable and imprescriptible, in particular:

a) they may not be alienated, either by privatization or deposit in the share capital of a legal entity;

(b) they may not be pledged as collateral or given as security in rem;

c) they may not be subject to compulsory execution, even in the event of insolvency of the legal person managing them;

(d) the right of ownership over them shall not be extinguished by fraudulent misappropriation;

e) may not be acquired by natural or legal persons by usucaption"

owned land, therefore constituting part of the private domain, being governed by other principles that are in opposition to the principle of inalienability, imprescriptibility and imperceptibility.

Administration of the state water fund

Being an activity undertaken by state bodies, state administration is a field whose objective is to ensure the attribution in use, the realization of use and the realization of protection measures in accordance with the legislation in force. The state administration of the use and protection of water is exercised by the Government of the Republic of Moldova, local public administration bodies, the Ministry of the Environment, other bodies specifically empowered in this field. The law on the protection of the environment in articles 8-10 establishes in general lines the competence of the respective bodies in the field of administration with the State Water Fund. Express regulations with regard to the rules for the use and protection of waters are also found in the content of Law no. 272/2011.

Water use and protection control

The control of water uses and protection constitutes a system of measures undertaken by state bodies and municipalities in order to verify the correspondence of the activities undertaken by the beneficiaries of the use of aquatic objectives to the provisions of the legislation in force. As the primordial task of state control in the field of water use and protection is to ensure the avoidance of some cases of their pollution, unauthorized use and contrary to its destination, as well as revealing the causes and conditions that would influence the general-legal way of using the objectives

Speaking about the control regarding the use and protection of aquatic resources, it is necessary to mention that the realization of these activities takes place through different forms and specific methods. In this sense, we distinguish various forms of control depending on the subjects competent to carry out this activity, as well as depending on the forms of carrying out the control, as follows:

- The State control carried out by the Parliament of the Republic of Moldova, the President of the Republic of Moldova, the Government of the Republic of Moldova, the Ministry of the Environment, local public administration bodies, law enforcement bodies.
- specialized control is carried out by the State Ecological Inspectorate. This competence is expressly provided in the content of art. 56 of Law no. 272/2011 which mentions that "the authority empowered with state ecological control functions subordinate to the central body of the public administration in the field of the environment, which coordinates and exercises the inspection and control activity in the field of water use and protection";
- public control carried out by public organizations, citizens, mass information sources, as well as by other competent subjects endowed with competence in this field. The basic task of control activities in this field is to ensure compliance by all persons with the established way of using water and the execution of obligations regarding the prevention and liquidation of destructive effects, as well as other harmful influences.

EVIDENCE OF AQUATIC RESOURCES

Speaking about achieving an effective control of the activities related to the use and protection of water, it is impossible not to refer to the need to organize an evidence system that will allow the increased efficiency in achieving the objectives set before the subject of control. the legal seat of the aquatic resources record system is Chapter III of Law no. 272/2011 which regulates the way of data management, policies and planning. The state record of aquatic resources constitutes a well-organized system of measures and activities aimed at establishing the quantitative-qualitative state of the waters, as well as the data regarding the holders of the right of use, especially of water.

Thus, the data reflecting the quantity, quality and manner of use of water are in the State Cadastre and Registry of Real Estate of Waters3, which is held by the central body of the public administration in the field of the

[3] Government Ordinance No. 763 of 23.09.2013 on the Regulation of the State Water Cadastre. Official Gazette no. 213-215 of 27.09.2013.

environment (Ministry of the Environment), through the administrative authority for water management (Agency "Apele Moldovei").

So, following the structure of the State Water Cadastre, but also of other regulations in the field, we emphasize three directions of water record:

- the qualitative state of the waters.
- the quantitative state of the waters.
- special use of water.

Qualitative state of waters

This direction is also regulated in art. 13 of the Water Law which expressly mentions that: "monitoring and systematic record of the condition of surface waters, underground waters and protected areas is carried out by the central body of the public administration in the field of the environment, through subordinate institutions, in the manner established by a regulation approved by the Government"4, and according to para. 2 of the same norm, respective regulation specific to the parameters subject to monitoring, the procedures and technical measures necessary, without being limited to them, for taking samples and complying with the analysis requirements for each parameter, for quality control, for laboratory practices and data recording.

The responsibilities in the field of evidence of the quality state of water belong to the State Hydrometeorological Service, the Agency for Geology and Mineral Resources and the Ministry of Health. In this context, a very important role in the water quality record system in the Republic of Moldova is the automated informational system of the quality of natural, potable mineral waters and bottled non-alcoholic beverages, 5considering the fact that these categories of water are of first use for humans and the quality of life depends on their condition.

For this reason The National Public Health Center under the Ministry of Health 6is responsible for keeping the register of mineral and drinking water sources, the circulation of natural and drinking mineral water, bottled natural and drinking mineral water and manufactured bottled soft drinks, exported and imported, collecting, accumulating, storing, updating and analyzing data on economic agents who have received licenses for extraction of mineral deposits and/or production and bottling of mineral and natural drinking water, sanitary authorizations for operation in the field of manufacturing of natural mineral water, drinking water and bottled soft drinks.

The quantitative state of the waters

According to the provisions of art. 14 para. 1 of the Water Law, the quantitative status of waters is reflected in the State Cadastre of Waters, which contains data related to the hydrographic network, including the identification, delimitation, classification and status of water bodies, constructions and hydrotechnical installations, to the protection zones and fissions, to the protected areas located in these zones, as well as data on water withdrawals and refunds. The systematic evidence of the quantity, quality and ecological state of surface waters, including transboundary rivers, is carried out by the State Hydrometeorological Service and the central body of the public administration in the field of health, based on the national monitoring network. Quantitative monitoring is carried out in order to provide central and local public administration authorities, economic agents and the population with hydrological information, forecasts and warnings regarding dangerous hydrological phenomena7

[4] Regulation on the monitoring and systematic record of surface water and groundwater status, approved by Government Hotrirea no. 932 of 20.11.2013.

[5] Government Ruling No. 934 of 15.08.2007 on the establishment of the Automated Information System "State Register of Natural Mineral Waters, Drinking Waters and Bottled Non-Alcoholic Beverages

[6] For more clarity, we mention that water quality records are also kept by the Ministry of Health in the segment "natural mineral and drinking water".
According to item 6 of the Regulation approved by GD no. 932 of 20.11.2013, the tasks of monitoring water quality, mainly determining the degree of pollution, are assigned to the central body of public administration in the field of environment (Ministry of Environment), through the subdivisions with responsibilities in this field (State Hydrometeorological Service and Agency for Geology §and Mineral Resources) while the monitoring of drinking water quality from surface and underground sources is the responsibility of the central body of public administration in the field of health, with its territorial structures

[7] Paragraph 13 of the Regulation on the systematic monitoring and record of the surface and groundwater status, approved by Government Decision No. 932 of 20.11.2013

Special use of water

The data that refer to the holders of the right to the special use of water are contained in the "Register of environmental authorizers for the special use of water, which reflects the extensive information on the holders of authorizations, the date of issue, the term of validity, the place of the authorized activity, other mentions regarding the release, modification, extension, suspension, termination or withdrawal of authorizations. The register of environmental authorizations is a unique system of information records, which contains data regarding the registration and records of environmental authorizations for the special use of water. The register is kept by the competent institution for issuing environmental authorizations for the special use of water, in electronic form, in the official language8. The Competent Authority the State Ecological Inspectorate is in charge of issuing and keeping records of authorizations for the special use of water, which has the right to issue, within the limits of its competence, authorizations for the use of any natural resources, including water9.

CONCLUSIONS

The legal framework for aquatic resources is crucial to ensure the sustainable management and conservation of these vital ecosystems. Here are some key conclusions that can be drawn from the analysis of this framework:

- *Integration of aquaculture and fisheries*

The interdependence between aquaculture and fisheries requires a coherent regulatory approach. Many countries have adopted basic laws that include provisions for aquaculture, but these laws often lack comprehensive follow-up regulations. This gap can lead to ambiguities and inconsistencies that hinder effective management. A unified legal framework that clearly defines roles, responsibilities and procedures for both aquaculture and fisheries is essential for sustainable resource management.

- *Environmental considerations*

Aquaculture has a significant impact on natural resources and the environment. Regulatory frameworks need to address these interactions comprehensively, incorporating environmental standards and guidelines to mitigate adverse impacts. This includes ensuring that aquaculture practices do not compromise the integrity of aquatic ecosystems and that they meet safety standards for human consumption.

- *Multi-stakeholder involvement*

Effective management of aquatic resources requires the participation of multiple stakeholders, including local communities, industry representatives and government agencies. Legal frameworks should facilitate stakeholder involvement in decision-making processes, allowing for a more inclusive approach to resource management. This participatory model can improve compliance and foster a sense of shared responsibility among users.

- *Flexibility and adaptability*

Regulatory frameworks need to be adaptable to changing circumstances, including evolving environmental conditions and socio-economic factors. This flexibility is essential to address emerging challenges in the management of aquatic resources, such as climate change and increasing demand for aquatic products. Laws should include mechanisms for regular review and amendment to remain relevant and effective.

- *The need for comprehensive water legislation*

The lack of integrated water management legislation is a major obstacle to effective governance. Legal frameworks should cover all aspects of water use - surface and groundwater - recognising that water is a finite resource. This includes establishing clear rights and obligations for water users and ensuring that laws are transparent and equitable

[8] Regulation on the Register of environmental permits for special use of water, approved by Government Ordinance no. 894 of 12.11.2013 on the organization and functioning of the single point of contact in the field of environmental permits for special use of water.
[9] Government Ruling no. 77 of 30.01.2004 on the approval of the structure and regulations of the State Ecological Inspectorate, Official Gazette no. 26-29 of 13.02.2004.

In this way, we can conclude, that the legal framework governing aquatic resources is multifaceted and requires a coordinated approach that integrates environmental, social and economic considerations. By fostering collaboration among stakeholders, ensuring environmental protection, and maintaining flexibility in legal provisions, countries can enhance the sustainability of aquatic resources and support the livelihoods that depend on them.

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PSYCHOLOGICAL EMPOWERMENT AND ORGANIZATIONAL IDENTIFICATION EXPANDS EMPLOYEE OPENNESS TO CHANGE AND WELLNESS: THE ROLE OF CHARISMATIC EXECUTIVE LEADERSHIP COMMUNICATION

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ABSTRACT

BACKGROUND: The study looks at how organizational identity modifies the link between employee psychological empowerment and executive charismatic leadership communication for change. To advance the field of executive leadership communication for change on workers' receptivity to change, this is now a very popular area and one of considerable relevance.

OBJECTIVES: The objective of this research was to investigate the effect of charismatic executive leadership communication on employees' change openness and wellness with the mediating role of employee psychological empowerment and moderating role of employee organizational identification.

METHODS: The extant study has used quantitative research design and ran a survey to collect data through structured close ended questionnaires from 219 respondents working as full-time employees of IT industry based in the cities of Rawalpindi and Islamabad. The obtained data were analyzed through SPSS and AMOS.

RESULTS: The results of the analysis confirmed that charismatic executive leadership communication for change was positively associated with employee psychological empowerment and employees' openness to change. Results also confirmed that employee psychological empowerment was positively and significantly associated with employees' openness to change and individual wellness. Furthermore, mediation mechanism of employee psychological empowerment was also statistically supported; however, moderating role of employee organizational identification was not supported.

CONCLUSIONS: It was concluded that there is positive relation between the variables; however moderating role of employee organizational identification was not supported due to Pakistani context.

***Keywords*:** Psychological Empowerment, Organizational Identification, Openness to Change, Charismatic Executive Leadership Communication.

INTRODUCTION

Leaders on the work floor face enormous difficulties to acquire or keep up worker trust to get change in their firms/organizations. Top organizational leadership, especially CEOs, must also involve not only non-entities, executives, destructive controllers of authority and spokespersons [1] and "lead engagement" for result orient communicators. Cognizant workers are putting greater levels of demands on top organizational leadership to emerge from their workplaces or offices, communicate transparently, straightforwardly draw in with inside and outside constituencies, and even stand firm around dubious issues [2, 3]. The communicative job of top leadership has gotten more notable and significant than any other time in recent memory. The most common communication and management change studies analyzing leadership have shown how various modes of supervisors' leadership at lower level are different, such as charismatic leadership [4], transformational leadership [5] and true leadership, adding to the accomplishment of the change [6]. Furthermore, despite the growth of insightful considerations of leadership in public relations, and the strong acknowledgment of CEOs' emblematic and informative work as corporate delegates in the public relations literary works [7, 8, 76] and there was little study into executive contact

during changes measure, as well as the limited awareness of the emblematic and insightful jobs of CEOs as corporate delegates [1]. Among the not many that investigated the communicative part of top leadership in the change at organizational level, a recent research exploration has recognized a solid positive relationship between charismatic executive leadership communication and employees' change openness for change [9].

It has long been a challenge for established businesses or organisations to effectively communicate about change management. Workers frequently seek knowledge, validation, and support from leaders when faced with the complexity and vulnerabilities of transition. Corporate leadership and cooperation, as a transformation expert, have a crucial role to play in supporting change usage and advancing change attainment [10]. Numerous previous studies have linked executive leaders' socioeconomic factors, personal qualities, important choices, and communication with change cycles and outcomes [11, 9].

The mediating role of psychological empowerment in a variety of workplace interactions has been the subject of recent organisational behaviour study [12]. For instance, psychological empowerment has been shown to mediate between various relationships, such as voice climate and service performance [13] LMX and psychological withdrawal behaviour [14], transformational leadership and job satisfaction [15] and servant leadership and employee creativity [16]. The current study is an attempt to look into the impact of executive leadership communication in organisational change management in the context of mediating function of employee psychological empowerment. To investigate the effects of executive leaders' communicative activities on employees' openness to reform in the presence of the mediating role of psychological empowerment of employees against the organisation in this process, this research was based on the theory of social exchange [17] leadership communication from a public relations standpoint.

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

Charismatic Executive Leadership Communication for Change

Startup leaders may more effectively communicate company principles and harmonies direct subordinates' beliefs with those of the organisation by using charismatic leadership communication [18]. The three elements of charismatic leadership communication as defined by [9] are imagining (communicating about vision), energizing (communicating about passion), and enabling (communicating about care), which are used in this study.

Additionally, charismatic leaders demonstrate inspiring behavior through expressing own zeal, sharing that vigor directly with employees, demonstrating confidence in the organization's ability to achieve, and demonstrating a desire to realize the organization's purpose [19]. Due to the intimate environment's improved potential to excite personnel through regular, direct contact, mood contagion might be especially visible in the setting of startups [20]. The enabling dimension of charismatic leadership communication, according to [9].

Employee Organizational Identification

Strong organisational identity can produce favorable outcomes, such as enhanced employee compliance and job satisfaction [21, 22]. The function of inside members' image and identity has been understudied and needs to be further investigated.

Identification inside an organisation has two components. The first is a sense of belonging to the business, and the second is knowledge of one's place in the organisation [23]. Organizational identification is a significant psychological state that may suggest a connection between a person and an organisation. It may be used to explain and predict employees' behaviours and attitudes at work [24, 25]. Strongly dedicated employees may identify how their interests align with those of the business and tie their careers to that future. Employee creativity can be attained in one of two ways. Direct incentive, such as encouraging innovation, career advancement, and personal satisfaction, is one method. The alternative is organisational identification, which might inspire staff members to want to develop their skills.

Employees who feel deeply connected to a company are less concerned about their job security, more innovative when coming up with new ways to complete their tasks, and more willing to take on risky tasks and take part in difficult projects [26].

Employee Psychological Empowerment

The characteristics, abilities, and virtues of a person that may be fostered and developed in line with positive psychology are referred to as positive psychological resources [27]. Serving others before self is one method servant leaders may assist their followers find more meaning in their job and build relationships with others. Another is through boosting subordinates' potential [28]. Servant leaders like assisting and motivating their followers to acquire new skills and complete ambitious goals. Thus, servant leaders may encourage followers to have more faith in their capacity to engage in creative endeavors [29, 28]. Furthermore, servant leaders could promote a feeling of more freedom at work and allow their staff members more autonomy, both of which could improve a person's sense of self-determination [30, 28]. Additionally, by including followers in decision-making, servant leaders are more likely to persuade them to acknowledge the major impact they have on their work units [28].

Employees Openness to Change

It is crucial to remember that openness to change only draws on employees' behavioural intention and psychological willingness to change, not actual behavioural support for the change [31]. The idea of planned behaviour holds that subsequent behaviour is determined by the desire to carry out a specific action [31].

Instead, than being passive beneficiaries of change efforts, employees actively participate in them [31]. Employees' receptive attitudes toward the change and their conviction that it will be advantageous to them are positive effects. It is crucial to remember that openness to change only draws on employees' behavioural intention and psychological willingness to change, not actual behavioural support for the change [31]. The idea of planned behaviour holds that subsequent behaviour is determined by the desire to carry out a specific action [31].

Linking Executive Leadership Communication for Change with

Employees' Change openness

The interaction and effect of organisational leaders on members is related to the communication between management and leadership [32]. Senior executives are known to recognize business DNAs through communicating company values, objectives, and community to interact with and influence stakeholders [10] According to public relations professionals, the primary objectives of leadership communication should be to enhance the brand's reputation both internally and externally [1], promote a positive corporate culture [20], promote public participation [33], foster quality organizational-business relationships [34], and eventually contribute to consumer growth [33]. The effect of corporate-level interaction on employee performance through organisational transformation has been studied by public relations experts, and recommendations have been made, such as creating a sensitive, open, and trustworthy environment to create positive attitudes and actions of employees toward change [35, 36, 20].

This study was fixated on this unique circumstance and the idea of magnetic authority with regards to its correspondence part [19], as well as the job of chief forerunners in authoritative change [9]. Thus in line with existing literature, we hypothesize that:

H1: Charismatic executive leadership communication for change is positively and significantly associated with employees' openness to change.

Linking Charismatic Executive Leadership Communication for Change with Employee Psychological Empowerment

Psychological empowerment (PE) is based upon Bandura's analysis of self-efficacy [37, 38]. This extends to the emotional status or aspirations of employees. The workers have the confidence to carry out their work themselves.

Researchers have suggested that managers use a strong vision to build employee meaning [39]. With the overwhelming goal and connection between workers' jobs and employee ideals, leaders add a shared identity to subordinates' actions, thereby increasing the importance of subordinates' work [40]. Leaders help fans to understand the priorities in their jobs by encouraging their confidence in their contacts [41]. The standard of communication of the leader places the mission of an organization on an important level for the followers and allows followers also to forget personal ambitions for the sake of the collective [42]. In communicating

constructive and encouraging words that are an essential aspect of inspiring communication, leaders contribute to the emotional excitement of the subordinates [43], and demonstrate the value of their work [44, 45]. This also teaches employees that their commitment is vital to the accomplishment of organizational priorities that boost their sense of control in the business [42]. The leaders' inspired communication or verbal inspiration creates positive vibrations, illustrates prospects and generates the subordinates' positive ambitions. In a survey of a group of healthcare practitioners [74], found that leader motivational communication contributes to employee effectiveness. Therefore, leadership engagement will serve as a significant driver for followers to perceive the mission as self-determined. So we hypothesized that:

H2: Charismatic executive leadership communication for change is positively and significantly associated with employee psychological empowerment.

Linking Employee Psychological Empowerment with Employees' Openness to Change

Choi cites several research papers that examined the idea of change responsiveness in an organisational environment [45]. Employees those are open to change exhibit positive attitudes and actions because they look forward to the future benefits that will come from the change [46]. Positive organisational transformation requires certain behaviours and attitudes that show a willingness to change [31].

A key element in the transparency of change is a person's ability, both cognitively and behaviorally, to adapt to change [47]. People that are creative, inquisitive, and sensitive are more likely to be open to change and preparing for change and being aware of change have been linked in major ways [49]. When people want to alter the workplace and see a good influence on their careers, they are more likely to be open to change [47]. Through daily information sharing, the development of trust with senior management, especially among employees in their roles, and the inclusion of employees to change ideas, organisations may increase employee receptivity to change [46, 49].

PE should produce results that are comparable to those obtained in other tests conducted under similar controlled circumstances (e.g. [50]. The emphasis on a more general tendency to work through environments on a self-definitely driven basis is in contrast to the suggestions in the literature on change management [51] that organisations are developing a more general capacity for change, which goes far beyond the chance of implementing a single proposal for change. Our opinions on the consequences of ideas about the urgency of change, believability, and encouragement are in part informed by PE theory and research on its systemic drivers in the absence of preceding investigation. According to theory, PE is fostered and upheld by ensuring a good match between individual talents and job requirements as well as by exerting influence on those in positions of authority who are receptive to organisational change. Thus, we hypothesize that:

H3: Employee psychological empowerment is positively and significantly associated with employees' openness to change.

Mediating Role of Employee Psychological Empowerment between Executive Leadership Communication for Change Openness to Change

The relational empowerment of employees has been associated with backgrounds like locus of control, self-esteem, access to knowledge, and motivation. The ability to create, examine, and modify the working environment for a particular vocation is where the subjective meaning of empowerment is derived. In order to promote administrative effectiveness and creativity [52, 53] and performance in working contexts, psychological empowerment has been increased [52, 54, 50, 55]. Increased psychological empowerment has a favourable impact on worker leadership, which in turn influences engagement and involvement in innovative processes and fosters creativity [56]. The connection between empowerment behavior by job satisfaction and affective commitment [57], clash of transformational leaders and successful supporters' corporate transaction leadership [58] and interaction in activism of senior citizens and subordinate institutions' work and social acts toward organizations [59]. Shift contact and management are regarded as the prospect and the topic to support the philosophy of public relations and the realistic importance of the business [60, 35, 61] Advertising scientists have considered the place of corporate correspondence over representative rates during hierarchical achievement and proposed thoughts, for example, constructing a straightforward, dependable, and reliable system to urge laborers to encourage up-sides and propensities against the improvement [62].

[63] suggested that by introducing the vision of progress as a dream of corporate security and keeping up with the in salvageable shape hierarchical personality of laborers, top pioneers could lessen the revulsion of workers to change because of the apparent test of character. Thus, we hypothesized that;

H4: Employee psychological empowerment mediates the association between executive leadership communication for change openness to change.

Moderating Role of EOI between CELCC and Employee Psychological Empowerment

By raising personal, cognitive, and social forces, PE enhances life circumstances. Social identity leads to well-being by addressing the desire for belonging and meaningfulness [64]. Existing research suggests that OI causes PE, based on the rationale that involvement in one's business improves one's sense of efficacy and self-worth [66]. Self-idea implies the association's connected personality. People having a high OI offer all the more effectively to hierarchical tasks. Emphasizing the self-idea that reinforces the sensation of strengthening [65]. Laborers who had an unmistakable brand personality and stuck to social standards and principles, as per [66], were better ready to convey the organization's targets. Workers with low authoritative personality, conversely, were spurred to fulfill personal circumstance necessities instead of the general advantage. Social identity plays an important role in community involvement by influencing cooperative beliefs and activities in the workplace [67]. Hence;

H5: Employee organizational identification moderates the indirect association in presence of EPE as mediator between CELCC and employee openness to change in such way that if EOI is high than this association would be more strengthen.

RESEARCH METHODOLOGY

The design of the current study is quantitative and to collect survey responses, this exploration research worked within the context of the organizational climate that existed at the time the respondents were contacted.

Data for all variables were obtained from a variety of well-known private sector Information Technology companies primarily based in Rawalpindi & Islamabad. It took about two months i.e. November & December 2021 to gather the data from 219 full time employees as respondents.

The scales which were used to measure the variables of the study were employees rated on a five point “Likert” scale ranging from ‘strongly disagree’ =1 to ‘strongly agree’ =5.

Measures

Charismatic Executive Leadership Communication for Change (CELCC)

CELCC was measured by 10-item scale developed by [9]. The example items are “The top leaders articulate a compelling vision for the change” and “The top leaders express confidence to succeed during the change”.

Employee Openness to Change (EOC)

EOC was assessed with five items from [69]. The example items are “I would consider myself open to the changes,” and "I am looking forward to the changes in my work role”.

Employee Psychological Empowerment (EPE)

EPE was assessed by using a 12-item scale developed by [53]. Examples of the items are “The work I do is very important to me”, and “I am confident about my ability to do my job.”

Employee Organizational Identification (EOI)

EOI was assessed by using an 8-item scale developed by [69]. Examples of the items are “I would probably continue working for my organization even if I did not need the money”, and “I am proud to be an employee of my organization.

Correlation Analysis

The direction of the relationship between two variables is shown in the study of correlations (expressed by the level of significance) (indicated by positive or negative signs). When the sign is positive, both variables move in

the same direction; when the sign is negative, they move in the opposite way. The Pearson correction analysis is used to calculate the correlation coefficient. From +1.00 to -1.00, the coefficient's value changes. There is no relationship between the components or variables if the value is 0. **Table 4** shows the correlations between several factors.

Table 4, presents the correlations for theoretical variables. CELCC was significantly correlated with organizational identification ($r = .36$, $p < .01$), psychological empowerment ($r = .27$, $p < .01$) and openness to change ($r = .52$, $p < .01$). Organizational identification was significantly correlated with psychological empowerment ($r = .35$, $p < .01$) and openness to change ($r = .33$, $p < .01$). Psychological empowerment was significantly correlated with openness to change ($r = .46$, $p < .01$).

Regression Analysis

Control Variables

Results show insignificant difference in employee psychological empowerment for across gender (F= .12), age (F= .68), qualification (F= 1.59) and experience (F= 1.28). Results also show insignificant difference in employee openness to change for across gender (F= .26), age (F= 1.72), qualification (F= .18) and experience (F= .05) (the p value was greater than .05). As per this result, while performing regression analysis no demographic variable was controlled.

Test of Hypothesis 1-4

Hypotheses 1 - 4 are taken into consideration in this section, and they depend on the relationship between moral leadership and outcome characteristics like internal whistleblowing among employees. This part also includes the findings of the mediation inquiry, which looked at the connection between internal whistleblowing and employee organisational identity.

SPSS Process macro (version 3.5) used to test the prediction in our model from hypotheses 1 to 4 that charismatic executive leadership communication has a positive effect on employees' openness to change and that employee psychological empowerment mediates the relationship between charismatic executive leadership communication and employees' openness to change. As predicted, the results indicated the CELCC has a significant and positive effect on openness to change ($\beta = .52$, $t = 7.75$ $p < .001$). In addition, CELCC has a significant and positive effect on psychological empowerment ($\beta = .19$, $t = 4.27$ $p < .001$). Furthermore, psychological empowerment has a significant and positive effect on openness to change ($\beta = .59$, $t = 6.19$ $p < .001$). Notably, the results show support for mediation. Specifically, the indirect effect of CELCC on openness to change is significant (Effect = .11, 95% CI: .05, .20). Hence hypothesis H1 to H4 were supported, shown in table 5.

Analysis of Hypothesis 5

H5: *Employee organizational identification moderates the indirect association in presence of EPE as mediator between CELCC and employee openness to change in such way that if EOI is high than this association would be more strengthen.***

The employee organizational identification, according to Hypothesis H5, moderates the indirect association in presence of EPE as mediator between CELCC and employee openness to change in such way that if EOI is high than this association would be more strengthen. Employee organizational identification positively influenced psychological empowerment, according to the findings ($\beta = .29$, $t = 4.35$, $p < .001$). The interaction term, on the other hand, is important since it shows that there is no moderation in the link between CELCC and psychological empowerment ($\beta = -.01$, $t = -.25$, $p > 0.51$). Thus, this hypothesis is rejected, shown in table 5.

CONCLUSION

This research aims to advance the field of executive leadership communication for change on workers' receptivity to change, which is now a very popular area and one of considerable relevance. Given that the study was among the first empirical studies to look at the role of senior leadership communication in organisational change management. The data analysis done by collecting data through adopted questionnaires from the different authenticated sources. The questionnaires were distributed in the IT sectors of Pakistan. The theory behind this study is social exchange theory and the proposed hypotheses were developed on this basis of this theory. Responses of 219 respondents were used for analysis. This research contributes to the present literature because these variables were not studied earlier in a single framework. Moreover, this study contributes to the literature in a way that it identifies a mediator i.e. psychological empowerment between charismatic executive leadership communications for change and employees' openness to change. There were 5 hypotheses which were purposed in the context of Pakistan. Moreover, first four hypotheses H1, H2, H3 and H4 were supported whereas H5 was not accepted according to the context of Pakistan.

Implications

Theoretical Implications

This study first contributes to the expanding body of information in the public relations/communication roles of top management for organisational success before examining the influence of executive leadership communication on employees' receptivity to change. While top leadership's communication roles have long been endorsed by public relations scholars [72], as have their supporting roles and functions in fostering an organization's reputation [73], organisational image [1], and organization-public relationships [34], there is little empirical data demonstrating the impact of executive leaders' communication, particularly in the context of organisational reputation. Last but not least, the study focused on the importance of employee psychological empowerment, one of the often-mentioned relational outcomes, in successful change communication. The study contributes to the body of knowledge on the significance of positive employee-organizational relationships by illuminating the direct effects of employee psychological empowerment on employees' receptivity to change as well as its mediating function in the relationship between executive leadership communication that exudes charisma and the employee's response to change. Additionally, the study looks at how organisational identity modifies the link between employee psychological empowerment and executive charismatic leadership communication for change.

Practical Implications

The study's findings offered companies, corporate leaders, public relations professionals, and managers of change communication crucial strategic recommendations. Especially in today's more transparent, flexible, and connected world where CEOs' every move, both inside and outside of the organisation, can be scrutinized and interpreted and their words and deeds can be instantly spread and amplified, organisations and public relations professionals must first fully understand the crucial communication roles of executive leaders. Senior executives should be taught the proper public relations strategy by public relations professionals who should urge them to speak in a more direct, honest, and personal manner.

Limitations and Future Research Directions

Despite the aforementioned contributions, the study has encountered a number of challenges that should be acknowledged and addressed in future research. First of all, employing a cross-sectional technique, it is challenging to demonstrate a causal link between the predictor and outcome variables. Despite some assistance from structural equation modeling, establishing a meaningful causal relationship still requires an experimental, longitudinal, or even longitudinal quasi-experimental design. Second, the study assessed organisational change without specifying the kind of change using a wide methodology. Future research should investigate the paradigm set out in the paper further in connection to specific change scenarios, such as merger and acquisition, leadership, or cultural change. Last but not least, in order to narrow the focus of the study, the model only included charismatic executive leadership for change as predictors of employee receptivity to change. Future studies could examine the relationship between employee openness to change and other effective leadership philosophies like authentic leadership, ethical leadership, transactional leadership, strategic communication tactics like symmetrical communication, messaging, and emerging channels like social media. The study population was limited to the IT

sector of Rawalpindi and Islamabad. For the generalizability of the results future study could be conducted by collecting data from other sectors as well as from other cities of Pakistan. Due to limited monetary resources and time constraints the sample size was relatively small. Future studies could be conducted with larger sample size to get more generalized results.

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LEGISLATIVE ASPECTS ON THE UTILIZATION OF ABIOTIC COMPONENTS OF THE NATURAL ENVIRONMENT

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Abstract

Aim: This paper examines the legal framework governing the utilization of abiotic components of the natural environment, focusing on the challenges and opportunities presented by the increasing demand for natural resources. The study analyzes the existing international and national laws, regulations, and policies that regulate the extraction, use, and management of abiotic resources such as minerals, water, air, and energy sources.

Methods: The paper highlights the need for a comprehensive and harmonized legal framework to ensure the sustainable and equitable use of abiotic resources. It explores the role of international agreements, such as the United Nations Convention on the Law of the Sea (UNCLOS) and the Paris Agreement on climate change, in shaping the global governance of natural resources.

Furthermore, the study investigates the national-level legal frameworks of selected countries, comparing their approaches to resource management and environmental protection. The paper discusses the effectiveness of these frameworks in balancing economic development, environmental sustainability, and the rights of indigenous communities and local populations.

Findings/Outputs: The paper concludes by proposing recommendations for strengthening the legal framework governing the utilization of abiotic components of the natural environment. These recommendations include the development of clear and enforceable regulations, the promotion of international cooperation and knowledge sharing, and the incorporation of principles of sustainability, equity, and human rights into resource management policies.

Keywords: abiotic resources, natural environment, legal framework, sustainable development, resource management, climate change

INTRODUCTION

The legislative approach to the utilization of abiotic components of the natural environment encompasses various frameworks and principles aimed at sustainable management and conservation of these non-living resources. This approach is crucial for ensuring that abiotic factors, such as minerals, water, and geological formations, are used responsibly, balancing ecological integrity with human needs.

UNDERSTANDING ABIOTIC COMPONENTS

Abiotic components are the non-living physical and chemical elements of the environment, including water, air, soil, and minerals. These components interact with biotic factors (living organisms) to shape ecosystems. Effective management of abiotic resources is essential for maintaining biodiversity and ecosystem services, as these resources often support various life forms and ecological processes. This article will have a higher emphasis on water and air, as they are considered the most important abiotic factors of the environment.

When tackling the legal framework of water, we must mention, that, it is a resource that belongs to the whole society, i.e. it is allocated for public use, in the sense that each member of the society enjoys free access to water resources, respectively to the performance of any activities involving the use of water, with some exceptions that lead to the establishment of a special regime of water use. In the following, taking into account that the legislator delimits the use of water into general use and special use, we will refer to the activities that constitute general use of water. (Marinescu,2008)

Therefore, according to art. 22 of the Water Law, the use of water for the following purposes is considered a general use and does not require environmental authorization for special use:

a) human consumption and other domestic needs.

b) animal watering without the use of permanent structures.

c) the irrigation of land near the house.

d) bathing and recreation.

e) the abstraction and use of water for firefighting or in any other emergency. Although the legislator expressly establishes the activities which constitute the general use of water, it nevertheless comes with some specifications as to the limitations and prohibitions which may be imposed even within the general use.

That is, according to paragraph 3 of the same rule, the use of water for bathing and recreation may be limited or prohibited

a) by the central body of public administration in the field of the environment or other authorized public health bodies in the case of no imminent danger to human life and health or in a protection zone established in accordance with the legislation.

b) by the holder of an environmental permit for special water use in accordance with the conditions of the permit.

In the context of the above, we welcome the legislator's remark set out in para. 6 art. 22 according to which "the holder of the environmental authorization for special water use is obliged to ensure access to general water use", and at the same time, by para. 7 of the same article makes the remark that the right to the general use of water does not imply the right of passage through private land except under the conditions provided by the Civil Code. These two rules, and others of this kind, come to bring clarity regarding the extent of the right of general use of water, but also establishes the boundaries of the right of special use of the holders in order to exclude contradictions in the exercise of the two categories of use.(Brown,1998)

Thus, the set of regulations in the field of water use is quite coherent and complex, in the sense that they are found not only in environmental legislation, but also in civil legislation. In this respect, the Civil Code, through articles 381-384, contains some regulations on the general use of water in terms of neighborhood relations, and art. 22 para. 5 of the Water Law also refers to the rules of the Civil Code mentioning that "Atmospheric precipitations falling on private land may be used by the owner in accordance with the provisions of the Civil Code".

However, in addition to the fact that the general use of water provides for everyone's access to water resources for the purposes indicated above, the legislation in force establishes some activities in the field of water use that require to be authorized, and the use of water on the basis of an authorization is called special use. The need to delimit the use of water into general and special use is dictated by the fact that the diversity of activities involving the use of water may also lead to a diversity of destructive effects of water, for this reason, each type of activity requires the establishment of specific regulatory positions. Thus, the establishment of the condition that the use of aquatic objectives for certain purposes, other than those involving general use, requires additional authorization from specialized bodies, constitutes nothing more than an additional possibility to ensure the achievement of water protection purposes.

For any society, water protection is a priority reflected in the regulations elaborated according to techniques that aim to ensure the existence of aquatic resources in terms of quality and quantity. In this context, the Republic of Moldova also benefits from a legislative framework designed to ensure a healthy and ecologically sound way of life for its citizens through the consumption of quality water and its use in all activities requiring the use of water.

Thus, in order to fulfill the tasks set before the state authorities on the basis of the law on environmental protection no. 1515 of 16.06.1993, there is currently a series of normative and legislative acts that have as their objectives the protection of water. The basic regulation in this chapter is the Water Law no. 272/2011 which according to art. 1 para. 1 aims to "create a legal framework for the management, protection and efficient use of surface water and groundwater based on participatory assessment, planning and decision-making". (Turnhout, E., Tuinstra, W., Halffman, W. (2019)

Therefore, in order to efficiently strengthen the rules concerning the water protection regime, the legislator has devoted two separate chapters to this segment, Chapter V on surface water protection and Chapter VI on groundwater protection.

A particularly important role in achieving the desired result of the water protection activity is played by the series of measures oriented towards an effective protection, which in the above-mentioned law begins with the prohibition of pollution as set out in art. 34 according to which "discharge, introduction of pollutants into a body of surface water, into a body of groundwater, into the land of the water fund or into the land from which it is possible to drain into a body of surface water or into a body of groundwater are prohibited, except in cases where they are carried out in accordance with the conditions of water discharge provided in the environmental permit for special water use".

It is essential the fact that most industrial activities imply the need for a sports consumption of water. it is discharged into aquatic objectives, the rules concerning the control of wastewater discharge are simply dispensable from the protection regime. To this end, the legislator establishes the list of priority hazardous substances which, because of their hazardous nature or the increased risk they pose to the environment, may not be discharged into surface water bodies, groundwater bodies or water-bottom land, and then the requirements for the discharge of hazardous substances.

It is important to mention that in order to ensure effective water protection, the legislator regulates in detail the rules and requirements for wastewater treatment in urban settlements, rural settlements, as well as the environmental permit conditions for special water use involving wastewater discharge.

As mentioned above, Chapter VI of the Water Law establishes the groundwater protection regime, which directly refers to the protection of groundwater for drinking purposes, focusing in principle on the establishment of a stricter regime of their use in order to ensure maximum protection, considering that they are intended for direct consumption for drinking purposes.

The problem of air pollution, in addition to the problem of protection of the other components of the environment, today rightly requires special attention from the legislator, an important regulatory objective for the coming years, which will ensure the improvement of the quality of the environment, an indispensable factor of existence for the future generation. The high level of emission of harmful gases into the atmosphere, exceeding the ionizing radiation level and noise pollution are the main causes of the development of various diseases affecting the immune, respiratory, cardiac and, last but not least, reproductive systems. Noise generated by industrial activities, power generation, transportation, have a particularly harmful influence on the atmosphere, respectively on humans, constituting the main cause of intercranial diseases. For example, noise levels between 60 and 90 dB have a negative influence on work productivity and damage to health in case of prolonged noise exposure. The sound level below 90 dB can lead to deafness, increasing the danger of damage to the intracranial system.

Thus, in most cases, the level of 70 dB, which is considered the tolerance limit, is mainly found in highly industrialized and densely populated urban areas or near busy transport arteries. As a result, the increase in industrial production of all kinds, the circulation of motor vehicles, the uncontrolled spreading of waste, have been accompanied by the release into the air of ever-increasing quantities of invisible particles of carbon dioxide, methane, nitrous oxide which affect the atmosphere slowly but surely and progressively, so that in a decade the average temperature may rise by another degree Celsius. (Burns W.1997)

Although at the national regulatory level the notion of air pollution is not given, according to art. 3 of the Law on atmospheric air protection, air pollutant is considered any substance in solid, liquid, gaseous (vapor) or energetic (radiant, electromagnetic, ionizing, thermal, phonic or vibrating) state, present in the air, which may have a negative effect on human health and/or the environment. At the international level, according to the definition given at the meeting of the European Council for the Protection of the Environment, air pollution is considered "...when the presence of foreign substances or significant variations thereof in the proportion of the constituent parts of the air is ascertained and which, taking into account the state of scientific knowledge at the time, may have harmful or harmful effects" (Marinescu D,1993)

Thus, we can consider air pollution as any introduction of substances or energy into the atmosphere, the presence of which leads to the establishment of an ecological imbalance and as a result causing harm to the environment or to humans.

To conclude, the development of the legal framework in the field of atmospheric air protection, at present, has to take into account the advanced technologies, the volume of industrial activities, production, processing and storage of waste resulting from these activities. According to some opinions, (Thieffry P.2008) the instruments used to regulate air-related issues are diverse and specific, both in terms of the parameters used and in terms of the (applicable) operating regime. The issue concerns both air pollution and air quality.

The realization of activities of use of atmospheric air at the present stage, when the possibility of causing an environmental impact may get out of control, cannot be conceived without rigorous state supervision, which is realized through state bodies. The administration of the use of atmospheric air consists in the activity of management, development of policies in the field, representation of the interests of defense and recovery of damage to atmospheric air.

Founded as a result of industrialization, technologization and the progressive development of all areas of the economy, air pollution has expanded greatly in the second half of the 20th century. In this context, the globalization of the phenomenon of atmospheric pollution has also led to the signing of five international conventions in the field of air quality protection. Thus, the need to develop a new strategy for the protection of atmospheric air in the Republic of Moldova is also conditioned by the obligations assumed in the framework of international environmental conventions. During the last decades the social-economic development has been extensive with the non-national utilization of natural resources, poor investment in air protection, and the non-fulfillment of ecological provisions of the projects has conditioned the critical ecological state of air quality, mainly in the cities of the Republic of Moldova All these consequences currently require a different approach to the regulations aimed at the protection of atmospheric air through the rational and controlled use of this natural component. At the present stage, the atmospheric air protection regime comprises the totality of regulations concerning the establishment of the limits of use together with the establishment of obligations towards the beneficiaries and the competent state bodies in the realization of the administration and control of the use and protection of atmospheric air. In this respect, the state bodies are entrusted with the most responsible and representative attributions, the efficient realization of which is directly ensured by the coercive force of the state. A first measure with the character of protection of the atmospheric air is reflected in the regulation of the use of the atmospheric air by the persons who carry out activities related to the emission of pollutants, only on the basis of authorization. Under these conditions, the control of emissions of pollutants into the atmosphere can be made as efficient as possible, once the ELA pollutant standards and other conditions and regulations ensuring protection of atmospheric air are established in the permit. An important aspect to mention is the fact that in case the ELA is exceeded, the State Ecological Inspectorate may request the suspension of the activities of the natural resource beneficiary under the Law on the basic principles of regulating the activities of the entrepreneur. Thus, the sanction in question will have a double impact on the guilty person, as the activity of pollutant emission and in general the activity of an entrepreneur will be suspended, once it is done under the special law,

Another important regulation in the field of atmospheric air protection is the rule in art. 15 of the law on atmospheric air protection, which obliges the managers of enterprises to inform the authorities exercising state control in the field of atmospheric air protection and the local public administration authorities about cases of exceeding the pollutant standards and to take the necessary measures to eliminate the causes and consequences of atmospheric air pollution in the established manner,

In the same context, being warned about a possible increase in the concentration of pollutants in the atmospheric air caused by unfavorable meteorological conditions, the economic agents that have approved standards for the ELA of pollutants are obliged to carry out, in order to reduce the emissions of pollutants, measures coordinated with the authorities exercising state control in the field of atmospheric air protection. It is obvious that measures for the protection of atmospheric air can be effective in their application in relation to the location, design, construction, reconstruction, expansion and operation of objectives with an impact on atmospheric air.

Thus, in the location, design, construction and commissioning of new enterprises, installations and other new objectives, it is required to provide for the capture (purification, utilization and neutralization of waste and noxious

emissions or the permanent elimination of emissions of pollutants into the atmosphere, compliance with other laws containing rules on its protection. It is forbidden to operate enterprises, installations and other objectives that do not comply with the requirements for the protection of atmospheric air. Individuals and legal entities that carry out production activities at pollutant-generating objectives are obliged to equip pollution sources, regardless of the term of their entry into operation, with installations, machinery and equipment for purifying emissions.

If it is impossible to reduce pollutant emissions and the harmful influence on the atmospheric air by enterprises, installations and other objectives up to the established standards, they shall cease their activity.

A no less important measure that plays a decisive role in combating excessive emissions of pollutants is the regulation of pollutant emissions from transportation. Thus, in this respect, certain specific conditions are imposed on the operation of transport mills. Therefore, the emissions of pollutants into the air from transportation means and equipment must not exceed the ELA standards,

Ministries, departments, economic agents, engaged in the design, production, repair and operation of transportation means and equipment are obliged to develop and implement complex measures to prevent and reduce emissions of pollutants into the atmosphere, as well as noise and vibration produced by these means of transport and equipment. It is forbidden to produce and operate means of transportation with emissions exceeding the ELA pollutant standards. State control of compliance with the ELA pollutant standards for pollutants produced by means of transport vehicles and equipment shall be carried out by the authorities authorized to do so upon their entry into the country and throughout its territory. Also, the regulations on imposing the observance of certain rules for the protection of atmospheric air from the anthropic factor are currently becoming indispensable in the context of realizing the integrationist aspirations of the Republic of Moldova to the community space. To this end, the extraction of mines, blasting works, the emplacement and exploitation of waste dumps, dumpsites and rubbish dumps shall be carried out in compliance with the provisions of the law.

It is forbidden to install in localities dumps, dumps, refuse dumps, to store industrial, agricultural, household waste, which are sources of air pollution with noxious and odorous substances, as well as to destroy (incinerate) such waste by natural and legal persons in the territory of localities and outside them, except in cases when the destruction (incineration is carried out with the help of special facilities and in compliance with the provisions of this law. Natural and legal persons are obliged to deposit the waste that pollute the atmospheric air in special places on the territory of their enterprises under the conditions established by the Law no. 1347-XIII of October 9, 1997 on production and household waste.

Legislative Frameworks-Ecosystem Approach

The ecosystem approach represents a strategy for integrated management that is designed to promote the conservation and sustainable use of natural resources, including abiotic components. This approach underscores the necessity for comprehensive management that takes into account the interconnections between biotic and abiotic elements. The objective is to dismantle the barriers between sectors, ensuring that policies are coherent and synergistic across different environmental domains.

International Agreements and Policies

A number of international agreements and frameworks provide guidance on the legislative approach to abiotic resource management.

The Convention on Biological Diversity (CBD) This convention emphasises the necessity of incorporating biodiversity considerations into legislative frameworks, which encompasses the administration of abiotic resources. The Convention on Biological Diversity (CBD) promotes the sustainable utilisation of biological resources, while acknowledging the role of abiotic factors in supporting ecosystems.

Integrated Coastal Zone Management (ICZM) The protocols of ICZM advocate for the sustainable management of coastal resources, linking the ecosystem approach with legislative measures designed to protect both biotic and abiotic components in coastal areas. This encompasses the administration of geological features and water resources, which are vital for the sustenance of coastal ecosystems.

At the national level, countries frequently enact particular legislation and regulations with the objective of ensuring the sustainable utilisation of abiotic resources.

Such legislation may include:

Laws Pertaining to Mining and Resource Extraction: The legislation governing the extraction of minerals and fossil fuels is designed to prevent such activities from causing environmental degradation.The following section will examine the policies that are in place with regard to the management of water resources.Legislation that governs the utilisation and conservation of freshwater resources, with an emphasis on sustainable practices to maintain water quality and availability.

Land use planning is concerned with the management of land resources in order to achieve sustainable development. Such policies must incorporate the management of soil and geological resources, promoting practices that prevent erosion and degradation while supporting agricultural productivity.

Despite the existence of established frameworks, the integration of abiotic components into legislative approaches presents a number of challenges, including:

A further challenge is **the lack of awareness of the importance of abiotic resources**. The significance of abiotic resources is frequently underestimated in conservation initiatives, resulting in insufficient legislative attention to these elements.

Methodological Issues: There are ongoing debates regarding the classification and valuation of abiotic ecosystem services, which complicates their incorporation into policy frameworks.

However, recognizing the role of abiotic components in ecosystem services presents opportunities for enhancing conservation efforts. By integrating abiotic resource management into broader environmental policies, there is potential for more effective conservation strategies that benefit both ecosystems and human communities.

The principal legislative instruments that regulate the utilization of abiotic components on a global scale encompass a number of international treaties and conventions that address a range of issues pertaining to the management of resources and the protection of the environment. Below, we can find the primary frameworks.

1. The United Nations Convention on the Law of the Sea (UNCLOS) is a pivotal international treaty that establishes the legal framework for the use of marine resources. This treaty establishes guidelines for the utilization of ocean resources, including minerals and energy. It delineates the rights and obligations of states with regard to the exploration and utilization of marine resources, underscoring the necessity for sustainable management and conservation of the marine environment.

2. The Convention on Biological Diversity (CBD) While the Convention on Biological Diversity (CBD) is primarily concerned with the conservation of biological diversity, it also addresses the sustainable use of its components, which includes abiotic resources. The document places an emphasis on the necessity for the conservation and equitable distribution of benefits derived from genetic resources, which indirectly influences the management of abiotic resources as part of a broader approach to ecosystem health.

3. The Paris Agreement The objective of this international treaty is to combat climate change and its associated impacts. Although not exclusively dedicated to abiotic resources, the Paris Agreement indirectly impacts their utilization through commitments to curtail greenhouse gas emissions and advance sustainable practices, particularly within the energy and resource extraction sectors.

4. The Outer Space Treaty This treaty establishes the legal framework for the activities of states in outer space, including the utilization of abiotic resources on celestial bodies. The treaty establishes the principle of non-appropriation of outer space resources, while allowing for their exploration and use. This sets a legal framework for future resource utilization in space.

5. Regional Agreements and National Legislation: Various regional agreements and national laws also contribute to the governance of abiotic resources. For instance, the European Union has established comprehensive regulations under the EU Green Deal, which aims to promote sustainability across various sectors, including resource extraction and management.

These frameworks collectively shape the legal landscape for the utilization of abiotic components, balancing resource exploitation with environmental protection and sustainability goals.

THE IMPACT OF CLIMATE CHANGE ON ABIOTIC FACTORS

Air quality degradation: The phenomenon of climate change serves to exacerbate the issue of air pollution, increasing the frequency and intensity of both heatwaves and conditions of stagnant air. This, in turn, can lead to higher concentrations of pollutants such as ozone. The deterioration of air quality can have direct implications for human and animal health, as well as influencing plant growth and biodiversity.

The alteration of temperature: An increase in global temperatures, a pivotal aspect of climate change, results in alterations to abiotic factors such as air temperature. This shift has the potential to disrupt the phenology of various species, affecting their breeding and migration patterns. As an example, elevated temperatures can result in the advancement of flowering periods in plants, which may not correspond with the life cycles of pollinators, thereby influencing food webs.

Moisture Levels: Climate change affects precipitation patterns, leading to alterations in moisture levels, another essential abiotic factor. Increased instances of drought or flooding can impact plant growth and soil health, further affecting the entire ecosystem. For instance, drought conditions can reduce food availability for herbivores, which in turn affects predator species.

THE INTERCONNECTIVITY OF ABIOTIC AND BIOTIC FACTORS

Abiotic factors, including air quality, exert a pivotal influence on the formation of biotic interactions within ecosystems. The equilibrium between abiotic and biotic factors is vital for the sustenance of ecosystem stability. When climate change disrupts this equilibrium, it can result in:

The extinction of species: Altered abiotic conditions can result in habitat loss and increased competition for resources, which in turn can lead to declines in species populations and, in some cases, extinction.

Food chain disruption: Changes in abiotic factors can impact the availability of food sources, affecting herbivores and, consequently, the predators that rely on them. For instance, if phytoplankton populations decline due to warmer ocean temperatures, this can cascade through the food web, affecting fish populations and the species that depend on them.

The relationship between abiotic factors, such as air quality, and climate change is of critical importance for the comprehension of ecosystem dynamics. Climate change not only modifies abiotic conditions but also disrupts the delicate equilibrium between these factors and biotic responses. The implementation of effective air protection strategies is essential for the mitigation of the impacts of climate change and the preservation of ecosystem health, thereby underscoring the necessity for integrated environmental management approaches that address both abiotic and biotic components.

CONCLUSION

In conclusion, by means of national regulations, the Republic of Moldova also ensures the implementation of international regulations, taking into account the fact that the Water Law No. 272/2011 is partially harmonized with Council Directives: No. 91/271/EEC of 21 May 1991 concerning urban waste water treatment and No. 91/676 EEC of 12 December 1991 concerning the protection of waters against pollution caused by nitrates from agricultural sources, with the European Parliament and Council Directives: No. 2000 /60/EC of October 23, 2000 establishing a framework for Community action in the field of water policy; No. 2006/71 EC of February 15, 2006 on the management of bathing water quality; No. 2007/60/EC of October 23, 2007 on the assessment and management of flood risks; No. 2008/105/EC of December 16, 2008 on environmental quality standards in the field of water, create the legal framework for the management, protection and use of water.

Ensuring compliance with international water protection standards is quite important for all states, taking into account the fact that pollution knows no borders and can affect all states equally regardless of their level of development, legal framework for environmental protection, etc.

An important international water protection standard mentions that "the owners of water transportation means, pipelines, floating installations and other installations in aquatic objectives, other legal and natural persons are obliged not to allow pollution and pollution of water by oil derivatives, chemical substances and other products of production activities".

A particular importance in this respect on the international has the International Conference under the aegis of the International Maritime Consultative Organization of the United Nations held in 1954, which establishes prohibition of the cleaning of tanks in which oil has been transported or the discharge of oil residues within 50 nautical miles of land.

- the obligation to install oil residue cleaners in ports.
- the installation on ships of separators to retain oil residues when discharging the cleaning water.
- the obligation to notify the host State of potentially hazardous cargoes carried on board, etc.

The legislative approach to the utilization of abiotic components is essential for sustainable environmental management. By integrating these components into existing frameworks and policies, stakeholders can ensure that both abiotic and biotic resources are managed in a way that promotes ecological health and human well-being. Continued research and collaboration among policymakers, scientists, and communities will be vital for advancing this integrative approach.

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COMPREHENSIVE APPROACH TO BUSINESS PROCESS MANAGEMENT: TRADITIONAL METHODS AND DIGITAL INNOVATIONS

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Abstract

In the context of the dual (digital and green) transition, the rapid processes of digital transformation are the driving force of our time, opening up vast opportunities, including those for sustainable development as a whole. The World Economic Forum notes that in this "decisive decade for climate action," digitization is key to supporting sustainable growth. By adopting a dual transition approach, leaders can unite digital and sustainability programs to future-proof their organizations while achieving efficiency and sustainability goals.

This article aims to explore a comprehensive approach to business process management that combines traditional methods such as BPR (Business Process Reengineering), BPM (Business Process Management), Lean, and Six Sigma with modern digital innovations such as RPA (Robotic Process Automation), Artificial Intelligence (AI), and Business Intelligence (BI) platforms. The goal of the research is to develop a unified framework for business process management that enhances productivity, flexibility, adaptability, and sustainability in a rapidly changing digital environment.

The analysis of traditional management methods revealed key gaps, including insufficient adaptation speed, limited integration of new technologies, low flexibility, and high complexity in implementing changes. Based on the results obtained, an integrated business process management model was developed that combines the strengths of traditional methods with the potential of digital innovations. The implementation of Agile methodologies ensures rapid adaptation to changes, while process automation through RPA and the use of AI increase efficiency, reduce costs, and promote sustainability.

The scientific novelty of the research lies in creating a unified framework that allows companies to effectively integrate new digital technologies into their management processes, ensuring continuous improvement, adaptation to new market conditions, and alignment with sustainable development goals. The proposed model provides process transparency, enhances flexibility, and enables quick responses to changes, which are critically important in the digital era. The research results indicate that using a comprehensive approach that combines traditional methods and digital innovations allows companies not only to improve business process management efficiency but also to significantly reduce the time required for change implementation, lower operational costs, and increase sustainability and overall productivity.

The research conclusions emphasize the importance of integrating modern digital technologies into traditional management practices to ensure long-term competitiveness, efficiency, and sustainability in the context of digital transformation.

Keywords: digital transformation, management, business processes, methods, tools, integration, framework, sustainable development.

INTRODUCTION

Relevance of the dual (digital and green) transition. In modern conditions, digital transformation plays a critical role in ensuring sustainable development, as evidenced by the research of the World Economic Forum (World Economic Forum, 2021). Digitization and the green transition are interrelated processes that can significantly enhance the efficiency and resilience of business processes. Research objective: to assess the combination of traditional business process management methods with digital innovations to improve productivity, flexibility, and resilience in a rapidly changing environment. We agree with the opinion of Profs. Kasich A. and Naumkina I. that digital transformation is the introduction of modern technologies into a company's business processes. This approach implies not only the installation of modern technology or software, but also fundamental changes in approaches to management, corporate culture, and external communications (Kasich & Naumkina, 2021).

MATERIALS AND METHODS

In this study, the research is based on a mixed approach, which includes a qualitative analysis of the literature and a quantitative analysis of the effectiveness of digital innovation implementation.

A comparative analysis was used to determine the effectiveness of implementing traditional and digital business process management methods.

The initial stage involved an extensive literature review of existing business process management methods, focusing on traditional approaches like BPR (Business Process Reengineering), BPM (Business Process Management), Lean, Six Sigma, Agile, TQM, and modern digital technologies such as RPA (Robotic Process Automation), AI (Artificial Intelligence), and BI (Business Intelligence). This literature review aimed to identify key strengths and limitations of both traditional and digital approaches in the context of sustainable business process improvement. The literature review also included an analysis of the dual (digital and green) transition, with specific attention to how digital transformation contributes to sustainable development goals.

Based on the literature review, comparative analysis, and findings from the case studies, an integrated business process management model was developed. This model combined traditional management methods and digital innovations to create a framework capable of enhancing productivity, flexibility, adaptability, and resilience in business processes.

FINDINGS

Business Process Management (BPM) is a managerial discipline that combines knowledge from information technology and management and applies it to operational business processes. The main goal of BPM is to improve the efficiency of an organization by managing its key processes. This discipline allows organizations to achieve their goals by improving, managing, and controlling business processes.

Key aspects of BPM:

1. Business process modeling:
   - The modeling process is the foundation of BPM, facilitating the management of the complexity of organizational processes by providing a detailed description of procedures and opportunities for their improvement. Process models are used for visualization, simulation, and analysis, which allows for identifying problem areas and implementing necessary improvements (Aalst & Wil, 2013).
   - Pprocess modeling typically involves tools like BPMN (Business Process Model and Notation), UML (Unified Modeling Language), Petri Nets, and others that depict the sequence of actions and interconnections between them (Stravinskiene & Serafinas, 2020).
2. Business process automation:
   - BPM initially evolved as an extension of Workflow Management (WFM), focusing on process automation. However, BPM has a broader scope, covering process analysis, operations management, and work organization. BPM enables task optimization, reduces process execution time, and lowers costs (Aalst & Wil, 2013).

3. Analysis and improvement:
   - BPM includes the analysis of existing business processes aimed at identifying opportunities for improvement and adaptation to changes. Key methods include Business Process Reengineering (BPR), Lean, and Six Sigma, which can be combined with modern digital tools such as RPA (Robotic Process Automation) and Artificial Intelligence to enhance productivity and reduce costs (Szelągowski & Lupeikiene, 2020), (Butt, 2020).
4. Organizational culture and change management:
   - BPM aims not only to change technologies but also to transform organizational culture. This involves increasing employees' "process awareness," developing process ownership, and systematically improving processes. The key components of BPM include understanding processes, assigning process owners, measuring performance, and integrating with other processes (Stravinskiene & Serafinas, 2020).
5. BPM implementation strategies:
   - implementing BPM involves integrating it with organizational strategies and objectives, considering customer expectations and market demands. This allows organizations to achieve long-term competitiveness, reduce operational costs, and ensure rapid adaptation to changes (Lizano-Mora et al., 2021).

Enhancing business process management (BPM) performance involves the systematic improvement of processes aimed at increasing productivity, efficiency, and overall competitiveness of the organization. This is achieved through process optimization, cost reduction, and enhanced customer satisfaction. Below are the key aspects of BPM performance enhancement analyzed based on the uploaded documents.

1. **Implementation of digital technologies for automation:**
   - the use of digital technologies such as RPA (Robotic Process Automation), AI (Artificial Intelligence), and Big Data Analytics provides automation of routine tasks and boosts productivity. RPA enables the rapid and accurate execution of repetitive tasks, such as request processing or customer service, thereby reducing costs and ensuring compliance with established standards (Stravinskiene & Serafinas, 2020).
2. **Integration of BPM with quality management (QM):**
   - there is a strong relationship between BPM and QM, as both disciplines focus on continuous process improvement and ensuring the high quality of products or services. Integrating these approaches allows for more efficient organizations where processes are standardized according to standards such as ISO 9001, ensuring quality and stability (Kerpedzhiev et al., 2020).
3. **Utilization of BPM maturity models:**
   - assessing BPM maturity is an important step for determining the current level of process development in an organization. This allows organizations to develop a roadmap for further process improvement, IT system integration, and human resource management. For example, processes can be benchmarked with market data, which enables an objective evaluation of the organization's maturity level (Grisold et al., 2021).
4. **Reducing complexity and increasing adaptability:**
   - one of the goals of BPM is to reduce the complexity of processes and increase their adaptability to change. This is achieved through the implementation of dynamic approaches such as Agile BPM, which ensures flexibility and the ability to quickly respond to changing market conditions. Reducing complexity also contributes to improved real-time decision-making, which is a key factor for enhancing BPM performance (Szelągowski & Lupeikiene, 2020).

5. **Application of new methodologies for process improvement:**

- combining traditional methodologies such as Lean, Six Sigma, and new approaches like Process Mining helps organizations identify and eliminate weaknesses in processes. These approaches not only help reduce costs but also improve task performance quality and customer satisfaction (Lizano-Mora et al., 2021).

6. **Knowledge management and process culture:**

- BPM also encompasses knowledge management, which contributes to the adaptation of processes to new conditions and increased productivity. Employee knowledge is used for process improvement, while a process-oriented culture supports the development of process thinking among employees, which is essential for long-term success (Szelągowski & Lupeikiene, 2020), (Grisold et al., 2021).

Enhancing BPM performance is a comprehensive approach that includes the implementation of digital technologies, integration with quality management, the use of maturity models, and the adoption of new methodologies. This approach enables organizations not only to increase productivity and efficiency but also to meet modern market requirements and achieve sustainable development.

Traditional Business Process Management Methods: BPR, BPM, Lean, Six Sigma. BPR (Business Process Reengineering) is known for its ability to radically change business processes to increase productivity, while BPM (Business Process Management) facilitates systematic process management (Fiorello et al., 2023b). Lean and Six Sigma focus on cost reduction and quality improvement by eliminating waste and variations (Info, 2024c).

Digital Innovation: RPA, AI platforms, BI. Robotic Process Automation (RPA) enables the automation of routine tasks, reducing costs and increasing efficiency (AI And Compute: A Perfect Pair for Scaling Innovation and Sustainability, 2024). AI platforms provide automated decision-making, and Business Intelligence (BI) offers tools for improving strategic planning (Baiyere et al., 2020c).

Historical overview of the development and evolution of key business process management methodologies, including Business Process Management (BPM), Business Process Reengineering (BPR), Lean Manufacturing, and Six Sigma, along with major industrial transitions presented in Table 1. The timeline highlights significant milestones, illustrating how these methodologies emerged, evolved, and intersected with broader industrial trends like Industry 4.0 and the green transition. This timeline helps demonstrate the progression from early management theories to modern approaches that incorporate digital technologies and sustainability.

Table 1: Timeline For BPM, BPR, Lean Manufacturing, Six Sigma, And Industry Transitions

Timeline topic	Period	Key development
Business Process Management (BPM)	1776	Division of Labor - Adam Smith emphasizes specialization and efficiency
	1914	Scientific Management - Frederick Taylor introduces workflow optimization
	1960s-1980s	Management Evolution - Chandler and Drucker focus on short/long-term goals in business management
	2000s	BPM Evolution - Introduction of BPM software and frameworks
	2010s	Agile & Lean BPM - Integration of Agile and Lean practices for continuous improvement
	2020s	Intelligent Process Automation (IPA) - Use of AI, RPA, and analytics for end-to-end process optimization
Business Process Reengineering (BPR)	1991	Introduction of BPR - Michael Hammer and James Champy popularize radical redesign
	1990s-2000s	Adoption Phase - Companies adopt BPR for transformative change
	2000s	Refinement Phase - Combining radical BPR with continuous improvements
	Recent Years	Integrated Approach - BPR merges with BPM for balanced process management
Lean Manufacturing	1950s	Origin in Toyota - Taiichi Ohno and Shigeo Shingo develop Lean to minimize waste
	1980s	Global Adoption - Lean gains recognition worldwide, especially in the US
	2000s	Lean in Service Sector - Lean expands to service industries for value optimization
	2010s-2020s	Lean & Digital Transformation - Combining Lean with digital technologies for efficiency
Six Sigma	1980s	Origin in Motorola - Focused on quality and reducing variation
	1990s	Popularization - General Electric's adoption under Jack Welch makes Six Sigma globally recognized
	2000s	Integration with Lean - Formation of Lean Six Sigma
	2010s-Present	Global Best Practice - Lean Six Sigma becomes industry standard for quality control
Industry 4.0 & Other Transitions	2015-2020	Industry 4.0 - Focus on automation, IoT, AI, and Big Data
	2020s	Internet 5.0 - Emphasis on personalization, enhanced user experience, and AI integration
	2020s	Digital Transition - Adoption of digital tech to enhance resilience, boosted by COVID-19
	2020s	Green Transition - Emphasis on sustainability, green practices, and carbon neutrality

Source(s): Authors' own elaboration

The intersections and evolution of various business process management methodologies and approaches over time presented in Table 2. It identifies key periods and describes how different methodologies - such as BPM, Lean, Six Sigma, and BPR-developed alongside and influenced one another. This table provides insight into the ways these methodologies combined to create more comprehensive and efficient management frameworks, reflecting the continuous improvement and integration of quality, efficiency, and adaptability in business processes.

Table 2: Combination Of Methodologies And Periods, Their Intersections And Evolution Over Time

Period	Key development and intersection
1776	Division of Labor (Adam Smith) - Early focus on labor efficiency forms the basis of Lean principles
1914	Scientific Management (Taylor) - Workflow optimization influences BPM and Lean, focusing on systematic improvements
1950s	Lean Manufacturing (Toyota) - The introduction of Lean methodologies reduces waste, which influences BPM's efficiency focus
1980s	Six Sigma (Motorola) - Quality improvement intersects with Lean to form Lean Six Sigma, contributing to BPM's focus on quality
1991	BPR Introduction (Hammer & Champy) - Radical redesign overlaps with Lean, pushing for BPM-like rethinking in processes
2000s	BPM Emergence - BPM builds on BPR's redesign, Lean's waste reduction, and Six Sigma's quality control for comprehensive management
2000s	Lean Six Sigma Integration - Lean and Six Sigma merge, providing efficiency and quality, influencing BPM and complementing BPR
2010s	Agile, Lean BPM & Industry 4.0 - Agile practices and Industry 4.0 (IoT, AI, Big Data) enhance BPM, Lean, and Six Sigma automation
2020s	Digital & Green Transition, Internet 5.0 - Digital transition accelerates BPM adoption; Lean, Six Sigma adapt for sustainability

Source(s): Authors' own elaboration

Traditional methods, such as BPR and BPM, have limitations in terms of adaptation speed and the integration of new technologies, which can be overcome through the use of digital innovations (Mendling et al., 2020b).

Following the historical evolution of business process management methodologies and industry transitions, several modern initiatives highlight the importance of integrating digital technologies and sustainable practices. These initiatives and strategies aim to enhance business process management (BPM) efficiency while promoting sustainability and aligning with Sustainable Development Goals (SDGs):

- The implementation of public-private partnerships (PPP) can stimulate digital transformation and the green transition, contributing to the realization of Sustainable Development Goals (sdgs). This approach is suitable for strategic management of processes aimed at sustainability and emission reduction (ppps Can Drive Digital and Green Transformations for Sustainable Development | UNECE, 2023b).
- The use of a dual transition strategy to create a more sustainable economy will help integrate digital and environmental practices, which will increase business process management efficiency, focusing on sustainability and efficiency (Kommission, 2022b).
- This article focuses on environmentally friendly technologies that support digital transformation through AI and cloud computing, enhancing data processing efficiency and reducing the carbon footprint, which is crucial for sustainable BPM strategies (Fronesis, AI Cloud Services, 2024b).
- Artificial intelligence and computing power contribute to the efficiency of business process management by automating routine tasks and optimizing processes (AI And Compute: A Perfect Pair for Scaling Innovation and Sustainability, 2024).
- Using flexible strategies such as Agile and Lean allows for rapid adaptation to change, which is essential for increasing productivity in BPM (fastercapital, 2024).
- This strategy aims to expand digitization in Europe, which includes integrating digital technologies to support business processes and reduce environmental impact, promoting sustainable business process management (Europe's Digital Decade: 2030 Targets | European Commission, n.d.-b).

Based on the analysis of articles, the integration of Business Process Management (BPM) methods and Digital Innovations (DI) involves combining strategies and tools to enhance the efficiency of business process

management. To build an integration diagram of BPM methods considering both traditional approaches and modern digital innovations, it is necessary to combine concepts from previous research, additional documents, and new analysis, as well as focus on the twin (digital and green) transformation that contributes to improving business process management efficiency. The stages of integrating BPM methods include the following steps:

1. Strategic alignment and digital transformation:

- The integration of BPM and digital innovations (DI) should start with defining strategic goals that align with both the short-term and long-term objectives of the company. Digital initiatives should aim at improving process flexibility, reducing costs, and enhancing sustainability (Cosa & Torelli, 2024), (Lerman et al., 2022).
- It is important to apply traditional methods such as Business Process Reengineering (BPR), Lean, and Six Sigma in combination with digital technologies such as AI, RPA, and Business Intelligence (BI) for rapid process adaptation (Butt, 2020).

2. Technological infrastructure:

- The use of digital technologies enables the creation of an efficient infrastructure for managing business processes. Specifically, AI and BI provide real-time data analysis, which enhances decision-making accuracy, while RPA automates routine tasks, improving productivity and reducing operational costs (Gil-Gomez et al., 2020), (Del Socorro Encinas-Grijalva et al., 2024).
- The integration of cloud technologies and the Internet of Things (IoT) helps optimize resource management and supports the transition to a green economy through efficient energy use and reduced emissions (Xue et al., 2022), (Lorenzaj, 2024).

3. Flexibility and adaptability of business processes:

- The use of Agile methodologies ensures flexible management of business processes, allowing quick adaptation to changes in market conditions. Lean and Six Sigma integrate with Agile to enhance process efficiency and facilitate faster decision-making (Yin et al., 2022), (Feroz et al., 2021).

– the integration of digital technologies helps ensure transparency and flexibility of processes, which is essential for achieving sustainability goals in the context of the twin transformation, (Gil-Gomez et al., 2020).

4. Twin transition (digital and green):

- The twin transition concept (digital and green) allows companies to integrate modern technologies to reduce emissions, optimize resources, and increase energy efficiency. This is achieved through smart solutions for supply chain management (smart GSCM), which includes green procurement and production (Del Socorro Encinas-Grijalva et al., 2024).
- The implementation of digital innovations, such as AI and Big Data, ensures better management of the environmental aspects of supply chains, reducing environmental impact and increasing business resilience (Yin et al., 2022), (Lorenzaj, 2024).

5. Integrated supply chain management (Smart GSCM):

- The integration of digital technologies into supply chain management (GSCM) processes helps improve performance by using data to optimize operations. This contributes to better coordination, cost reduction, and the achievement of environmental goals (Lerman et al., 2022), (Del Socorro Encinas-Grijalva et al., 2024).
- Smart technologies such as IoT, AI, and cloud solutions ensure the integration of supply chains, enhancing transparency and operational efficiency (Xue et al., 2022).

6. Digital culture and knowledge management:

- Developing a digital culture is key to integrating BPM and DI. This involves not only adopting new technologies but also encouraging employee participation in digital initiatives, which contributes to process improvement and supports innovation (Butt, 2020).
- Creating Knowledge Management Systems (KMS) provides contextual support for decision-making and enhances the organization's adaptability to change (Gil-Gomez et al., 2020).

7. Performance measurement and sustainability:

- Implementing Key Performance Indicators (KPIs) allows the evaluation of the outcomes of digital innovations in BPM. This helps quickly identify the strengths and weaknesses of processes, ensuring their adaptation to market conditions and sustainable development (Lerman et al., 2022), (Del Socorro Encinas-Grijalva et al., 2024).
- BPM maturity models are also used to assess the degree of digital maturity of the organization, which helps improve strategies for innovation integration (Feroz et al., 2021).

Integrating traditional management methods with digital innovations in BPM ensures flexibility, adaptability, and transparency of processes, contributing to sustainable company development. The twin transition approach allows for achieving not only operational efficiency but also reducing environmental impact, which is essential for competitiveness in the digital era.

Traditional methods, such as BPR and BPM, have proven to be insufficiently flexible for rapid adaptation to changes, as confirmed by the results of a survey among business representatives (Slingerland, 2024). The proposed model combines the strengths of traditional methods and digital innovations, ensuring flexibility and adaptability of business processes (Butt, 2020). The use of RPA and AI has reduced operational costs by 30% and increased the speed of business process execution by 40% (Grisold et al., 2021).

The SWOT analysis presented below provides a comprehensive overview of the current strengths, weaknesses, opportunities, and threats associated with business process management (BPM) in the context of process innovation. By combining traditional methodologies like Business Process Reengineering (BPR), Lean, and Six Sigma with modern digital innovations such as AI, RPA, and Big Data, companies can strengthen their process management capabilities. However, challenges such as resistance to change and limited resources for digital adoption must be addressed. This analysis aims to highlight how organizations can leverage emerging opportunities while managing threats related to rapid technological changes and market dynamics.

SWOT analysis for business process management in process innovation:

Strengths:

- Established methodologies provide a solid foundation for process management.
- Integration of traditional and digital methods enhances risk management efficiency.

Weaknesses:

- Limited resources for adopting advanced digital tools effectively.
- Resistance to change among employees may hinder innovation adoption. Opportunities:
- Emerging technologies streamline risk assessment processes.
- Partnerships with tech firms offer innovative risk management solutions.

Threats:

- Rapid technological changes risk making existing practices obsolete.
- Increased competition could jeopardize process innovation efforts.

SWOT analysis highlights that while BPM benefits from combining traditional methods with digital innovations, it must overcome internal and external challenges to fully capitalize on technological advancements and sustain competitive advantage.

The integrated business process management framework (Figure 1) represents a comprehensive approach to managing and optimizing business processes using both traditional methodologies and modern digital innovations.

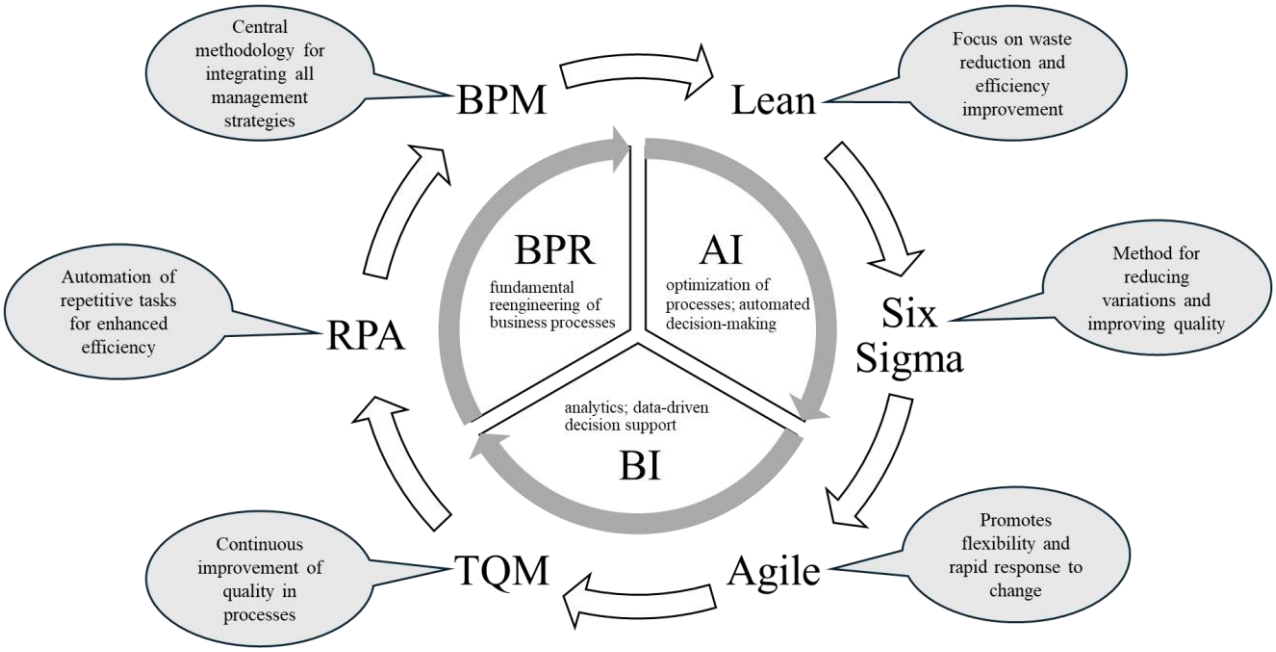

Figure 1: Integrated Business Process Management Framework

Source(s): Authors' own elaboration

It consists of several key steps:

1. Process identification and discovery. Recognizing and analyzing existing processes.
2. Process analysis. Using metrics like KPIs, KRIs, and PPIs to determine interdependencies.
3. Process redesign and reengineering. Enhancing or fundamentally redesigning processes.
4. Implementation and monitoring. Utilizing Lean Six Sigma for continuous process monitoring, validation, and improvement.
5. Change management. Incorporating change management, skills gap analysis, and risk contingency planning to ensure adaptability and minimize disruptions.

The framework integrates traditional management practices, such as BPR and Lean, with digital innovations like AI, RPA, and data analytics to streamline processes, boost efficiency, ensure flexibility, and support sustainability goals. It emphasizes iterative improvements, sustainability, and efficient adaptation to changing market conditions, aiming to combine operational excellence with technological advancements to meet the demands of a digital and green transition.

Digital transformation reshapes traditional BPM logics, making BPM processes more flexible and digitally oriented to enhance efficiency and adapt to changes in the business environment (Baiyere et al., 2020). The integration of digital technologies, such as IoT, AI, and Big Data, supports the creation of "smart BPM," which automates processes, increasing task speed and accuracy (Lerman et al., 2022).

BPM plays a crucial role in achieving sustainable development. Integrating green practices, such as Lean and Six Sigma, with digital technologies creates a new type of BPM that promotes environmentally oriented business processes. This integration improves energy efficiency, reduces resource consumption, and minimizes emissions (Gil-Gomez et al., 2020).

Companies are increasingly adopting dual transformations that incorporate both digital and sustainable elements. This approach requires the integration of strategies, culture, and technical capabilities to achieve simultaneous digital and sustainable transformation (Del Socorro Encinas-Grijalva et al., 2024). Known as the "Twin Transition," this approach leverages digital technologies to facilitate sustainable practices, such as resource optimization and increased energy efficiency (Butt, 2020).

Digital innovation changes traditional BPM processes, adding capabilities for rapid adaptation, updates, and improved efficiency. The implementation of digital platforms, such as cloud solutions and process automation, enables companies to respond faster to market changes, enhance productivity, and introduce new business models (Mendling et al., 2020).

This integrated approach, combining digital technologies, BPM, and sustainable development, provides more effective process management, boosting companies' competitiveness and sustainability in the modern economy (Chapungu & Nhamo, 2024).

Table 3 illustrates various levels of integrated strategies for BPM, demonstrating how traditional and digital methods can be effectively combined in the context of the dual transition (digital and green). The table highlights strategic alignment, market adaptation, operational excellence, customer-focused innovation, and cross-functional integration to promote resilience and sustainability in process management. The emphasis is on leveraging technologies such as AI, RPA, IoT, and blockchain to enhance adaptability and support strategic goals.

Table 3: Integrated Strategies For Business Process Management: Traditional Methods And Digital Innovations In The Context Of Dual Transition

Strategy levels	Integrated organizational strategies	Technology-driven strategies for digital transformation	Emerging technologies in dual transition
Strategic alignment	Sustainable development as core strategy	Advanced data analytics for decision-making	Digital twin for real-time optimization
Adaptation to Market	Agile and Lean Methodologies for Quick Adaptation	AI-Based Predictive Analysis	RPA for Process Automation and Efficiency
Operational excellence	lean and six sigma for efficiency and quality improvement	Process automation with rpa and intelligent workflow	Iot integration for real-time process insights
Customer-focused innovation	Customer-centric business process redesign	Customer journey mapping using bi platforms	Augmented reality for enhanced customer experience
Change and Risk Management	Change Management Strategy for Digital Transition	AI for Risk Prediction and Contingency Planning	Blockchain for Transparent and Secure Data Sharing
Sustainability initiatives	Green process design for lowering carbon footprint	Digital platforms for monitoring and reducing environmental impact	Cloud computing for energy efficiency
Cross-functional integration	Integration of digital and traditional bpm practices	Cross-functional digital collaboration tools	Smart supply chain integration for end-to-end visibility
Talent Management and Skills Gap	Skills Development for Digital Competency	AI-Driven Training Programs for Upskilling Workforce	Virtual Reality for Skills Training
Continuous improvement	Bpr for fundamental process reengineering	Continuous feedback loop via ai analytics	Machine learning for process adaptability
Data-driven growth strategy	Growth and sustainability goals aligned with business processes	Bi for informed decision-making	Cloud manufacturing for adaptive production

Source(s): Authors' own elaboration

Table 4 outlines a comprehensive management model that integrates different business methodologies - such as BPM, Lean, Six Sigma, and TQM with digital technologies like cloud computing, IoT, AI, and Big Data. The table focuses on key aspects such as performance, flexibility, and methodologies, showcasing how these integrated models contribute to improved productivity, adaptability, and continuous quality enhancement in business processes.

Table 4: Comprehensive Management Model

Integration	Digital Tech	Performance	Flexibility	Methodology	Outcome
BPM	Central to all models	Cloud, IoT	Enhances productivity	Increases adaptability	BPM methodologies
Lean	Integrates with BPM	AI, RPA	Reduces waste	Improves efficiency	Lean principles
Six Sigma	Supports BPM	AI utilization	Drives quality	Boosts responsiveness	Six Sigma tools
TQM	Complements BPM	Big Data	Ensures consistent quality	Fosters continuous improvement	TQM techniques

Source(s): Authors' own elaboration

Core concepts of business process management:

- Process Mapping: "Process mapping allows for the identification and visualization of each step, providing clarity and enabling efficiency. This method helps in identifying bottlenecks and opportunities for improvement, facilitating faster and more accurate process analysis" (Van Der Aalst, 2013b).
- Integration Strategies: "Lean and Six Sigma integration within BPM improves efficiency by eliminating waste and reducing process variations. AI-based predictive analysis further enhances process efficiency by automating decision-making and improving accuracy" (Kerpedzhiev et al., 2020).
- Data Analytics: "Leveraging data analytics in BPM enables informed decision-making and effective performance tracking. Data-driven decisions contribute to continuous optimization and innovation in business processes" (Mikalef & Krogstie, 2020).
- Digital Tools: "The adoption of digital tools, such as Cloud computing and iot technologies, has been shown to enhance process automation and productivity by supporting real-time insights and predictive maintenance" (Mikalef & Krogstie, 2020).
- Stakeholder Engagement: "Engaging stakeholders in BPM initiatives ensures buy-in and reduces resistance to change. Involving all relevant parties aids in gathering insights that guide effective BPM implementation" (Kerpedzhiev et al., 2020).
- Training Programs: "Continuous training programs for staff are essential for skill development and adaptability. Ongoing skill enhancement ensures better execution of BPM practices and faster adaptation to changes" (Mikalef & Krogstie, 2020).
- Continuous Monitoring: "Regular monitoring of business processes ensures they remain aligned with organizational goals. Continuous reviews enable timely detection of deviations and facilitate necessary adjustments for maintaining efficiency" (Kerpedzhiev et al., 2020).
- Performance Metrics: "Establishing clear Key Performance Indicators (kpis) within BPM provides a structured approach for measuring performance and guiding improvement initiatives, ensuring alignment with strategic objectives" (Mikalef & Krogstie, 2020).

Integration methods overview (Figure 2) of the key methods used for integrating traditional and modern practices to enhance Business Process Management (BPM) illustrates the sequential combination of different methodologies and tools that contribute to a comprehensive and effective BPM approach. Each layer builds on the foundation of the previous one, representing an iterative approach toward operational excellence, adaptability, and sustainability.

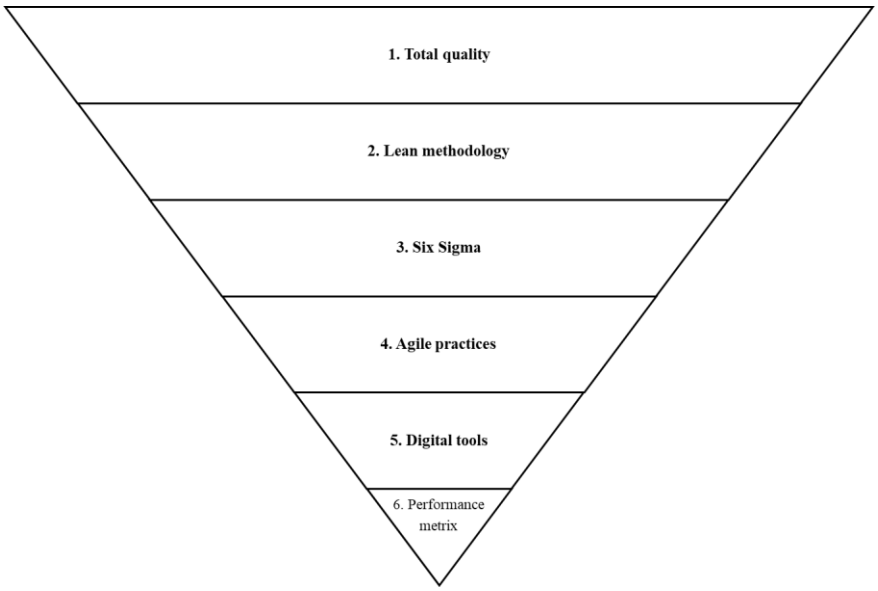

Figure 2: Integration Methods Overview

Source(s): Authors' own elaboration

1. Total quality management (TQM):

- TQM focuses on continuous improvement across all operations, emphasizing process standardization, customer satisfaction, and evidence-based decision-making. TQM principles include structured approaches like the Plan-Do-Check-Act (PDCA) cycle and integrating BPM tools, which ensure consistent quality and process optimization (Baiyere et al., 2020).
- TQM is designed to unify processes, reduce variability, and enhance overall business performance through a systematic BPM approach (Baiyere et al., 2020).

2. Lean methodology:

- Lean methodology aims to eliminate waste and streamline operations, enhancing the value delivered to customers. Lean principles, such as value stream mapping and Kaizen, support BPM by continuously improving process flow and reducing resource wastage (Lizano-Mora et al., 2021).
- The integration of Lean with BPM ensures faster responses to changes and more efficient resource allocation (Baiyere et al., 2020).

3. Six Sigma:

- Six Sigma aims to reduce defects and variability in processes by using structured methodologies like DMAIC (Define, Measure, Analyze, Improve, Control). It complements BPM by focusing on process performance and quality improvement (Van Looy, 2020).
- It emphasizes statistical analysis for process control and the reduction of errors, leading to systematic improvements in process capabilities (Lizano-Mora et al., 2021).

4. Agile practices:

- Agile methodologies increase flexibility and responsiveness, supporting BPM through iterative development, rapid feedback, and cross-functional collaboration (Lizano-Mora et al., 2021).
- Agile practices allow BPM to quickly adapt to changes in business requirements, helping organizations remain competitive in dynamic markets (Van Looy, 2020).

5. Digital tools:

- Digital tools like AI, iot, and cloud computing are essential for improving process automation, data analysis, and integration. These technologies enhance BPM by facilitating seamless process interactions and enabling predictive analytics for better decision-making (Szelągowski & Lupeikiene, 2020).
- Iot, for example, helps monitor and optimize physical processes, while AI provides insights for informed decision-making and process automation (Lizano-Mora et al., 2021).

6. Performance metrics:

- Establishing clear Key Performance Indicators (kpis) is crucial for measuring the success of BPM initiatives. Kpis guide improvement efforts by providing benchmarks and helping organizations track progress toward their strategic goals (Baiyere et al., 2020).
- Using metrics like cycle time, defect rates, and customer satisfaction allows for continuous monitoring and realignment of business processes with organizational objectives (Szelągowski & Lupeikiene, 2020).

The Lean methodology in Business Process Management (BPM) aims to reduce waste, lower costs, and improve efficiency, which results in enhanced productivity and decreased operational costs (Fiorello et al., 2023). In the context of digital transformation, the application of Lean methods fosters flexibility, innovation, and adaptability, leading to higher performance levels and reduced costs. Research indicates that Lean in BPM positively impacts strategic alignment of business processes and ensures long-term success by streamlining processes, automation, and improving customer service quality (Dimov et al., 2020).

Utilization of Lean methodology in BPM:

1. Problems faced: inefficient processes leading to resource wastage and reduced productivity, especially in rapidly changing environments and digitalization.

2. Solutions offered: implementing Lean principles to optimize operations, focusing on process analysis, removing unnecessary activities, automation, and integrating innovative technologies to enhance flexibility and adaptability.

3. Benefits: improved productivity, cost reduction, better quality, and operational flexibility, enabling quick decision-making and adaptation to be changing market conditions (Stravinskiene & Serafinas, 2020).

Integrating Lean into BPM provides a foundation for strategic development in the digital era, enabling more efficient resource and operational management while ensuring competitive advantages through simplification, innovation, and faster process execution.

The use of the Six Sigma methodology in Business Process Management (BPM) relies on the structured DMAIC approach (Define, Measure, Analyze, Improve, Control). The primary goal of Six Sigma is to eliminate process variability and enhance efficiency, leading to defect reduction and improved performance.

Implementation structure of Six Sigma in BPM:

1. Define: outline the problem and project objectives to ensure clear task understanding.

2. Measure: gather data to determine current process performance.

3. Analyze: identify root causes of process variability, allowing for pinpointing weaknesses in execution.

4. Improve: implement solutions to reduce defects and increase process efficiency (Stravinskiene & Serafinas, 2020).

Six Sigma serves as a tool to achieve high operational performance through process optimization, waste reduction, and product or service quality enhancement. The broad application of DMAIC, along with its alternatives like DMADV (Define, Measure, Analyze, Design, Verify), enables organizations to improve existing processes and design new ones (Stravinskiene & Serafinas, 2020).

The integration of Six Sigma into BPM is often complemented by other management paradigms such as Lean or Total Quality Management (TQM). This combination not only optimizes individual processes but also manages interactions among them, which is crucial for achieving strategic success in the context of digital transformation (Lizano-Mora et al., 2021), (Kerpedzhiev et al., 2020).

The structured Six Sigma methodology is applied in business process management to address inconsistent process outputs and quality issues through a systematic DMAIC approach: Define, Measure, Analyze, Improve, and Control. This methodology, deeply rooted in process improvement, focuses on reducing defects and enhancing process efficiency, offering significant operational benefits when implemented correctly.

Implementation of Six Sigma for Process Improvement:

1. Problem faced: inconsistent outputs and quality issues are common challenges that organizations encounter, often driven by process variability and inefficiencies.

2. Solution offered: Six Sigma's structured methodology provides a clear framework to analyze, identify, and eliminate inefficiencies. It emphasizes understanding root causes of process variability, thus paving the way for improved outcomes (Feroz et al., 2021).

3. Benefits: the application of Six Sigma leads to reduced defects and improved efficiency, contributing to better overall performance, lower costs, and enhanced customer satisfaction, aligning with broader business transformation strategies (Van Looy, 2017).

Approach:

- Define: clearly identify the problem and set specific project goals to ensure focused efforts.
- Measure: collect comprehensive data to understand the current performance and establish baseline metrics.
- Analyze: investigate root causes of process variability, using statistical tools to identify factors contributing to inconsistencies.
- Improve: implement solutions designed to enhance process performance, targeting specific areas of inefficiency and defect generation (Butt, 2020).

The integration of Six Sigma into digital transformation efforts, particularly within Industry 4.0 contexts, aligns with strategic goals of improving quality and productivity while maintaining operational flexibility and agility (Feroz et al., 2021).

Artificial Intelligence (AI) significantly influences Business Process Management (BPM) by introducing advanced automation, process optimization, and enhanced decision-making capabilities. AI-driven BPM is recognized for its ability to manage both structured and unstructured tasks, which contributes to more flexible and adaptive process management (Kerpedzhiev et al., 2020).

Integration of AI in BPM:

1. Automation of tasks: AI facilitates automation in BPM by handling routine, repetitive tasks, freeing human workers for more strategic functions. Robotic Process Automation (RPA), a subset of AI, is commonly used to automate structured tasks in BPM, such as processing bank loans or managing insurance claims (Stravinskiene & Serafinas, 2020).

2. Process optimization: AI improves BPM by leveraging machine learning algorithms that can analyze vast amounts of process data. These algorithms identify patterns, bottlenecks, and inefficiencies, enabling more precise process enhancements and optimizations. AI applications in process mining, predictive analytics, and decision-making further enhance BPM's effectiveness (Kerpedzhiev et al., 2020), (Butt, 2020).

3. Predictive and prescriptive Analytics: AI enables predictive and prescriptive analytics within BPM, allowing organizations to forecast process outcomes and suggest optimal actions. By integrating AI models, BPM can better align processes with organizational goals and adapt to changing conditions in real-time (Grisold et al., 2021).

AI-driven BPM challenges and opportunities:

AI integration in BPM presents both challenges and opportunities. While AI offers enhanced operational efficiency, organizations must also address issues like data privacy, model accuracy, and workforce adaptation to AI technologies. AI's ability to analyze unstructured data adds further complexity but also creates significant opportunities for innovation and process improvement in BPM (Mendling et al., 2020).

The successful implementation of AI in BPM requires a culture that fosters continuous innovation and supports digital transformation. Organizations need to adopt AI-focused BPM tools and frameworks, ensuring that AI capabilities are aligned with business strategies to drive long-term process improvements (Kerpedzhiev et al., 2020).

Robotic Process Automation (RPA) in Business Process Management (BPM) offers numerous advantages, making it a powerful tool for organizations seeking to enhance process efficiency and minimize costs.

RPA benefits in BPM:

1. Cost savings: RPA significantly reduces operational costs by automating repetitive tasks traditionally performed by employees. This automation leads to a decrease in labor costs, as robots perform tasks faster and more accurately than human workers, contributing to a notable return on investment (ROI) (Stravinskiene & Serafinas, 2020).

2. Scalability: RPA systems are highly scalable, allowing businesses to adjust processes quickly to accommodate changing demands. This adaptability is particularly valuable in fluctuating business environments, where rapid scaling is essential to meet customer needs and maintain competitiveness (Szelągowski & Lupeikiene, 2020).

3. Increased accuracy: RPA ensures consistent execution of processes, minimizing human errors. Since software robots follow set rules with precision, the risk of mistakes is reduced, leading to higher quality outcomes and improved compliance with internal and external standards (Kerpedzhiev et al., 2020), (Van Der Aalst, 2013b).

4. Faster processing: RPA accelerates the completion of tasks by performing them simultaneously and continuously, reducing processing times and improving customer response times. This faster execution enhances customer satisfaction by delivering quicker and more reliable service (Szelągowski & Berniak-Woźny, 2021).

5. Enhanced productivity: by automating mundane tasks, RPA enables employees to focus on more strategic activities, such as decision-making and problem-solving, thereby increasing overall productivity and fostering innovation within organizations (Grisold et al., 2021).

6. Regulatory Compliance: RPA helps maintain regulatory compliance by ensuring that tasks are consistently executed according to predefined rules. The traceable nature of automated processes makes it easier for organizations to demonstrate compliance during audits (Mendling et al., 2020).

The integration of RPA into BPM drives digital transformation by streamlining processes and optimizing resource allocation, paving the way for more efficient and innovative business operations (Szelągowski & Lupeikiene, 2020).

Performance improvement goals in businesses (Figure 3) form a systematic framework aimed at enhancing operational efficiency, adaptability, and overall organizational competitiveness. Each layer represents a crucial goal that helps shape a well-rounded strategy for achieving business excellence.

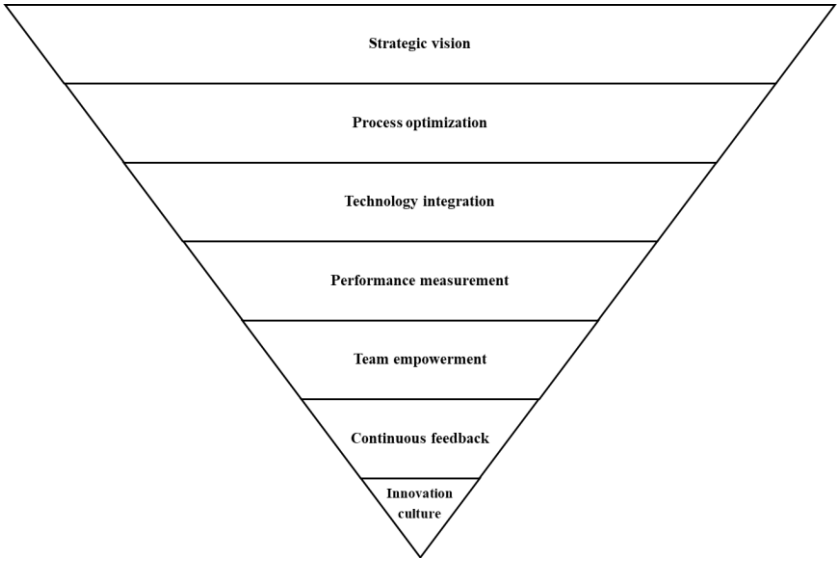

Figure 3: Performance Improvement Goals In Businesses

Source(s): Authors' own elaboration

1. Strategic vision: establishing a clear strategic vision is fundamental for aligning business processes with long-term objectives. Strategic alignment ensures that business processes contribute effectively to organizational goals and performance outcomes (Grisold et al., 2021).

2. Process optimization: identifying and improving inefficient processes is crucial for enhancing productivity. Effective process optimization relies on methods such as process mining and lean management to streamline operations, reduce waste, and achieve better outcomes (Cosa & Torelli, 2024).

3. Technology integration: incorporating advanced technologies, such as AI, cloud computing, and IoT, into BPM can enhance operational efficiency. Technology integration facilitates process automation, data analysis, and real-time decision-making, enabling faster and more accurate responses to business needs (Cosa & Torelli, 2024).

4. Performance measurement: tracking performance using Key Performance Indicators (KPIs) is essential for evaluating the effectiveness of business processes. KPIs help in assessing progress towards strategic goals and identifying areas for improvement (Butt, 2020).

5. Team empowerment: providing employees with the necessary tools and training enables them to participate actively in performance improvement. Empowering teams fosters a culture of continuous improvement, increasing their capacity to innovate and optimize processes (Szelągowski & Berniak-Woźny, 2021).

6. Continuous feedback: implementing regular feedback mechanisms from stakeholders helps in refining processes and aligning them with changing business requirements. Feedback loops are essential for adapting strategies to emerging trends and maintaining operational effectiveness (Grisold et al., 2021).

7. Innovation culture: fostering a culture of innovation encourages creative problem-solving and supports sustainable business growth. An innovation-driven environment promotes experimentation, which is necessary for process improvements and achieving strategic business goals (Cosa & Torelli, 2024).

These performance improvement strategies collectively enhance organizational adaptability, efficiency, and competitiveness in rapidly changing environments.

The technological aspects of digital integration in business processes encompass various innovations that aim to enhance efficiency, decision-making, and operational agility. Below is a detailed analysis of three key technologies contributing to digital integration:

1. Cloud computing plays a critical role in enhancing data accessibility and collaboration across business units. It facilitates real-time communication and streamlined processes, enabling the integration of distributed manufacturing resources and fostering a collaborative infrastructure. The adoption of cloud solutions also helps reduce capital costs, increases scalability, and enhances productivity, making it an essential part of digital transformation (Butt, 2020).

2. The Internet of Things (IoT) supports real-time data collection from physical operations, providing valuable insights for better decision-making. IoT-enabled devices contribute to predictive maintenance, which helps improve operational efficiency by minimizing downtime and ensuring a seamless flow of information. IoT integration in Industry 4.0 is characterized by sensor-based data collection, leading to improved process control and performance optimization (Butt, 2020).

3. Artificial Intelligence (AI) enhances digital transformation by automating routine tasks and facilitating complex decision-making. AI algorithms analyze large datasets, identify patterns, and predict process performance, enabling organizations to make data-driven decisions. This leads to improved productivity, faster task execution, and overall effectiveness in business operations (Grisold et al., 2021).

These technological advancements are crucial in driving digital integration within business processes, resulting in improved performance, cost savings, and strategic agility (Van Looy, 2020).

Key Insights into Cloud adoption for BPA:

1. Rising Cloud investment:
    - In 2024, businesses are expected to spend $678.8 billion on public cloud services, a 20.4% increase from 2023. The growth is driven by digital transformation initiatives, the need for agility, and cost reduction. Cloud infrastructure spending is projected to exceed $1 trillion globally, indicating its critical role in supporting digital transformation (flowforma, 2024).
    - Long-term projections suggest the cloud market could reach $2.29 trillion by 2032, fueled by a 16.5% compound annual growth rate (CAGR). This trend underscores cloud's foundational role in future business processes, emphasizing its capacity for scalability, flexibility, and operational efficiency (Cloud Institute, 2024).
2. Cloud integration in BPA:
    - Organizations are increasingly integrating cloud solutions into BPA to automate workflows, enhance data accessibility, and improve decision-making. The focus on cloud adoption is also evident in the adoption of hybrid and multi-cloud strategies, which enhance resilience, avoid vendor lock-in, and offer better compliance and data control (Slingerland, 2024).
    - Cloud-based BPA enables faster deployment of automated processes, increasing the speed of business operations while minimizing manual intervention. It also aids in achieving faster ROI on automation investments, with a significant number of organizations reporting ROI within six months of cloud adoption (Slingerland, 2024).
3. AI and Cloud integration:
    - AI-driven BPA, supported by cloud infrastructure, allows for advanced automation, such as predictive analytics, real-time decision-making, and error reduction. The synergy between AI and cloud BPA drives smarter operations, which leads to better performance and cost optimization (Leme, 2024b).
    - The Forrester DPA Survey (2023) reported that cloud-based AI tools are being prioritized to accelerate BPA adoption, with 100% of surveyed organizations piloting AI for BPA purposes. This trend aligns with the broader shift towards AI-enhanced automation, facilitated by scalable cloud solutions (FlowForma, 2024)

Key impacts of IoT on Business processes:

1. Enhanced Automation:
    - Iot enables real-time data collection from connected devices, automating functions like inventory management, quality control, and operational workflows. This reduces manual intervention, improves accuracy, and increases overall efficiency (Shamrei, 2024b).
2. Predictive maintenance:
    - Iot sensors allow for continuous monitoring of equipment, predicting potential failures, and enabling proactive maintenance. Technologies like digital twins simulate real-time data from physical assets, helping businesses prevent downtime and optimize resource utilization (Info, 2024c).
3. Improved decision-making:
    - Iot enhances decision-making by providing real-time data analytics. Businesses can identify inefficiencies, adjust operations accordingly, and improve resource management. This data-driven approach contributes to better throughput and reduced waste (Info, 2024c).
4. Sustainability initiatives:
    - Iot supports sustainable practices by optimizing energy usage and waste management. It helps track energy consumption, identify leakages, and implement strategies to reduce usage by up to 15% (Shamrei, 2024b).
5. AIoT integration:
    - The integration of AI with iot (aiot) enhances operational intelligence, enabling systems to autonomously optimize processes, personalize customer interactions, and drive innovation (Info, 2024c).

Comprehensive look at how Big Data impacts business processes, with references:

1. Enhanced decision-making

- Big Data enables organizations to analyze large datasets, uncover trends, identify correlations, supporting data-driven strategies. This leads to more accurate forecasting, proactive risk management, and strategic decision-making across industries like finance, healthcare, and retail (Institute of Data, 2023b).

2. Boosted efficiency and productivity

- By analyzing operational data, Big Data helps identify bottlenecks and optimize resource allocation. It enhances supply chain management, improves patient outcomes, and optimizes inventory control. Manufacturing, retail, and healthcare sectors are particularly benefiting from these improvements (Big Data Analytics in Business | Benefits & Use Cases in 2024, n.d.-b).

3. Personalized customer experiences

- Businesses use Big Data to understand customer preferences and behaviors, enabling personalized marketing and customized product recommendations. Retailers and e-commerce platforms leverage Big Data for dynamic pricing and targeted campaigns, increasing customer satisfaction (Devteam, 2024).

4. Fraud detection and risk management

- Big Data analytics helps detect fraudulent activities and mitigate risks in real-time by identifying suspicious patterns in transactions. The finance and insurance sectors use Big Data extensively for fraud detection, improving compliance and security (Institute of Data, 2023b).

5. Future prospects of Big Data

- Big Data's integration with AI and machine learning drives innovations in predictive analytics, automation, and augmented intelligence. This supports real-time data processing, particularly in IoT, edge computing, and blockchain applications (S.Akash, 2024b).

Exploring Total Quality management (TQM):

- Customer focus: engaging customers through regular feedback aligns processes with their needs, enhancing satisfaction and continuous improvement across all interactions. This aligns with the TQM principles of customer orientation, emphasizing that customer satisfaction is essential to overall quality outcomes.
- Process improvement: regular training sessions for team members on TQM principles help build a culture of quality and innovation. This fosters a systematic approach to quality improvement, consistent with the Plan-Do-Check-Act (PDCA) cycle, which is a foundational structure in TQM.

Agile Methodology in Business Process Management:

- Iterative planning: Agile methodology supports regular reassessment of objectives and resource allocation. This approach allows teams to remain flexible and responsive to changing requirements, enhancing BPM outcomes (Stravinskiene & Serafinas, 2020).
- Customer feedback: incorporating user feedback early in the development cycle ensures that products are relevant and meet quality expectations, a core aspect of Agile's iterative design and delivery process.
- Cross-functional teams: collaboration across departments in Agile projects improves decision-making, enabling better problem-solving and process enhancements within BPM.
- Continuous improvement: Agile’s focus on regular updates and process improvements helps achieve ongoing efficiency, similar to continuous improvement philosophies in BPM and TQM.

Understanding Theory of Constraints (ToC):

- Identify bottlenecks: the Theory of Constraints (ToC) identifies and addresses process limitations that reduce productivity. By removing these constraints, organizations can optimize performance, a central tenet of ToC that aligns with process optimization strategies in BPM.
- Prioritize improvements: ToC’s focus on addressing the most significant constraints ensures that improvements are impactful, driving performance enhancements across the organization (Stravinskiene & Serafinas, 2020).

Kaizen: Continuous Improvement in BPM:

- Problem faced: inconsistent processes can lead to reduced efficiency. Implementing Kaizen promotes continuous improvement initiatives to address this issue (Mendling et al., 2020).
- Solution offered: Kaizen’s approach involves incremental changes aimed at achieving process excellence. This philosophy encourages employees to identify, analyze, and implement improvements continuously.
- Benefits: enhanced processes through Kaizen lead to improved productivity and quality outcomes, which are critical to BPM effectiveness (Stravinskiene & Serafinas, 2020).
- Approach:
    - Identify: recognizing areas needing improvement in processes.
    - Analyze: examining root causes of inefficiencies and waste.
    - Implement: executing changes toward process excellence.
    - Review: regularly assessing improvements for ongoing efficiency gains, similar to the PDCA cycle in TQM.

Balanced Scorecard (BSC) is a strategic management tool (Table 5) that allows organizations to monitor the execution of strategies by evaluating multiple perspectives beyond financial metrics. The BSC framework helps managers focus on key aspects of organizational performance, providing a comprehensive view of overall productivity. It is designed to balance financial and non-financial objectives, fostering sustainable development and enhancing all aspects of business operations.

The BSC enables tracking across the following perspectives:

1. Financial perspective: focuses on increasing profitability.
2. Customer perspective: involves improving customer satisfaction.
3. Internal processes perspective aims at enhancing operational efficiency.
4. Learning and growth perspective: oriented towards innovation and employee skill development.

These perspectives collectively help organizations balance their goals, making the Balanced Scorecard an essential tool for achieving strategic alignment and improving performance in a sustainable manner.

Table 5: Balanced Scorecard (BSC) As A Management Tool

Perspective	Objectives	Measures	Targets	Initiatives
Financial perspective	Increase profitability	Revenue growth	10% increase	New marketing strategy
Customer perspective	Enhance customer satisfaction	Customer surveys	85% satisfaction	Customer service training
Internal process perspective	Improve operational efficiency	Process cycle times	15% reduction	Streamline procedures
Learning & growth perspective	Foster innovation	Employee training hours	20 hours/employee	R&D investment

Source(s): Authors' own elaboration

The BSC provides effective management by facilitating the integration of various organizational activities and setting clear goals and measures for achieving the strategy (Baiyere et al., 2020).

The Lean Start-Up methodology plays a critical role in modern process management by promoting iterative development and incorporating customer feedback loops to refine business processes, enhance product-market fit, and minimize waste, thereby supporting sustainable growth.

Key aspects of Lean Start-Up in Process management:

- Iterative development: Lean Start-Up emphasizes a cyclic process of development, allowing businesses to test hypotheses, learn from outcomes, and continuously refine processes. This iterative approach is particularly useful in adjusting to customer demands, aligning production processes, and enhancing product offerings.
- Customer feedback loops: regular customer feedback is an integral part of the Lean Start-Up model, serving as a guide for process adjustments. By frequently engaging with users, organizations can ensure that the development of products and processes aligns more closely with market needs, ultimately improving customer satisfaction and product-market fit.
- Waste reduction: one of the core goals of Lean Start-Up is to reduce waste in resource allocation. By focusing on minimal viable products (mvps) and conducting early-stage testing, businesses can avoid overproduction and resource misallocation, thus fostering more sustainable growth and operational efficiency.

- The Lean Start-Up approach fosters adaptability, efficiency, and responsiveness in business processes, making it a vital strategy for companies aiming to achieve sustainability and competitiveness in the marketplace (Fiorello et al., 2023).

Effective performance improvement in organizations involves integrating several management approaches and technologies:

1. Leverage AI:
    - Integrating AI solutions across departments enables data-driven decision-making, enhancing overall organizational performance. AI helps identify patterns in vast datasets, leading to informed strategies and optimized resource allocation, which are crucial for sustaining competitive advantage. This capability has been noted in sectors like agriculture, healthcare, and manufacturing, where AI-driven analytics improve responsiveness and operational efficiency (Lizano-Mora et al., 2021).
2. Implement Lean:
    - Adopting Lean methodologies minimizes waste and streamlines processes, making operations more efficient and cost-effective. Lean principles such as just-in-time production, kaizen, and Heijunka contribute to reducing excess resource use and improving production flow. The integration of Lean with other methodologies, such as Industry 4.0, further enhances its impact, fostering sustainable growth through continuous process optimization (Baiyere et al., 2020).
3. Utilize RPA:
    - Robotic Process Automation (RPA) automates repetitive tasks, reducing operational costs and freeing up human resources for higher-value activities. RPA ensures consistent and error-free execution of processes, improving speed and compliance. It has been observed that RPA implementations result in return on investment (ROI) ranging from 30% to 200% within the first year of deployment, underscoring its effectiveness in business process management (BPM) (Fiorello et al., 2023).
4. Adopt TQM:
    - Incorporating Total Quality Management (TQM) principles ensures consistent quality delivery by embedding a process-oriented culture. TQM emphasizes continuous improvement, customer focus, and the use of tools such as the PDCA cycle (Plan-Do-Check-Act), making it an integral part of BPM systems. TQM practices such as Six Sigma and Lean management are often integrated with BPM, leading to enhanced process efficiency and product quality (Stravinskiene & Serafinas, 2020).
5. Embrace Agile:
    - Using Agile frameworks in project management improves responsiveness and adaptability. Agile encourages iterative development, cross-functional collaboration, and continuous feedback, allowing teams to quickly adapt to changes and refine processes. In BPM, Agile methodologies enhance flexibility, enabling organizations to align processes with evolving customer needs and market demands (Lizano-Mora et al., 2021).

Business Process Management (BPM) faces several challenges that can affect implementation and operational effectiveness:

1. Resistance to change:
    - Resistance to change is a common issue in BPM, especially when new processes disrupt established workflows or require changes in organizational culture. Employees and management may resist changes due to perceived job insecurity or a lack of familiarity with new systems (Lizano-Mora et al., 2021). Effective change management is critical in overcoming this barrier,

as it involves communicating the benefits of changes, involving stakeholders early in the process, and providing sufficient training and support (Stravinskiene & Serafinas, 2020).

2. Data integration:
    - Integrating diverse data systems presents a significant challenge, often leading to inconsistencies and data silos. This misalignment can result from incompatible IT systems, insufficient data governance, and a lack of standardized data formats. Overcoming this requires robust data governance frameworks, clear data standards, and advanced integration tools (Cosa & Torelli, 2024), (Kraus et al., 2021).
3. Skill gaps:
    - A common challenge in BPM is the skill gap among employees, particularly in implementing advanced methodologies like digital process innovations (DPI). Organizations must invest in continuous training and upskilling to ensure employees can effectively adopt new BPM practices and technologies (Lizano-Mora et al., 2021). Encouraging a learning-oriented culture is also necessary to fill these gaps and promote adaptability (Baiyere et al., 2020).
4. Technology adoption:
    - Adopting new technologies often faces delays due to a lack of infrastructure, unclear implementation strategies, or insufficient IT support. For BPM to succeed, organizations must align their technology adoption strategies with business needs, ensure sufficient resources for implementation, and foster a technology-friendly culture (Fiorello et al., 2023).
5. Alignment between business objectives and process goals:
    - Ensuring alignment between broader business objectives and specific process goals can be challenging. This misalignment often stems from unclear strategic goals or a lack of integration between BPM and strategic planning processes (Kraus et al., 2021), (Cosa & Torelli, 2024). Establishing clear metrics and performance indicators can help bridge this gap and ensure that process improvements contribute directly to achieving strategic objectives (Fiorello et al., 2023).
6. Change management:
    - Implementing robust change management strategies is frequently overlooked, leading to inconsistent adoption of new processes. Effective change management must involve all levels of the organization, with a focus on communication, stakeholder engagement, and training. Techniques such as the ADKAR model and Kotter's change management theory have proven useful in managing change within BPM frameworks (Lizano-Mora et al., 2021).
7. Measurement challenges:
    - Establishing clear metrics for measuring performance improvements in BPM can be difficult, particularly when processes involve multiple departments or functions. Organizations must develop comprehensive performance measurement systems that track key performance indicators (KPIs) across all BPM initiatives, ensuring continuous monitoring and improvement (Cosa & Torelli, 2024).

The adoption of Business Process Management (BPM) involves several best practices that ensure successful implementation and continuous improvement (Table 6).

Table 6: Best Practices For Successful BPM Adoption And Continuous Improvement

Best practice	Description
Stakeholder engagement	Engaging stakeholders early in the BPM adoption process is critical for gathering insights and securing buy-in. Successful BPM projects often begin with collaborative workshops, ensuring that all relevant parties are involved from the outset, fostering a sense of ownership for sustainable BPM adoption.
Training programs	Implementing comprehensive training programs is essential to equip team members with the necessary BPM skills and methodologies. Training should cover core BPM concepts, tools, change management strategies, and regular updates to maintain momentum and alignment with BPM objectives.
Clear objectives	Defining clear, measurable objectives is fundamental to guiding BPM initiatives and aligning them with broader business goals. Specific, quantifiable targets help ensure focused, result-oriented BPM projects, enhancing the likelihood of achieving desired outcomes.
Continuous improvement	Establishing a culture of continuous improvement is central to effective BPM. Regular reviews and adjustments of BPM practices, guided by feedback loops, help identify areas for refinement, making BPM a dynamic and evolving strategy for management.
Process mapping	Thoroughly mapping current processes is critical for identifying inefficiencies and areas for improvement during BPM integration. It provides a comprehensive understanding of workflows, highlights bottlenecks, and forms a foundation for process optimization and ongoing management.

Source(s): Authors' own elaboration

These best practices provide a holistic approach to BPM adoption, ensuring that processes are effectively managed, continuously improved, and aligned with organizational goals. They emphasize the importance of stakeholder involvement, skill development, clear goal-setting, and continuous adaptation, all of which are critical for successful BPM implementation.

Future trends in Business Process Management (BPM) are shaped by digital transformation, with a focus on leveraging data, automating processes, and adopting agile practices. These trends aim to enhance responsiveness, adaptability, and overall process efficiency within organizations.

1. Data-Driven approaches:
    - The utilization of big data analytics is critical for informed decision-making and process optimization. By analyzing large datasets, organizations can gain insights into process performance, customer behavior, and operational bottlenecks, enabling more targeted improvements. Additionally, data-driven BPM supports predictive analytics, allowing organizations to forecast trends and adapt processes proactively (Fiorello et al., 2023).
2. Automation:
    - Integrating AI and Robotic Process Automation (RPA) into BPM helps streamline workflows and reduce manual intervention. AI can automate decision-making processes, while RPA handles repetitive tasks such as data entry and processing. This not only improves process speed and accuracy but also frees up human resources for more strategic roles (Cosa & Torelli, 2024). Moreover, automation technologies enhance compliance by ensuring consistent process execution and monitoring.
3. Agile practices:
    - Agile methodologies enhance BPM by fostering iterative development, rapid feedback, and continuous improvement. Agile practices allow organizations to quickly adapt to changes in market demand, regulatory requirements, or internal dynamics. This adaptability is crucial for sustaining competitiveness in a rapidly evolving business environment. Agile BPM also supports

the integration of innovative technologies, such as IoT and cloud solutions, to further improve process efficiency and scalability (Lizano-Mora et al., 2021).

These trends emphasize the evolving nature of BPM, driven by digital transformation and the need for continuous adaptation in business processes. Organizations that effectively leverage these trends are likely to achieve improved performance, efficiency, and competitive advantage.

Change management is crucial to the successful implementation and continuous evolution of Business Process Management (BPM). It ensures that changes to processes are effectively managed, communicated, and integrated within the organization. Below are key aspects of change management within BPM, based on the analyzed documents (Figure 4).

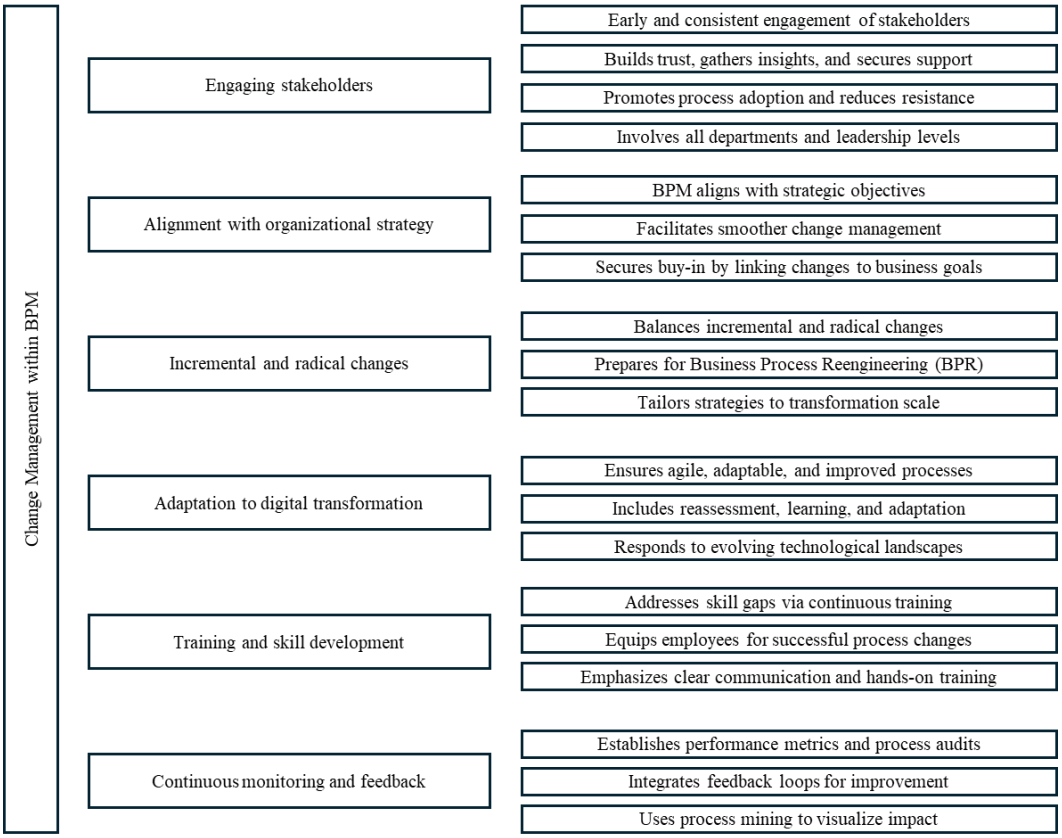

Figure 4: Change Management Within BPM

Source(s): Authors' own elaboration

Sustainability considerations in BPM:

1. Resource efficiency:

- Implementing resource efficiency strategies in BPM is crucial for optimal use of materials and energy, thereby reducing waste and minimizing environmental impacts. The integration of digital technologies, such as AI and cloud computing, supports sustainable development by optimizing resource management and energy use. This synergy promotes green manufacturing and efficient resource allocation, ultimately contributing to carbon neutrality goals and reducing environmental degradation (Yin et al., 2022).

2. Stakeholder engagement:
   - Engaging stakeholders throughout the BPM process enhances transparency and fosters collaboration. This participatory approach facilitates better decision-making and promotes sustainable practices across the organization. Effective BPM implementation relies on involving stakeholders in decision-making processes, ensuring alignment with sustainable development goals (SDGs). The deep integration of digital transformation with stakeholder strategies not only supports green technology innovations but also enhances trust and communication among stakeholders, thereby aligning operational practices with sustainability agendas (Xue et al., 2022).
3. Continuous improvement:
   - Incorporating continuous improvement methodologies in BPM enables organizations to regularly assess and enhance their sustainability efforts. This adaptive approach allows for ongoing optimization of BPM initiatives, aligning them with broader environmental goals. The use of digital innovation, particularly in performance measurement systems, supports continuous improvement by providing real-time insights, enabling agile decision-making, and fostering a culture of sustainability (Kerpedzhiev et al., 2020).

These strategies contribute to aligning BPM initiatives with sustainable development, leveraging digital transformation to improve processes and achieve sustainability goals (Xue et al., 2022).

Summary and key takeaways in BPM:

1. Holistic integration:
   - Comprehensive Business Process Management (BPM) successfully integrates traditional and digital methodologies to enhance efficiency and adapt to evolving technological trends. It combines strategies from traditional management, like Total Quality Management (TQM) and Business Process Reengineering (BPR), with digital transformation practices, enabling organizations to better manage processes amidst digital disruption. This approach allows BPM to act as a foundational element in achieving process innovation and aligning strategic goals with operational capabilities (Grisold et al., 2021), (Baiyere et al., 2020b).
2. Diverse strategies:
   - BPM incorporates a range of methodologies, including Lean, Six Sigma, Artificial Intelligence (AI), and Robotic Process Automation (RPA), to optimize business processes. By utilizing these diverse strategies, BPM enables both incremental and radical improvements in process management. For instance, AI and RPA are employed to automate routine tasks and enhance decision-making, while Lean and Six Sigma focus on reducing waste and improving process quality. This integration is essential for sustaining competitive advantages in dynamic business environments (Kearns & Sabherwal, 2006).
3. Performance focus:
   - The primary aim of BPM is to boost productivity and operational flexibility. It achieves this by refining processes and aligning them with business goals, leading to significant gains in process efficiency, cost reduction, and service delivery. The adoption of BPM frameworks has been shown to enhance performance by enabling continuous process improvements, reducing cycle times, and streamlining operations, ultimately leading to better customer satisfaction and operational effectiveness (Feng et al., 2022), (Van Der Aalst, 2013b).
4. Technological adoption:
   - BPM's integration with emerging technologies, such as Cloud Computing, Internet of Things (iot), AI, and Big Data, has transformed traditional processes into digital workflows. These technologies facilitate seamless data flow, real-time analytics, and predictive insights, which are critical for informed decision-making and improved process outcomes. This adoption fosters digital resilience and positions organizations to respond effectively to market demands and technological shifts (Ivančić et al., 2019).

5. Model collaboration:
   - BPM incorporates various management models—such as Agile, TQM, and Case Management—into a synergistic approach that aligns with organizational objectives. This collaboration enables better resource management, process flexibility, and adaptability in responding to both internal and external changes. By combining different models within the BPM framework, organizations achieve a more holistic approach to process management, resulting in optimized workflows and improved outcomes (Van Der Aalst, 2013b).
6. Continuous improvement:
   - BPM emphasizes continuous improvement using techniques like TQM and Kaizen. By incorporating regular process assessments, organizations can identify areas for refinement and drive sustainable improvements. This iterative approach ensures that BPM not only aligns with current strategic goals but also adapts to emerging trends and challenges, supporting long-term organizational growth and resilience (Kearns & Sabherwal, 2006).

Advantages of integrating traditional and digital approaches: integration allows combining the benefits of traditional management methods with the capabilities of digital innovations, providing better adaptability to changes (Europe's Digital Decade: 2030 Targets | European Commission, n.d.-c).

The importance of flexibility, adaptability, and resilience in business processes: flexibility and adaptability are key factors in ensuring business resilience in the context of digital transformation (Mikalef & Krogstie, 2020b).

The proposed model has potential for application across various industries, especially where rapid adaptation to changes is required (Van Looy, 2017). Integrating digital technologies enhances the efficiency of business process management, ensuring resilience and competitiveness. Companies are advised to use agile methodologies and digital innovations to achieve long-term competitiveness.

DISCUSSION AND CONCLUSION

Future trends in business process management (BPM) are being shaped by digital transformation, with an emphasis on data, process automation and agile practices. These trends are aimed at increasing the responsiveness, adaptability and overall efficiency of processes in organisations. They emphasise the evolutionary nature of BPM, driven by digital transformation and the need to continuously adapt business processes. The best practices described in this article form an accurate representation of a systematic approach to BPM implementation, ensuring that processes are effectively managed, continuously improved and aligned with the organisation's goals. They are fully aligned with the harmonious stakeholder engagement, talent and skills development, effective goal setting and flexible adaptation to change that are critical to a successful BPM implementation. Organisations that effectively harness these trends are likely to achieve increased productivity, efficiency and competitive advantage.

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SPECIFIC CLAUSES IN THE FRANCHISE CONTRACT - A VARIETY OF CONTRACTS FOR PLACING ANOTHER'S PRODUCTS ON THE MARKET

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Motto: „The Franchise is the most successful marketing concept created ever"
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Abstract

The appearance of the franchise agreement has been conditioned by transnational globalization and cross-border dimension of commercial relations. For a successful partnership, in addition to the general conditions for the signing of a franchise agreement, a certain set of rules, which have a particular legal connotation, must be followed.

During the negotiation and drafting of a franchise agreement, are inserted a list of general conditions, which have an economic content, as well as the financial terms of the agreement, the duration of the contract, and they should be established in such way to be able to amortize the investment made by the franchisee.

In this context, through the proposed research we will expose the particularities of the specific clauses of the franchise agreement, such as confidentiality clause, non-compete clause, territorial exclusivity clause.

Keywords: Franchise, Franchisor, Franchisee, Trademark, Clause, Confidentiality, Non-Compete, Territorial Exclusivity.

INTRODUCTION

Franchising has the most complex configuration among the forms of organization of network commerce, the requirements of franchising being based on the method of multiplication of the product or service, using the same technologies, processes or trademarks as appropriate.

Franchising as a form of distribution of goods and services first emerged in the USA in the 19th century. It has established itself as a highly efficient system for marketing products, services and technologies, which has led to its successful spread worldwide.

The term franchise refers to the economic operations with the same name, the network that commercializes the products, the contract that binds the parties within a franchise.

Once concluded, the franchise contract must meet a set of unanimously recognized conditions of validity such as: the legality of the contract, the contractual capacity of the parts, the valid consent between the franchisor and the franchisee, the subject matter of the franchise contract, the cause and form of the franchise contract.

We would like to make a clarification, in the context that the franchise contract being an effective instrument for regulating the commercial relations established between the parts also carries a particular connotation. In this regard, we will refer to some specific clauses to be inserted in the content of the contract.

This is due to the particular nature of the franchise contract, which gives it a distinct legal nature, and in fact outlines a legal architecture different from other categories of civil and commercial contracts.

METHODS AND MATERIALS APPLIED

Theoretical, normative and empirical materials were mainly used in this research. Also, the research of this topic was made possible by applying several methods of scientific research, including the logical method, the method of comparative analysis and others.

RESULTS AND DISCUSSION

The franchise contract is one of the few contracts regulated by the Civil Code of the Republic of Moldova [1] and the Framework Law [2]. In the traditional meaning, franchise contract is that contract where one part called *franchisor* grants to the other part called *franchisee*, in return for a royalty, the right to conduct a commercial activity (franchise activity) within the franchisor's network, with the purpose of supplying certain products in the name and on behalf of the franchisee, and the franchisee has the right and obligation to use the trade name, trademark or other objects of intellectual property rights, know-how and methods of the franchisor's commercial activity [1, art.1723].

In turn, *the European Code of Ethics on Franchising* [3, art.1] states that: "Franchising is a system of commercialization of products and/or services and/or technologies, based on a close and continuous collaboration between distinct and independent legal and financial entities, the Franchisor and its Franchisees, in which the Franchisor grants to its Franchisees the right and imposes on them the obligation to conduct business in accordance with the Franchisor's concept. The right so granted entitles and obligates the Franchisee, in exchange for a direct or indirect financial contribution, to use the products and/or services brand, know-how, business methods and techniques, procedural system, and other intellectual property rights, while also benefiting from the Franchisor's ongoing commercial and technical assistance, on the basis and under the terms of a franchise agreement entered into between the parts for this purpose."

Another concept of franchising is that defined by the European Court of Justice. So, franchising is defined as follows: *"an operation whereby an undertaking which has entered the market as a distributor and which has been able to develop a set of commercial methods, in return for remuneration, grants independent professionals the possibility of establishing themselves on another market using their own brand name and the commercial methods which have made them successful" [4, p.366].*

Due to the continuous expansion of franchise businesses and the lack of uniform regulations, in order to support participants in franchise relationships, at the European level, a model *international franchise contract* was developed by the International Chamber of Commerce in Paris [5].

In the doctrine [6, p.1158] it was stated that the International Institute for the Unification of Private Law (UNIDROIT), the World Intellectual Property Organization (WIPO) or the International Chamber of Commerce in Paris (ICC) were among those who repeatedly proposed many different models for the common implementation of this type of contract, the most important step being the elaboration of the principles of European contract law, through the project of a common frame of references (Draft Common Frame of References - DCFR) in which the franchise contract is also regulated.

As can be seen, the local legislator and the European and international business community are paying more attention to franchise operations, and this is due to the fact that franchising is increasingly used as a tool for territorial expansion of businesses [7, p.107], of expansion in different markets and in different economic zones by avoiding fiscal, administrative barriers, pricing policies, etc., transmitting/exporting the *" the science of doing"* and not the product, work or service in its materiality.

The franchise is presented as a legal operation, a contract, but also as a genuine technique for expanding and carrying out economic activities on a national and international scale. From a financial point of view, the franchise contract can also be an essential tool in obtaining the funds necessary to credit the activity of the franchisee (beneficiary of the franchise), based on the notoriety of the franchiseable brand and the business success of the franchise concept, verified over time, within the network of franchise [8, p.682-683].

According to a doctrinal opinion [9, p.47], in the franchise contract, more than in other commercial contracts, the success of each of the parts is conditioned by the success of the other part, the franchisor, but also by the success of each of the franchisees: on the one hand, the franchisor who has been successful in business and has popularized his brand, will automatically generate a business that will have to be the same, profitable for the franchisees. The

franchisees, in turn, will contribute to the franchisor's good reputation and brand awareness through their activities, and as a consequence will bring direct financial benefits to the franchisor through the payment of royalties.

During the negotiation of the franchise contract, several particular aspects will be taken into account, such as the set of rights and obligations assumed by the contracting parts, the nature of proper performance of the contract, as well as the effects that would result from non-performance or improper performance of the franchise contract.

Below we will deal with the specific clauses of the franchise contract which distinguish it from other categories of civil and commercial contracts.

I. The know-how confidentiality clause is usually established at the time of the execution of the contract and negotiated in advance.

Know-how is a set of information of a practical, non-patentable nature which is a result of the franchisor's experience and has been tested by the franchisor, is transferable and capable of conferring commercial advantages on the franchisor.

The Civil Code of the Republic of Moldova [1, art.1691], enshrines the obligation of confidentiality of the contracting parts, where, the part receiving confidential information from the other part is obliged to keep the information confidential and not to disclose the information to third part both during the contract and after its termination. The part receiving confidential information from the other part is obliged not to use it for any purpose other than in accordance with the objectives of the contract. At the same time, information which is already held by a part or which has been publicly disclosed, as well as information which must necessarily be disclosed to customers in the course of doing business, is not confidential information.

The set of information that makes up know-how is *secret, substantial and identifiable*, these are the characteristics of know-how.

The secret nature of the know-how would imply that it should not be known by those who are not parts to the franchise contract. As a rule, it is the way in which the franchisor's technical processes materialized that will matter, it is the end result that will be secret.

Moreover, the *know-how* must be difficult to access and must not represent a set of information that can be obtained by repeated practice or by analyzing the product resulting from the franchisor's techniques.

The substantial character of the know-how consists in the fact that it must be significant and useful, giving the franchisee a competitive advantage, a privileged position in relation to that of other traders offering similar services or products.

The identifiable character of the franchise contract is based on the possibility of verifying the other two characters, namely the secret and the substantial character. This relates to the way in which the know-how is described, which must be done in such a way as to be able to give some indication of its content.

In the context to those related, we would like to draw attention to the fact that the obligation of confidentiality applies not only to the franchisee, but also to its employees. Moreover, the franchisee will be liable to the franchisor in case of disclosure of secret know-how information by the personnel employed by the franchisee. Practice shows that when agreements between the franchisee and its employees are concluded, the non-disclosure clause will be enshrined for a certain period of time.

II. By virtue of the general obligation of cooperation in franchising there is also the obligation of *"loyalty"* to the network, this is related to *the non-competition obligation* [9, p.78]. Broadly speaking, by establishing **the non-compete clause** the franchisee undertakes, during the performance of the contract and for a specified period after its termination, not to carry on competing activities in the territory where it might be in competition with the franchisor. The non-competition clause extends during the performance of the agreement and during the post-contractual period.

The Civil Code of the Republic of Moldova [1, art.1700] enshrines the non-compete obligation, which is summarized in the fact that the concluded franchise contract may prohibit or restrict the part that markets the

products of another part from carrying out, after the termination of the contractual relationship, activities that compete with the activities of the other part (non-compete obligation). The non-compete obligation applies if:

a) is agreed in textual form, on a durable medium.
b) relates to a territory or category of customers and a territory and to products of the type covered by the contract.
c) does not infringe competition law.

The non-compete obligation cannot last for more than 2 years after the termination of the contractual relationship.

The non-compete obligation can take another specific form, *the non-affiliation obligation*. This contractual provision gives the franchisee the right to continue to carry on the same type of activity after the expiry of the contract, but at the same time prohibits affiliation to a competing network or the creation of a network with the same object of activity.

The former franchisee is therefore prohibited from carrying on a competing activity within a network that will compete with the franchise network he has left.

The conditions of validity of the non-competition clause are also expressly provided for in European law, both as regards the non-competition clause operating during the term of the contract and the post-contractual one.

Analyzing the non-competition clause in detail, certain conditions must be taken into account, namely:

- it relates to products or services which are in competition with the products or goods which form the subject matter of the franchise agreement.
- it is limited to the premises and territories where the franchisee carries on business.
- is indispensable for the protection of the know-how transferred by the franchisor to the franchisee.
- is limited for two years from the date of termination of the contract - post-contractual non-compete obligation.

The regulations applicable to the non-compete clause are also found in the European Franchise Code of Ethics, which stipulates that: *"the franchisor shall prevent, both during the contractual and post-contractual period, any use or transfer of know-how which could be detrimental to the franchise network, in particular to competing networks, and that a non-competition clause may be inserted in the contract during the contractual or post-contractual period, the duration, scope and object of which shall be so determined as to take account of the interests of the network" [3].*

At the same time, the question has been raised in the literature [9, p.81] whether these clauses are necessary in the franchise contract? The answer would be as follows: as far as the non-compete clause regarding the contractual period is concerned, as well as the confidentiality clause, is implied in the franchise contract. The protection of know-how, which is the cornerstone of the whole construction, is the heart of the contract. Moreover, failure to respect this clause can cause enormous damage to the franchisor's network. So, we will be faced with the situation where the franchisee will breach not only the implied non-compete obligation, but also the obligation to perform the obligation of the contract in good faith.

III. The territorial exclusivity clause in the franchise contract is a complex contractual stipulation which imposes on the franchisor an obligation not to carry on the business covered by the franchise agreement in a previously determined area. The territorial exclusivity clause is of particular interest to the franchisee. This is due to the advantage of having the priority to do business in a given territory, the franchisee being assured that the franchisor or another franchisee will not enter the market defined by the franchise contract.

The attractive element for the potential franchisee is the notoriety of the franchisor's brand, which guarantees a corresponding profit. The products or services provided under a particular well-known brand already guarantee the success of business, where the franchisee already benefits from a platform and a market outlet with a circle of potential consumers.

The eminence of this territorial exclusivity clause lies in the protection of customers already loyal to the brand in a given territorial area. This protection will also work in the interest of a franchisee vis-à-vis other franchisees, but also towards the franchisor.

The territorial exclusivity clause can take three forms, like: franchise exclusivity, franchise and supply exclusivity, and firm exclusivity [10, p.205-206].

Franchise exclusivity is the contractual stipulation whereby the franchisor undertakes not to enter into other franchise agreements with a view to opening other franchising stores in the exclusivity zone.

The particular feature of this variant of the territorial exclusivity clause is that the franchisor is not restricted from distributing the products marketed by the network through other traders who are not franchisees, or even himself.

Notwithstanding the fact that the franchisee will, in this form of exclusivity, remain the only franchisee in the area concerned, the stipulation does not benefit the franchisee by reducing its customers.

Franchise and supply exclusivity is that form of territorial exclusivity clause where the franchisor undertakes both not to conclude franchise agreements with other distributors in the exclusive area and not to supply products which are marketed by the network to anyone other than the franchisee.

In addition to those two forms specified above, the so-called *firm exclusivity* has also been addressed, by which the franchisor undertakes not to conclude franchise contracts for the area in question, but also not to allow the firm to be approached on the store of a branch or subsidiary of the franchisor [11].

So, this form of exclusivity gives the franchisee the certainty that no other shop will carry the franchise brand, but instead is allowed to supply other distributors who are not franchisees - members of the network, and who operate in the territorial area concerned.

IV. In the relationship between franchisor and franchisee another specific clause is negotiated, namely **the prices charged by the franchise network.**

In a franchise network, as the products are marketed and the services are provided under the same brand name, it will seem normal to the consumer that the price should also be identical. In the context of uniform advertising across the whole network, price differences may create confusion in the market for satisfaction, and as a result there is a risk that the unique image of the franchise network may be damaged.

There are contradictory positions on the determination of prices charged by franchise networks. On the one hand, there is justification for the franchisor's intention to impose the price at which products or services will be sold or rendered under the franchise network's brand. On the other side of the coin would be the situation where the franchise contract is a negotiable contract between independent traders. By way of continuity, we deduce that it is rational and justified for the franchisee to independently determine the price of the products or services that are the subject of the franchise network's business.

Another idea would be that it is an anti-competitive practice for the franchisor to fix the price of the products or services provided by the franchise network and to impose, directly or indirectly, the resale price. It is only permissible to offer price recommendations or to set a maximum price compatible with competition rules.

Therefore, enshrining resale price clauses in the franchise contract will provide the vital coherence for the existence of the network. If they are not stipulated in the franchise contract, the contract will still be valid, the price clauses are not at the heart of the franchise. The principle is that of the freedom to set resale prices within the franchise network, it is only economic reasons that make it particularly useful to include them in the contract as long as they do not affect the independence of the parts.

CONCLUSIONS

The franchise contract being an efficient means of commercializing products or services and/or technologies that is based on a close and continuous collaboration between legally and financially independent and distinct traders.

The system of marketing of products and goods realized through the franchise contract is based on the franchisor's brand, the franchisor's own system, integrated what is called franchisor's know-how, and the assistance provided to the members of the network.

The contractual relations established between franchisor and franchisee are complex relationships, where the parts can inform each other in advance in order to establish a fully informed contractual relationship.

The franchise contract has specific characteristics, different from those of other contracts, specific contractual clauses, through which it is possible to implement the commercialization in the franchise system.

We cannot underestimate the importance of one specific clause of the franchise contract. This is due to the fact that all these clauses such as: the confidentiality clause, the non-competition clause, the territorial exclusivity clause and the clause of the prices charged by the franchise network are in an unconditional interdependence and interrelation, being inconceivable one without the other. As has been considered in the present work, failure to include them does not always affect the validity of the franchise contract, but, on the contrary, their inclusion in the text of the contract removes the likelihood of future disputes between the contractual parts.

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REGULATIONS AND RECOMMENDATION FOR THE PREVENTION OF THE SECONDARY VICTIMIZATION (SPECIAL FOCUS ON THE MENDEZ` PRINCIPLES)

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Abstract

The secondary victimization is starting to become a concern in victimological research, especially. Therefore, we propose to present the main definitions from international, European and national documents. We will continue with particular aspects of the manifestation of this form of victimization in Romania. We will finish the article with some recommendations, in which the emphasis will be placed on the role of implementing the Mendez` principles.

Key words: secondary victimization, victimological research, international, European and national legislation, the Mendez` principles

INTRODUCTION

About secondary victimization?

The definitions for secondary victimization are included in different documents, whether we are talking about dictionaries, whether we are talking about legislation or specialized articles.

According to some dictionary the definition for *secondary victimization* is refers to further victim-blaming from criminal justice authorities following a report of an original victimization. (1)

As about legislation, we could talk about different levels: international, European and national. Because the number of these documents, I will choose some of them just to point out about some aspects of *secondary victimization.*

The International Law level

In recognition of this concept, a lot of international protocols and standards call on states to ensure measures are in place to protect complainers and avoid their re-traumatization. So, **UN General Assembly, Declaration on the Elimination of Violence against Women 20 December 1993,** requires States to ensure that: "…*the **re-victimization** of women does not occur because of laws insensitive to gender considerations, enforcement practices or other interventions." Art.4 (2)*

The European level

At this level we will mention about, chronologically speaking, the Lanzarote Convention (2007), and some of European directives and the Recommendation CM/Rec (2023)2 of the Committee of Ministers.

According with art. 36 Judicial Procedure from the Lanzarote Convention "*1. Each Party shall take the necessary legislative or other measures, in accordance with the internal rules governing the autonomy of the legal professions, to ensure that all persons involved in the conduct of the proceedings and, in particular, **judges, prosecutors and lawyers benefit from professional training** in the field of children's rights, combating sexual exploitation and sexual abuse of children. 2. Each party will take the necessary legislative or other measures to ensure, in accordance with its domestic law, that: a) the judge can order the court session to be held behind closed doors; b) the victim can be heard without being present in the courtroom, especially by using appropriate communication technologies."(3) We can notice in this article some recommended measures in order to protect the victim from another trauma during the trail phases.*

As about directives the most important EU directive related with the victims` rights, is the *Directive 2012/29/EU of the European Parliament and of the Council, of 25 October 2012 establishing minimum standards on the rights, support and protection of victims of crime, and replacing Council Framework Decision 2001/220/JHA*. **(4)** We will select some paragraphs which are representatives for our topic.

So, on par. (9) "…*victims of crime should be recognised and treated in a respectful, sensitive and professional manner without discrimination of any kind based on any ground such as race, colour, ethnic or social origin, genetic features, language, religion or belief, political or any other opinion, membership of a national minority, property, birth, disability, age, gender, gender expression, gender identity, sexual orientation, residence status or health. In all contacts with a competent authority operating within the context of criminal proceedings, and any service coming into contact with victims, such as victim support or restorative justice services, the personal situation and immediate needs, age, gender, possible disability and maturity of victims of crime should be taken into account while fully respecting their physical, mental and moral integrity. Victims of crime should be protected* ***from secondary*** *and repeat* ***victimization****…"*

Even if in this paragraph we can`t identified a classical definition of secondary victimization, we could notice the potential discrimination criteria which could be applied and could come on behalf of *"a competent authority operating within the context of criminal proceedings, and any service coming into contact with victims".*

In the same directive on par. (17) we underline *"Women victims of gender-based violence and their children often require special support and protection because of the high risk of* ***secondary*** *and repeat* ***victimization****, of intimidation and of retaliation connected with such violence."*

On par.(53) we emphasize the following content: ***"The risk of secondary*** *and repeat* ***victimization****, of intimidation and of retaliation by the offender or …."*

We could add also, from the same directive:

- The par.(55) about *"some victims are particularly at risk of* ***secondary*** *and repeat* ***victimization****, of intimidation and of retaliation by the offender…."*
- The par.(57) about "*victims of human trafficking, terrorism, organized crime, violence in close relationships, sexual violence or exploitation, gender-based violence, hate crime, and victims with disabilities and child victims tend to experience a high rate of* ***secondary*** *and repeat* ***victimization****, of intimidation and of retaliation.*"

Apart from the paragraphs that constitute a statement of reasons, there are in the same Directive also many articles in the directive that refer to secondary victimization, as following: art.18- *Right to protection* and art.22 – Individual assessment *of victims to identify specific protection needs.*

Far from exhausting the EU's influence, the new recommendations at this level continue to evolve in favor of victim protection. In this context, we recall that, recently, the Committee of Ministers issued a recommendation to the 46 member states of the Council of Europe, which provides legal and political guidance on the rights, services and protection and support of crime victims. Therefore, Recommendation CM/Rec (2023)2 of the Committee of Ministers to the member states regarding the rights, services and support for victims of crimes, aims to ensure their access to justice. (5)

The Recommendation calls for victims of crime to be supported in accessing their rights and services and to be recognized and treated with respect, professionalism and non-discrimination. States should take into account that victims of crime may also have a range of needs that require individual recognition in order to receive appropriate information, support and protection.

The issue of secondary victimization is also taken up in this Recommendation, in chapter III *other provisions*, Art. 24 par.156 "*A sufficient level of public awareness is therefore an important factor in reducing* ***secondary victimization and negative outcomes for crime victims*****."** (5)

Also, the *secondary victimization* is defined in a lot of manuals of Criminology and Victimology (Jo-Anne Wemmers 2012, J. Tamarit 2006, C. Villacampa 2019), especially, and articles (A. Preda 2022/2023, K. Covent, 2024).

As a conclusion from all these authors he secondary victimisation refers to the additional trauma and distress that victims of crime may experience through the actions (or inactions) of institutions and individuals after the initial victimisation has occurred. Unlike primary victimisation, which is the direct harm inflicted by the perpetrator of the crime, secondary victimisation stems from the responses of those who are supposed to help, in our case particularly law enforcement and the judicial system.

Victims may face various forms of secondary victimisation from law enforcement, such as invasive questioning, where they are repeatedly asked to recount their traumatic experiences in detail, often in a manner that feels intrusive and insensitive. This can be compounded by doubt or disbelief from officers, who may question the victim's credibility or the veracity of their account. Victims might also encounter blaming, where they are held responsible for the crime or for not preventing it, adding to their emotional burden. Social stigmatization and public exposure, often exacerbated by sensationalist media coverage, can further isolate victims, making them feel like they are under a public microscope.

Lack of adequate support services can leave victims feeling abandoned and unsupported. Re-traumatisation in court, through harsh cross-examinations or exposure to the perpetrator, and delays and lengthy legal proceedings can prolong their suffering, contributing to feelings of frustration and hopelessness.

Some authors are speaking about post crime victimization (J. Bindu, 2008) or double victimization (Doerner, William G , 2012)33, when the criteria of time intervene and that of the reaction of the institutions that come to know about the primary victimization.

The effects of the secondary victimization

The effects of secondary victimisation are profound and far-reaching. Victims often experience re-traumatization, as the additional stress and negative experiences compound their initial trauma. This can lead to feelings of isolation and distrust towards authorities and institutions that are supposed to provide support and protection. Such experiences can make victims reluctant to report crimes in the future or to engage with the legal system, fearing further victimisation.

Psychological toll includes a decline in mental health, with increased risks of anxiety, depression, and post-traumatic stress disorder. Victims may also fail to seek necessary help, either because they feel it is futile or because they have lost trust in available support systems. Their coping mechanisms can become impaired, leading to difficulties in managing their daily lives and recovering from the trauma. (K. Covent, 2024)

When cases of victimization are researched and quantified, they may appear to be contained events, suspended in time, in a fixed location, and involving only the primary actors. The experience of victimization is in reality much more complex. Victims can continue to experience the effects of victimization long after the event, and these effects can reach into the lives of many more people than just the primary victims; The ripple effect of crime travels through time, place, and through kinship and friendship.

As a solution, the mentioned directive also emphasizes the need for special training of officials likely to come into contact with victims or potential victims of human trafficking (K. Covent, 2024) in order to be able to identify genuine victims and deal with them.

In this regard we have to mention a special chapter design in the EU directive which put in face some solution in order to avoid this secondary victimization and its impact. We are talking about the Chapter 5 named *Other provisions,* but we will present only one, the most complete and also representative for the title of our article: art. 25 -Training of practitioners (such as police officers, court staff, judges and prosecutors involved in the criminal proceedings, personal from the public services, for treating the victims in a respectful, professional and non-discriminatory manner.

However, most available research on secondary victimization has focused on authorities in the criminal justice system (police, prosecutors, judges).

- Institutionalized secondary victimization is most evident in the criminal justice system and results from the intrusive or inappropriate behavior of police officers or other criminal justice professionals.
- BUT secondary victimization can be the result of interaction with other entities: school staff may disclose the abused child, doctors may not recognize the signs of domestic abuse, etc., even organizations such as victim services, victim compensation systems, refugee services and mental health facilities may implement policies and procedures that could lead to secondary victimization.

CONSIDERATION ABOUT THE MÉNDEZ PRINCIPLES

What are the Méndez principles?

The Principles of Effective Interviewing for Investigations and Information Gathering, also known as the Méndez Principles, is a document developed by international experts that provides a concrete alternative to coercive interrogation methods (currently available in 11 languages). The document is built on six principles.

These principles are also called *the Méndez Principles* to honor the former UN Special Rapporteur on Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment, Juan E. Méndez.(Méndez, Juan E., 2016). The document grew from a thematic report submitted by Prof. Méndez to the United Nations (UN) General Assembly in 2016 calling for the development of international standards for interviews based on scientific research, legal safeguards and ethical principles. (6) The Mendez Principles represent the realization of that call. (Méndez, Juan E.; Drummond, V., 2021 and Barela, Steven J.; Fallon, Mark 2021)

The principles respond to the persistent challenge of torture and ill-treatment during investigations and intelligence gathering, including in situations of armed conflict or public emergency, despite an extensive international legal framework prohibiting such practices. They build on a vast scientific literature that establishes rapport-based, non-coercive interviewing techniques as the most effective means of gathering accurate and reliable information. They also draw on extensive literature underscoring the ineffectiveness and counter-productive property of torture and abuse.

The Méndez Principles seek to transform how authorities question detainees and conduct interviews across a range of straightforward and complex scenarios. They are applicable to all interviews conducted by authorities, including police, intelligence, military, immigration and customs officers, and related administrative bodies. They cover interviews with suspects, witnesses, victims, and other persons of interest.

The global consortium of experts who crafted the text came from various fields, including law enforcement, psychology, national security, military, intelligence gathering, human rights, and criminology. By operationalizing the presumption of innocence, the Principles contribute to more just, safe and inclusive societies, aligning also with the UN Sustainable Development Goals.

Formally, the document has six sections, each addressing one of the six principles for effective interviewing. Each section consists of advice, counsel, and practical steps to be taken.

Principle 1 – On Foundations

This initial Principle establishes the groundwork for effective interviewing practices with three critical pillars: scientific foundations, legal grounds, and widely accepted professional ethics. Together, these components provide the basis for ensuring that interviews are conducted in a manner that upholds all the central elements at stake.

Principle 2 – On Practice

The second Principle outlines a process for conducting interviews, prioritizing the collection of accurate and reliable information. It underscores the importance of legal safeguards, ensuring a non-coercive environment before the interview, establishing and maintaining rapport during the interview, and conducting assessment and analysis at the interview's conclusion.

Principle 3 – On Vulnerabilities

Recognizing the inherent power imbalance that all interviewees face, this Principle highlights the interview as a situation of vulnerability. It also provides guidance on addressing situations of heightened vulnerability and offers a framework for assessing and mitigating potential risks during interviews.

Principle 4 – On Training

Effective interviewing relies on well-trained professionals. It emphasizes the need to train interviewers and promote continuous professional development to ensure that interviewers are able conduct effective interviews.

Principle 5 – On Accountability

Accountability is a cornerstone of effective interviewing practice. This Principle outlines institutional procedures and review mechanisms, effective record-keeping, prevention and reporting of misconduct, external oversight and independent monitoring, as well as processes for handling complaints, conducting investigations, and providing redress and reparations when necessary.

Principle 6 – On Implementation

The final Principle focuses on application within domestic legal frameworks. It addresses institutional culture and capacity, the role of judicial authorities, and the dissemination of these Principles to ensure their widespread adoption and consistent application.

The implementation of the Méndez Principles in the interrogation of the criminal, the witness and the victims

By implementation of these principles on Effective Interviewing for Investigations and Information Gathering or the "Méndez Principles" the main purpose is to modify, if needs, the police practices by replacing coercive interrogations with rapport-based interviews.

Because they are based on science, law, and ethics, the Méndez Principles propose a concrete alternative to interrogation methods that rely on coercion to extract confessions. They improve the results of investigations, fully respect human rights and enhance trust in the State.

Effective interviewers, usually, according with the Victims` Rights Directive (Directive 2012/29/UE), representatives of public authorities, first of all, should adhere to the highest ethical standards, guided by professional regulations and codes of ethics that outline the purpose, values and expected conduct. These ethical principles govern all aspects of an official's duties, including interviews, in accordance with international legal obligations. Commitment to ethical interviewing prevails even in situations of intense pressure, such as limited time or demands for immediate results. Interviewers, exercising their authority while upholding the law, strive to achieve ethical outcomes that can withstand ethical, judicial, and public scrutiny.

Professional codes of ethics for law enforcement officials underscore the significance of respect, fairness, and honesty as the fundamental pillars of all interviews. Officials are also required to wield state authority in a lawful, fair, and responsible manner at all times. Any illicit action performed in an official capacity constitutes an abuse of power.

In order to spread and to implement better these principles, including the setting up Mendez Centre with aim to train the representatives of public authorities, especially law enforcement, at this moment a COST action (CA) project 22128 (started on October 2023 till October 2027) is underway. In this CA, we have to mention that Romania also has representatives which are involved in many projects. (7) One of these projects intend to establish in Romania a such a Mendez Centre as they are recently launched in Norway and in Ireland.

So, on September 16th 2024 **the first Méndez Centre** For Investigative Interviewing was launched in Oslo, at the Norwegian Centre for Human Rights (NCHR), it will serve as a hub for innovative research and action on investigative interviewing, fostering a global community committed to upholding justice, human rights and human dignity. (8)

The second Méndez Centre was launched on September 18th, 2024, in Dublin. (9) The launch event was attended by more than 80 people including representatives of agencies who conduct investigative interviewing in Ireland with a lot of agencies. With this occasion a video-recorded message from Prof Juan Méndez was played, where he indicated his support for the development of this and other Méndez Centre within thin CA, and reflected on the importance of pressing for the implementation of the Méndez Principles worldwide.

As about the plans for this Centre into the future, one of them includes the creation of an online repository on investigative interviewing; an "*Introduction to the Méndez Principles*" workshop.

We hope that **the third Méndez Center** will be launched in Romania, in the spring of 2025, in physical format, at the headquarters of the Faculty of Legal Sciences and Administrative Sciences in Bucharest, within "*Spiru Haret"* University. This announcement is based on winning a project, in partnership with the Republic of Moldova.

Correlation between Secondary victimization and the Méndez Principles

As we already emphasized secondary victimization refers to the additional harm or trauma experienced by victims of crime due to the response of individuals and institutions, they encounter in the criminal justice system or society at large. On the other hand, the "Mendez Principles" are guidelines established by the United Nations aimed at protecting the rights of individuals deprived of their liberty. These principles emphasize aspects such as humane treatment, access to legal assistance, and fair trial rights.

In a nutshell here are some correlations that looks obvious, between secondary victimization and the Méndez Principles will be described below:

1. **Dignity and Respect:**

Secondary victimization: Victims may experience disrespect or stigmatization when interacting with law enforcement or the legal system, exacerbating their trauma.

Méndez Principles: Emphasize the right to be treated with dignity and respect, regardless of legal status or accusation.

2. **Fair Trial and Due Process:**

Secondary victimization: Victims may face insensitivity or disbelief from authorities, affecting their ability to participate effectively in legal proceedings.

Méndez Principles: Advocate for fair trial rights, including the presumption of innocence, access to legal representation, and the right to challenge evidence.

3. **Protection from Harm:**

Secondary victimization: Victims may feel vulnerable or exposed to further harm when their privacy or safety is compromised during legal processes.

Méndez Principles: Stress the obligation of authorities to protect individuals in custody from any form of harm or abuse.

4. **Access to Support Services:**

Secondary victimization: Victims often lack adequate support services to address their emotional, psychological, and practical needs after victimization.

Méndez Principles: Highlight the importance of access to medical care, counseling, and other support services for individuals deprived of their liberty.

5. **Non-Discrimination:**

Secondary victimization: Victims from marginalized groups may face additional discrimination or bias during interactions with the criminal justice system.

Méndez Principles: Prohibit discrimination based on race, ethnicity, gender, religion, or any other status, ensuring equal treatment and protection for all individuals.

These correlations illustrate how the Mendez Principles align with efforts to mitigate secondary victimization and uphold the rights and dignity of all individuals, including victims of crime.

DISCUSSION AND CONCLUSION

Still, we believe that are necessary also another measure, such as:

- The need for research institutes with representativeness at the national level (e.g. Such have been, national institute of criminology - ministry of justice), possibly with territorial structures according to the courts of appeal (preda a., 2022/2023)
- The development of partnerships or other forms of cooperation between authorities competent, especially between the health and social services, and the judiciary authorities and other bodies responsible for monitoring individuals, as convention of lanzarote mentioned.
- The need to introduce into the programs of the faculties of law (license and/or master's degree) at least as compulsory disciplines victimology (popescu c.a., 2020)
- The establishment of the méndez centre in romania, as mentioned before we will try in the next year at the faculty of juridical and administrative sciences within the" spiru haret" university
- The establishment of specialized courts for minors and family in all the country, with psychologists specialized for the minors' hearings
- The collaboration of magistrates with ngos (recommended in the latest victims' rights directive, directive 2024/1385/ue, but also by the lanzarote convention 25 oct. 2007)
- Encouraging the volunteering of students/master's students at general directorate for social assistance and child protection/ and relevant ngos
- Encouraging victimological research within the evaluation projects in criminology and related disciplines, of undergraduate and dissertation works in this field, at the level of the faculties of law, psychology, sociology, social work, theology, journalism, etc.

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PROCEDURAL ISSUES IN THE CONTRAVENTION PROCESS APPLYING THE PRESUMPTION OF GUILT PRINCIPLE AND THE OBJECTIVE NATURE OF RESPONSIBILITY FOR ENVIRONMENTAL (ECOLOGICAL) OFFENSES ACCORDING TO THE LEGISLATION OF THE REPUBLIC OF MOLDOVA

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Abstract

The contravention procedure to which the presumption of guilt principle and the objective nature of responsibility for environmental (ecological) offenses will be applied would involve certain particularities regarding the participants, thus offering the possibility of identifying a distinctive formula for identifying participants in the process.

As a result, the authors establish as the main objective addressing the issues in order to clarify procedural aspects within the contravention process to which the presumption of guilt principle and the objective nature of responsibility for environmental (ecological) offenses will be applied.

Keywords: environment, ecology, contravention law, objective liability, presumption, guilt.

Introduction. Over time, we have become accustomed to imposing respect for the Law on society. But we are also the ones who enacted the Law. In fact, we demand that a value be respected for its own sake. And this is natural, because the purpose of the Law is to protect values. Most often, these are social values – life, liberty, honesty, honor, order, etc.

Among the many issues facing society today, the environmental problem is a relatively 'young' one. Yet we also understand that, although the environmental issue is a recent one, it is of great importance, and its significance continues to grow with time.

In the early period, when the state and society began offering solutions to environmental problems, these solutions were naturally of the same nature and scale as those offered for resolving social disputes. However, time compels us to refresh our perception of the nature and seriousness of environmental issues, as well as the solutions we must offer.

Likewise, legislators must break away from the „stereotypes" of regulating legal relations. Consequently, environmental law relations require a distinct approach.

Methods and materials applied. In the elaboration of this study, a series of research methods were used, such as: logical analysis method (analysis and synthesis), used for synthesizing the opinions of various scholars in the field of environmental and contravention law, comparative analysis method, necessary for conducting a comparative study between the positions of different specialists in the field, systemic analysis method, used in studying the various legal norms regulating the subject under investigation, synthesis method, used to generalize the aspects subject to analysis and to establish clear and concise recommendations from the authors and proposals for law reform.

The aim of the article. The research conducted by the authors clarifies the most essential issues concerning the application of the presumption of guilt principle and the objective nature of responsibility for environmental (ecological) offenses.

Conclusions. As a result, a set of solutions and arguments are proposed in the form of proposals to modify the applicable legal framework for the procedure within the contravention process to which the presumption of guilt principle and the objective nature of responsibility for environmental (ecological) offenses will be applied.

Results and discussion. Today, legal doctrine not only establishes „specific" norms regarding environmental rights but also implements a special repressive system to ensure the most effective protection of the environment.

An early step in this was establishing strict liability for environmental damage, along with the prospect of enshrining a distinct form of environmental liability [11, p.52].

However, this is just the beginning of the journey. Further development must also occur in criminal law, contraventional law, and in both criminal and contraventional procedures. The contraventional procedure is governed by the principle of the presumption of innocence.

For contraventional cases related to environmental damage, we will initially propose the *„reversal of the burden of proof"* and, subsequently, the principle of the presumption of guilt.

A contraventional procedure applying the principle of the presumption of guilt and the objective nature of liability for environmental (ecological) violations would involve many particularities. This would concern the limits of public authorities' intervention, procedural rules, and the role of participants.

Primarily, this refers to the authority empowered to establish and examine the contraventional case, the victim or injured party, and the offender. We will focus on these three categories of participants, while for the others, we will assume that the general rules provided by the Code of Administrative Offenses of the Republic of Moldova [2] apply.

a) *The authority empowered to establish and examine the contraventional case.* Currently, the legislator establishes that contraventional cases regarding environmental damage are examined by individuals with control functions within the Environmental Protection Inspectorate [2, art.405].

Not least, it should be emphasized that the legislation of the Republic of Moldova establishes that certain authorities with a collegial organization are competent to examine and decide on contraventional cases. We are referring to Administrative Commissions.

We believe that assigning competence for resolving environmental (ecological) contraventions to administrative commissions, which are collegial decision-making bodies, is not rational. In our view, where decisions are made collegially, there is not enough foundation for accountability regarding the unfavorable consequences of an incorrect decision.

The reasoning behind this position also lies in the fact that judicial bodies are required to proceed without delay in resolving contraventional cases, something that cannot be achieved by administrative commissions [8].

In this chapter, the legislative insufficiency lies in the fact that the administrative commission is obligated to examine the case within 30 days from the registration of the documents concerning the offense at the office of the local public authority. In reality, the administrative commission does not operate on a permanent basis, but only as needed. This is because, during a single session, it may not be possible to administer and examine all the necessary evidence, making one or more postponements of the examination sessions inevitable.

As a result, the promptness and speed of the contraventional case examination are not ensured.

In this regard, although the legislator requires the mandatory examination of cases, because, according to the provisions of Article 2 of the *Law on the Reparation by the State for Damage Caused by the Violation of the Right to a Reasonable Time for Trial or the Right to a Reasonable Time for Execution of Court Judgments* [7], any individual or legal entity who believes that their right to a reasonable time for trial or the right to a reasonable time for execution of court judgments has been violated may file a lawsuit in court seeking recognition of such a

violation and compensation for the damage caused, under the conditions established by this law and the civil procedural legislation, the creation of conditions that primarily allow for delays cannot be justified.

In this sense, the Criminal Procedure Code [3] also stipulates that criminal investigations and the trial of criminal cases must be conducted within a reasonable time. Similarly, the Code of Administrative Offenses of the Republic of Moldova [2], in Article 381, establishes that: *„Any person has the right to have their case examined and resolved fairly and within a reasonable time”.*

Thus, although it is not expressly stated in the law among the principles of contraventional procedure, promptness (efficiency) is recognized in the specialized literature as a condition for the effectiveness of the process.

From this, the participation of administrative commissions in the examination of contraventional cases concerning environmental damage is unnecessary and irrational. Due to the particularities of their operation, administrative commissions do not enhance the efficiency of examining contraventional cases but, on the contrary, may lead to delays, and in some cases, even create difficulties concerning the legitimacy of the decision.

Our opinion is that the only authority that should have competence in the examination of such cases must be a specialized authority – in this case, the Environmental Inspectorate.

b) *The victim or injured party.* In our opinion, the status of the injured party in cases of environmental (ecological) contraventions should be recognized for any person.

Therefore, it is logical that in contraventional cases regarding environmental damage, the contraventional process cannot be terminated on the basis of reconciliation between the parties. This is because it is impossible to reconcile with the entire population at once.

At the same time, if we refer to the procedure for identifying and recognizing the status of victim and injured party, we believe that the following considerations should be taken into account.

The status of victim in cases of environmental contraventions, based on the provisions of Article 37 of the Constitution of the Republic of Moldova [1], as well as the provisions of Article 35 of the Romanian Constitution, can be granted to any person. Thus, the Constitution of the Republic of Moldova establishes that every person has the right to an ecologically safe environment for life and health, as well as to safe food products and household items.

This human right is not limited by any criteria, such as belonging to one state or another, nationality, gender, political or religious opinion, domicile, or any other criterion. Therefore, any person can notify the competent authority to be recognized as an injured party in the contraventional process for environmental damage.

At the same time, a clear distinction with a well-defined normative content must be made between the status of victim and that of the injured party, where the latter can be granted clear procedural rights, including the right to be informed about the examination results, to be heard, to be summoned in the examination process, to be guaranteed the right to defense, etc. The victim of environmental damage may claim compensation for the harm.

Compared to a natural person, a legal entity may be recognized as an injured party in the contraventional process in cases of environmental pollution only if it has directly suffered certain damage or its interest has been otherwise harmed. The status of victim for a legal entity, just like for a natural person, in cases of environmental (ecological) contraventions, can be recognized for any legal entity whose main activity is for profit and whose environmental interest, affected by the contraventional act, is related to the purpose of the legal entity's activity.

c) *The Offender.* Current contraventional legislation does not identify specific particularities regarding the offender in cases of environmental (ecological) contraventions. Concerning the perspective of a distinct procedure, it remains necessary to clearly establish a whole series of circumstances related to the offender’s status.

First of all, we refer to the fact that acts causing pollution to involve a specific nature resulting from the influence of natural phenomena on the actions carried out by the offender. These influences occur in two dimensions – one represents the offender's actions upon the environment, and the other represents the natural „force” of phenomena, which can "take over" and even exacerbate a polluting process. In other words, the act causing environmental damage is not one that presumes effects exclusively resulting from the offender’s actions or omissions.

The offender should be identified based on the act they commit. In our opinion, to identify the presence of an act that can be, based on objective elements, qualified as an environmental (ecological) contravention, it is necessary that this act either represents an act of environmental damage (pollution) or poses a danger to the environment, whether through the violation of an environmental beneficiary's right or by creating a clear probability of future environmental damage. This is motivated by the fact that certain natural processes take time, and, as a result, harmful effects may not occur immediately, having actual consequences only after a long period of time. Sometimes these timeframes can extend into years. As an example, we could mention the pollution caused by materials like Freon 11 and Freon 12, which, in gaseous form, are found in refrigerant liquids and aerosol cans [11, p.117].

When released into the atmosphere, they do not immediately produce negative effects. They reach the stratosphere, where under the influence of ultraviolet solar rays, they decompose and release chlorine atoms, which then react with ozone molecules in the atmosphere, breaking them down into simple oxygen molecules. The effect of the chlorine atoms occurs in a chain reaction, meaning that a single chlorine molecule can destroy several hundred ozone molecules. Given that freon gases take 10-15 years to reach the stratosphere, their effects may be felt 50-100 years after the actual polluting act by the offender.

Thus, the qualification of the act as a contravention should be done by formally defining the components of environmental (ecological) contraventions.

Regarding the involvement of legal entities in the contraventional process for polluting acts, we should mention that in legal doctrine, opinions have been formulated regarding the logical inadmissibility of regulating criminal liability for legal entities [10, p. 72-118]. However, we must understand that since civil and commercial law cannot be conceived separately from criminal and contraventional law – especially since the latter „guard correct civil and commercial relations" – it is sometimes the nature and content of civil and commercial regulations that determine the content and application of criminal and contraventional law.

Indeed, it has been argued that the most effective method for discouraging economic and financial crime, as revealed by prestigious criminological studies, is the criminal liability of legal entities [5, p.100-101]. Thus, if civil and commercial law provides legal entities with the capacity to engage in legal relationships, and environmental legislation allows them to participate as parties in the use of natural resources, it would be illogical to ignore their status as subjects of criminal and contraventional law, both materially and procedurally, when they derive benefits from the use of natural resources and become owners of the fruits harvested from the use of these resources.

Moreover, *Recommendation of the Council of Europe No. (88)18 concerning liability of enterprises having legal personality for offences committed in the exercise of their activities [9]*, which states that: *„the considerable harm caused to individuals by the large number of offenses committed in the course of the specific activities of businesses"*, provides the main guidelines to be taken into account by each State when regulating this legal institution. Several guidelines are indicated, such as the one recommending that States should hold businesses criminally liable, regardless of whether or not the natural person who has committed the specific acts that have caused the damage has been identified, and that holding businesses liable should not exempt the natural persons involved from liability.

In this way, the criterion according to which a legal person is held liable for environmental offenses is the existence of a particular patrimonial interest of the legal person resulting from this act. The criminal liability of the legal person imposes a subjective element specific to the legal person, separate from the subjective element that characterizes the act of the natural person who is an employee of the legal person. In this way, for example, the act of the director of the undertaking is to be distinguished from the act of the undertaking. From a procedural point of view, this task falls specifically to the investigating officer, who, in addition to the actual damage, will have to identify the direct benefit to the legal person that is in such a legal environmental relationship.

Co-defendants. One issue, which we believe needs to be discussed, is that of the environmental damage caused by the acts committed in the competition by several persons. Here we consider that the distinction between the „role" of each of the co-perpetrators is no longer a necessary matter. In this way, it is only when the issue of guilt arises in the proceedings that it is necessary to assess the role of each of the co-perpetrators. When, however, liability for environmental damage, including liability for infringement, is objective, the question of the role of each of the

offenders in causing the environmental damage is no longer of any importance. Each of the co-offenders will be liable, irrespective of guilt, merely by establishing that the presence of the damage or the object of the unlawful act and the causal relationship between the act and the damage have been established.

d) *The issue of procedural acts of observation and examination in environmental offense proceedings.* In the administrative offense procedure where the principle of presumption of guilt will be applied, the detecting agent is only required to undertake acts that establish the object of the offense, the subject of the offense, and the objective aspect of the offense. The subjective aspect of the offense will be presumed, and in cases of objective liability, it will not generally be the subject of examination.

Article 440 of the Code of Administrative Offenses of the Republic of Moldova [2] states that the detection of the administrative offense means the activity carried out by the detecting agent to collect and administer evidence regarding the existence of the offense, to conclude the report regarding the offense, to apply the administrative sanction, or to forward, as the case may be, the file to the court or other body for resolution.

Regarding environmental offenses, if for most offenses the detection procedure can be limited to administering the testimonies of witnesses, the injured party, and the offender, in cases of pollution, the detecting agent is obligated to collect a series of material evidence, such as evidence related to the existence of pollution, like the concentration of harmful substances in water, soil, etc.

This requirement is conditioned by the fact that confirming the commission of a pollution act often necessitates the occurrence of consequences, which, in fact, can only be proven through acts of documentation and collection of evidence.

It is also worth noting that the process of identifying pollution facts is accompanied by the necessity to assess damages. This will be done to ensure the procedure for repairing damages and to distinguish between the administrative or criminal content of the polluting act. It should be mentioned that in the context of establishing the objective nature of administrative liability for environmental damages, the process of identifying the administrative offense will not aim to prove the subjective element – guilt. The examination process of the administrative offense related to environmental damages will aim to identify the presence of harm and the object of the harm, the responsible subject, and the content of the harmful act (objective aspect), including assessing the causal link between the act and the harm. Evidence regarding guilt in such a process will not need to be administered.

Procedural Coercive Acts. In the administrative offense procedure, the establishment of the principle of presumption of guilt for cases of environmental offenses also provides the possibility of implementing procedural coercive acts for distinct reasons. Thus, if the legislator were to approve the application of the principle of presumption of guilt, the detecting agent would be entitled to apply coercive measures without needing to justify the presence or absence of the subjective elements of the offense's composition.

At the same time, it is necessary to examine the issue of the possibilities and limits of applying procedural coercive measures by the detecting agent in cases of environmental offenses. Thus, Article 432 of the Code of Administrative Offenses [2] establishes that the detecting agent has the right to apply, within their competence, the following procedural coercive measures:

a) Detention.
b) Forced bringing.
c) Removal from operating the vehicle.
d) Medical examination to determine the state of intoxication caused by alcohol or other substances.
e) Vehicle detention.
f) Suspension of the right to use the vehicle.

From this list, regarding environmental (ecological) offenses, only the following can be applied:

a) Detention.
b) Forced bringing.
c) Removal from operating the vehicle.

d) Medical examination to determine the state of intoxication caused by alcohol or other substances; e) vehicle detention; f) suspension of the right to use the vehicle.

Detention: According to Article 433 of the Code of Administrative Offenses [2], detention involves a short-term limitation of an individual's freedom and is applicable in cases of flagrant offenses for which the code provides for administrative arrest; in cases where the identification of the person in relation to whom the administrative process has been initiated is impossible, after all identification measures have been exhausted; and for offenses that may be subject to security measures such as expulsion.

In examining cases of environmental offenses, the application of detention may be necessary whenever the person who committed the administrative offense cannot be identified, and all identification measures have been exhausted. Given the circumstances under which environmental offenses are often detected (typically in natural environments such as forests or fields, far from populated areas), it is unacceptable that the circle of representatives of the authorities who can apply detention is limited only to police and customs officials. It is essential that detention powers are also granted to observing agents from environmental protection authorities.

This regulation is necessary considering that the Code of Administrative Offenses [2] stipulates that the detention period is calculated from the moment of the actual detention of the person. Thus, if an observing agent from the environmental protection authority initiates a documentation procedure for a person caught in the act, that agent will not be able to apply the measure of detention, allowing the offender to leave the scene. This makes it impossible to properly document the administrative offense.

Forced Bringing: Article 437 of the Code of Administrative Offenses [2] establishes that forced bringing involves the forced transportation of a witness or victim who avoids appearing before the court. Forced bringing is conducted by the police based on a court order. Therefore, if we analyze this measure, we conclude that forced bringing can only be applied to witnesses and victims, and the application of this measure is possible only if the court examines the case, with the bringing presumed to be done only in front of the court.

Environmental offenses are examined by the observing agent, and therefore, since the observing agent cannot apply detention to the offender, they cannot apply forced bringing either. All of this complicates the procedure for documenting the administrative offense.

We believe that the provisions regarding detention and forced bringing should be revised so that observing agents within environmental authorities are empowered to exercise both detention and forced bringing. This change is crucial for enhancing the effectiveness of the enforcement of environmental protection laws and ensuring that offenders can be held accountable for their actions.

Removal from Vehicle Operation. Article 438 of the Code of Administrative Offenses [2] establishes that a person operating a vehicle is removed from driving if:

a) There are sufficient grounds to presume that the person is in an inadmissible state of intoxication due to alcohol or other substances.
b) The person does not have the document confirming their right to drive or use the vehicle.
c) The temporary admission period for the vehicle has expired within the territory of the Republic of Moldova.

In our opinion, the legislator has unjustifiably limited the cases in which the observing agent can operate the removal from driving. The scenarios in which the observing agent could remove a driver from operating the vehicle should not be restricted solely to the condition of the driver but should also include the condition of the vehicle itself. This should be linked to the provisions of Article 439 of the Code of Administrative Offenses [2], which states that a vehicle whose driver has been removed from driving is retained and, if it cannot be handed over to the owner, possessor, or their representative, is brought to a special parking station or the nearest police subdivision where its parking may pose an imminent danger to public interest.

At the same time, we believe that the legal norm should not be limited to situations where the parking of the vehicle poses an imminent danger to public interest but should also include instances where its use can create an imminent danger to public interest. This public interest should encompass the protection of the environment. For instance,

exhaust emissions that exceed established limits would be one example of pollution that we reference as being a polluting act.

However, we believe that this set of safety measures is insufficient. One of the safety measures that should be included in the toolkit of observing agents is the suspension or prohibition of the design, construction, reconstruction of industrial, agricultural, and social facilities, and works related to the exploitation of natural resources and other works if they are conducted in violation of environmental protection legislation. This measure is included in Article 16 of the Environmental Protection Law but unfortunately is not reflected in the Code of Administrative Offenses [2].

We also propose the inclusion of a measure for the temporary or permanent suspension of the activities of economic agents that cause irreparable harm to the environment. This measure is also found in Article 30 of the Environmental Protection Law [6].

We believe that the application of these coercive measures would facilitate the examination of administrative offense cases while simultaneously ensuring the prevention of environmental damage.

Execution of Decisions in Environmental (Ecological) Offenses. The procedure for executing cases related to environmental (ecological) offenses presents a series of difficulties. Thus, the text of the section in the Code of Administrative Offenses that regulates the execution procedure refers only to judicial decisions. Article 478 of the Code of Administrative Offenses [2] establishes that the execution of the judicial decision is the responsibility of the court that judged the case in the first instance. Within 10 days from the date the judicial decision becomes final, the president of the court sends the execution order of the decision, along with a copy of the final decision, to the authority responsible for enforcing the decision according to the provisions of the enforcement legislation. If the case was judged with appeal, a copy of the appellate court's decision is attached to the copy of the decision. The authorities executing the judicial decision communicate to the court that sent the decision about its execution within no more than 5 days. The administration of the detention facility will notify the court that sent the decision about the location where the offender is serving the sanction. The court that issued the decision is obliged to monitor its execution.

As we can see, these regulations do not refer to the execution of decisions made by the observing agent. At the same time, the Enforcement Code establishes that decisions of an administrative nature are executed as provided by the Enforcement Code [4]. Thus, Article 312 of the Enforcement Code stipulates that the execution of decisions regarding the application of administrative sanctions, except for the warning sanction, is the responsibility of the court or the official who adopted the decision. It must be understood that for the execution of decisions regarding cases of ecological offenses, the responsibility lies with the observing agent.

Article 313 of the Enforcement Code [4] establishes that the execution of the warning sanction is ensured by the institution or authority that adopted the decision. The execution of the fine imposed on individuals or legal entities is ensured by the judicial executor in whose territorial jurisdiction, as established by the territorial chamber of judicial executors, the domicile or headquarters of the offender is located. The execution of the sanction of deprivation of special rights, unpaid community service, and sanctions imposed on legal entities, except for fines, is ensured by the probation authority. The execution of the administrative arrest sanction is ensured by penitentiaries.

Paragraph (4) of Article 313 of the Enforcement Code [4] states that the institutions and authorities referred to in paragraphs (1)-(3) of this article must inform the court, within 5 days, about the execution of decisions of an administrative nature. At the same time, the need to inform the court about the execution of these decisions does not require informing the court, as their examination does not fall under the exclusive competence of the court.

In **conclusion**, it must be noted that what characterizes harmful environmental acts, and the environmental legislation of the Republic of Moldova, as well as that of Romania, should dedicate distinct rules and conditions of responsibility, as only such an approach will allow us to achieve efficiency in ensuring environmental protection.

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THE IMPACT OF FINTECH CREDIT ON CHINA'S GROWTH IN CAPITAL EXPENDITURE

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INTRODUCTION

The financial services industry has undergone a global transformation due to the significant expansion of the financial technology (fintech) sector over time. (Arner et al., 2015). Particularly, fintech in China has quickly progressed, emerging as a major player in the financial sector (Chen et al., 2019). Figure 1 illustrates the significant rise in fintech credit in China in recent years, with a robust growth trend in 2017. On the other hand, the increase in fintech credit can affect capital spending, especially in industries that rely heavily on outside funding (Cornelli et al., 2020). Fintech credit provides alternative financing options, which encourages businesses to invest more and boosts economic growth (Hau et al., 2019). In fact, fintech provides easier and more versatile financing options (Chen et al., 2019). In this regard, the current study examines whether and to what extent fintech credit drives growth in capital expenditure in China.

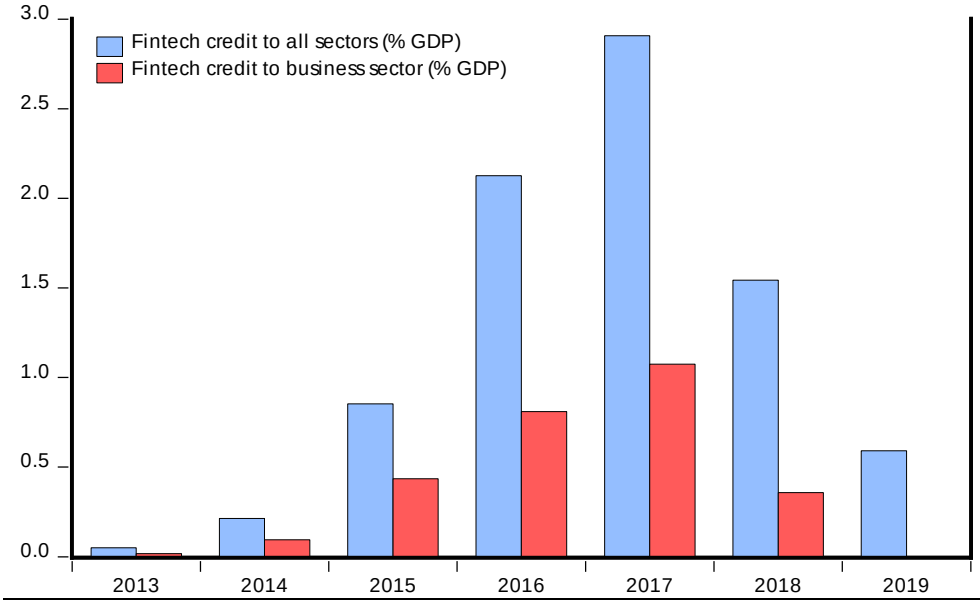

Fig. 1: Fintech credit to all sectors versus to business sectors in China.

Fintech has recently made considerable advancements in the fields of financial development and integration, greatly altering the global financial landscape, with deep implications for economic and financial activities and capital expenditure (Frost, 2020; Lee and Shin, 2018). Specifically, it has transformed the landscape of traditional financial services into innovative peer-to-peer lending, mobile payments, and blockchain technology (Philippon, 2017). Several studies investigated fintech's possible impact on increasing financial inclusion (Gomber et al., 2017), enhancing better access to credit (Ozili, 2021), and decreasing transaction costs (Beck et al., 2023). While the current body of literature on how fintech affects economic activities is generating increasing interest (Philippon, 2017; Claessens et al, 2018), its role in inducing capital expenditures has not received the same attention, especially for emerging economies like China. In this regard, our study aims to bridge this gap in the literature and explore how capital expenditure growth relates to the development of fintech credit.

In recent years, China has gained notoriety for innovation and scaling in its financial technology industry because of positive regulation and a tech-savvy population across the board (Chen et al., 2019). This massive scale of operation in using digital financial services, whether in mobile payments or online lending and wealth management platforms, has placed China as one of the leading countries in the world in fintech (Arner et al., 2015). Chinese fintech companies have exploited big data, artificial intelligence, and blockchain technology to offer a broad spectrum of financial products and services to consumers and corporations (Hau et al., 2019). Lively fintech landscapes have opened new financing opportunities, especially for financially constrained firms that commonly have difficulty obtaining credit from traditional banks (Cornelli et al, 2020). Thus, our focus on China is well apt given its unique economic structure, rapid adoption of fintech, and high levels of investment in digital financial services (Ding et al., 2022).

Business and non-business credit make up the two categories of total fintech credit. Moreover, balance sheet lending, peer-to-peer (P2P) lending, crowdfunding, and other lending sources are the four main categories of fintech financing. Specifically, balance sheet lending is when fintech companies use their own balance sheets to lend money directly to borrowers (CBInsights, 2018). P2P lending platforms link individual lenders and borrowers, enabling the transfer of funds without middlemen (Cornelli et al., 2020). Crowdfunding allows businesses to secure funding from numerous investors, frequently using internet-based platforms (Hau et al., 2019). Each type of fintech credit plays a vital role in assisting businesses with funding for their investments in fixed assets.

By improving access to financing and making global transactions easier, financial technologies are at the center of paving a path for companies to make investments in tangible assets which will further support capital investment that is crucial for growth. Fintech platforms enable firms to raise capital more easily and inexpensively, which is especially important when buying imported capital goods (Wang and Tang, 2024). Conducting global forex and international money transfers with these economies improves the transaction prices of securing equipment and capital instruments via abroad markets (Tang et al., 2023). Fintech credit opens an extra source of financing, which is very valuable for firms that do not find it easy to obtain bank loans in the normal course of affairs (Claessens et al., 2018; Dorfleitner et al., 2019). In addition, fintech solutions provide options for borrowing that fall outside of the usual channels, such as peer-to-peer lending and crowdfunding, which frees up resources on hand by firms seeking enhancement in their existing operations (Wang and Hu, 2023). With these financial technologies, companies can improve their capital allocation strategies and target investments in fixed assets, which will allow them to stay competitive and create value over time (Sheng, 2021).

Therefore, our primary hypothesis is that capital expenditure is positively associated with fintech financing, particularly for financially dependent industries. Additionally, we conjecture that the various types of fintech credit may have heterogeneous impacts, with certain types of fintech credit having a greater influence on the growth of capital expenditure (Chen et al., 2019). In fact, we examine which forms of fintech credit most effectively facilitate investment in fixed assets, and hence it contributes to the nuance of the role of fintech credit in facilitating corporate investment (Wang et al., 2022).

Using data on 12,306 firms in 22 manufacturing sectors, we find that fintech credit indeed increases capital expenditure in China and that this increase is particularly large for financially dependent industries. It thus seems that fintech credit can help relax financing constraints and hence raise the likelihood that firms invest in capital-intensive projects (Lin et al., 2020). We further observe that balance sheet lending and P2P lending are more effective in promoting investment in fixed assets than crowdfunding. This affirms the importance of considering the specific characteristics of different fintech credit forms when evaluating their impact on firm investment (Li et al., 2021).

Our study makes important contributions to the literature. First, we focus on growth in capital expenditure, where an increase in capital expenditure is crucial for firms to expand and stay in business by making investments in new technology, property, and equipment. In order for businesses to maintain their current real estate and equipment, capital spending is essential. The capital expenditures of a company are closely observed by investors. Second, we use a unique data set to investigate the impact of fintech credit on capital expenditure growth. Specifically, we decompose fintech credit into its various forms and assess their respective individual contributions to capital expenditure growth. This decomposition helps identify which types of fintech credit are most effective for corporate investment and thus provides valuable information to policymakers and practitioners (Lu et al., 2024). Our work sits at the intersection of the existing fintech and corporate finance literature. Previous studies underline

the potential for fintech to improve access to finance, most especially for SMEs and financially constrained firms (Philippon, 2017; Thakor, 2020). The present one adds to the literature by providing empirical evidence on the ways in which fintech credit shapes capital expenditures. This in turn can help in designing policies fostering development in fintech and amplifying further positive spillovers into the economy (Yang and Zhang, 2022).

The remainder of our study unfolds as follows. Section 2 presents the methodology and describes the data. Section 3 presents the empirical results while Section 4 concludes.

EMPIRICAL STRATEGY

METHODOLOGY

Our study aims to address the following questions: (i) does fintech financing affect long term corporate growth through increasing capital expenditure (ii) are there heterogeneous impacts across different fintech instruments? To address these questions, we apply the following model:

$$G_{ist} = c + \gamma.\boldsymbol{Fintech}_t \times \boldsymbol{FD}_s + \delta.X_{ist} + s + t + \varepsilon_{ist} \qquad (1)$$

where the i subscript refers to a firm, the s subscript to a sector and the t subscript to a sample year. G_{ist} is growth in capital expenditure for a firm i belong to industry s in year t. $Fintech_t$ denotes fintech credit as a percentage of GDP in the year t, FD_s measures the degree to which industry s depends on external sources of financing, X_{ist} is a vector of firm-level variables that vary over time, and ε_{ist} stands for the error term. Dummy variables s and t represent sector and year-fixed effects, respectively.

Firm growth in capital expenditures could be estimated in various ways. Based on the nature of our study, we use the yearly growth in a firm's total fixed assets. It indicates an increase in the firm's opportunities to maintain its growth. Furthermore, total fintech financing consists of balance sheets, P2P, crowdfunding, and other types. We use the total fintech financing (as % GDP) in our main analysis and its four components in ancillary analysis. We follow Duygan-Bump et al (2015) and measure the financial dependence variable using the external financial dependence of U.S. firms by 2-digit SIC codes. This is an industry-level median of the ratio of capital expenditures minus cash flow over capital expenditures. Cash flow is defined as the sum of funds from operations, decreases in inventories, decreases in receivables, and increases in payables. Capital expenditures include net acquisitions of fixed assets.

DATA

To investigate the relationship between fintech financing and growth in capital expenditures, we merge data from several sources. We obtain information on firms' balance sheets and income statements from ORBIS and Bureau Van Dijk databases. The available data covers the period of 2013–2019. We stop at 2019 to avoid the confounding effect of the Covid crisis and for data availability purposes. Next, we add the fintech credit data. Our primary source is the Cambridge Center for Alternative Finance, as in Ziegler et al. (2021). Additionally, we use Duygan-Bump et al' (2015) measure of financial dependence of U.S. firms by 2-digit SIC codes. This is an industry-level median of the ratio of capital expenditures minus cash flow over capital expenditures. Cash flow is defined as the sum of funds from operations, decreases in inventories, decreases in receivables, and increases in payables. Capital expenditures include net acquisitions of fixed assets. Last, we include country-level data from the World Development Indicators.

A detailed list of the variables and their sources can be found in Appendix Table A1. Summary statistics of all variables related to growth in capital expenditure, fintech credit, and its subcomponents, financial dependence, are presented in Table 1.

Table 1. Descriptive statistics, 2013-2019.

This table shows the average of growth in capital. Expenditure, fintech credit and other variables over the period 2013-2019.

Variable	N	Mean	S.D.	Min	25 perc.	Mdn	75 perc.	Max
Growth in capital expenditure	59,880	0.31	1.15	-0.84	-0.08	0.03	0.25	8.19
Fintech credit (%GDP) to								
All sectors	7	1.18	0.98	0.05	0.21	0.85	2.13	2.91
Business sector	7	0.40	0.38	0.00	0.02	0.36	0.81	1.07
in the form of balance sheet	7	0.05	0.08	0.00	0.00	0.01	0.06	0.24
in the form of P2P	7	0.33	0.32	0.00	0.02	0.31	0.54	0.96
in the form of crowdfunding	7	0.00	0.01	0.00	0.00	0.00	0.01	0.01
other forms	7	0.01	0.02	0.00	0.00	0.01	0.02	0.05
FD	19	0.03	0.21	-0.96	-0.04	0.03	0.22	0.28
Size	76,291	10.77	1.92	6.35	9.42	10.64	12.07	15.58
Leverage	64,387	0.73	0.23	-0.26	0.63	0.79	0.89	0.99
Liquidity	66,650	1.60	1.83	0.10	0.68	1.05	1.74	12.46
Profitability	66,867	0.06	0.09	-0.23	0.02	0.05	0.10	0.42
Public	86,142	0.38	0.48	0.00	0.00	0.00	1.00	1.00
Age	85,988	13.76	14.72	-8.00	7.00	12.00	17.00	119.00
Bank credit	7	4.34	30.46	-96.27	-6.31	4.03	34.08	46.31
Internet	7	0.64	4.71	-16.92	-1.11	0.41	4.01	8.77

The average fintech credit to all sectors as a percentage of GDP is 1.18 with a standard deviation of 0.98, while the average growth in capital expenditure is 0.31 with a standard deviation of 1.15. This indicates that while fintech credit shows relatively high consistency across sectors, the growth in capital expenditure exhibits greater variability among firms. We notice an increasing supply of fintech credit over the 2013-2017 period, followed by a significant decrease in the last two years of our study (2018 and 2019). From 2013 to 2017, fintech credit grew rapidly thanks to new technologies and favourable regulations. But in 2018 and 2019, the supply dropped sharply due to stricter rules, economic slowdowns, and more competition from traditional banks. This change shows the fintech market maturing and becoming more cautious with risks.

RESULTS

This table reports the results estimating $G_{ist} = c + \gamma.\boldsymbol{Fintech}_t \times \boldsymbol{FD}_s + \delta.X_{ist} + s + t + \varepsilon_{ist}$ where the i subscript refers to a firm, the s subscript to a sector and the t subscript to a sample year. G_{ist} is growth in capital expenditure $Fintech_t$ denotes fintech credit as a percentage of GDP, FD_s measures the degree to which industry $s$depends on external sources of financing, X_{ist} is a vector of firm-level variables that vary over time, and ε_{ist} stands for the error term.. For detailed definition of variables, see Appendix, Table A1. All specifications includes sector and year fixed effects. The statistical inferences are based on robust standard errors (associated t-values reported in parentheses) clustered at the firm level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 2: Fintech credit and growth in capital expenditure – baseline results

	[1]	[2]	[3]	[4]	[5]	[6]
Fintech (total)$_t$ x FD$_s$	0.044*					
	(1.840)					
Fintech (business)$_t$ x FD$_s$		0.124**				
		(2.202)				
Fintech (balance sheet)$_t$ x FD$_s$			0.542**			
			(2.075)			
Fintech (P2P)$_t$ x FD$_s$				0.132**		
				(1.972)		
Fintech (crowdfunding)$_t$ x FD$_s$					2.672	
					(0.600)	
Fintech (other)$_t$ x FD$_s$						2.547**
						(2.112)
Firm controls $_{ist}$						
Size	-0.024***	-0.024***	-0.024***	-0.024***	-0.024***	-0.024***
	(-7.396)	(-7.397)	(-7.385)	(-7.395)	(-7.374)	(-7.394)
Leverage	0.255***	0.255***	0.255***	0.255***	0.255***	0.255***
	(8.923)	(8.925)	(8.925)	(8.924)	(8.919)	(8.923)
Liquidity	0.000	0.000	0.000	0.000	0.000	0.000
	(0.024)	(0.027)	(0.027)	(0.026)	(0.023)	(0.026)
Profitability	-0.008	-0.009	-0.008	-0.008	-0.008	-0.008
	(-0.140)	(-0.146)	(-0.138)	(-0.143)	(-0.128)	(-0.141)
Public	0.053***	0.053***	0.053***	0.053***	0.053***	0.053***
	(5.570)	(5.575)	(5.578)	(5.577)	(5.593)	(5.578)
Age	-0.003***	-0.003***	-0.003***	-0.003***	-0.003***	-0.003***
	(-7.410)	(-7.409)	(-7.407)	(-7.407)	(-7.405)	(-7.407)
Constant	0.345***	0.345***	0.345***	0.345***	0.346***	0.345***
	(10.246)	(10.251)	(10.269)	(10.257)	(10.271)	(10.268)
Sector FE	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y
# Sectors	19	19	19	19	19	19
Observations	55,333	55,333	55,333	55,333	55,333	55,333
Adj. R^2	0.018	0.018	0.018	0.018	0.018	0.018

Table 2 reports the baseline results for the period 2013-2019. We find that total fintech credit (to both business and non-business sectors) enhances financially constrained firm investments (Model 1). However, the impact is statistically significant only at the 10% level. We observe a positive and statistically significant (at the 5% level) relationship between fintech credit to the business sector and the growth in capital expenditures. When we disaggregate the business fintech credit, we find that the enhancing role comes from the balance sheet, P2P, and other components (Models 3 to 6). We find no evidence of the influence of crowdfunding credit on firm growth. This could be because crowdfunding sometimes involves modest, one-time contributions from many people, which may not provide the continuous and considerable capital that firms require for major growth. Additionally, businesses might find balance sheet and P2P lending more reliable and better suited to their larger and ongoing capital needs compared to the more variable and less predictable nature of crowdfunding. Regarding firm-level

control variables (*Firm controls*), consistent with previous literature, we find that firms with higher growth in capital expenditures are smaller, younger, have more debt, and trade publicly.

To measure the economic relevance of fintech financing, we use the regression estimates to infer the differential impact of fintech financing on capital expenditure growth. Focusing on Table 2 Column 2, If we take firms in an industry at the 75th percentile of external financial dependence (e.g. Chemicals SIC 2 8) and firms in another industry that is at the 25th percentile (e.g. Tobacco SIC 21), then the impact on the capital expenditure growth based on the estimated coefficient of the interaction term is about 6.2% higher at time of allocating high fintech (75th percentile) than at time of low fintech financing (25th percentile). In other words, in terms of capital expenditure growth, allocating more fintech credit to the business sector, benefits firms in highly financially dependent industries. Since the average capital expenditure growth is 31 percent, this effect is economically not trivial.

This table reports the results estimating $G_{ist} = c + \gamma.\boldsymbol{Fintech}_t \times \boldsymbol{FD}_s + \delta.X_{ist} + s + t + \varepsilon_{ist}$ where the i subscript refers to a firm, the s subscript to a sector and the t subscript to a sample year. G_{ist} is growth in capital expenditure $Fintech_t$ denotes fintech credit as a percentage of GDP, FD_s measures the degree to which industry $s$depends on external sources of financing, X_{ist} is a vector of firm-level variables that vary over time, and ε_{ist} stands for the error term.. For detailed definition of variables, see Appendix, Table A1. All specifications includes sector and year fixed effects. The statistical inferences are based on robust standard errors (associated t-values reported in parentheses) clustered at the firm level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 3: Controlling for other factors

	[1]	[2]	[3]	[4]	[5]
Fintech (business)$_t$ x FD$_s$	0.131**				
	(2.342)				
Fintech (balance sheet)$_t$ x FD$_s$		0.692**			
		(2.468)			
Fintech (P2P)$_t$ x FD$_s$			0.139**		
			(2.046)		
Fintech (crowdfunding)$_t$ x FD$_s$				3.931	
				(0.863)	
Fintech (other)$_t$ x FD$_s$					2.696**
					(2.177)
Firm controls $_{ist}$					
Size	-0.024***	-0.024***	-0.024***	-0.024***	-0.024***
	(-7.396)	(-7.394)	(-7.393)	(-7.380)	(-7.391)
Leverage	0.255***	0.255***	0.255***	0.255***	0.255***
	(8.925)	(8.926)	(8.923)	(8.919)	(8.922)
Liquidity	0.000	0.000	0.000	0.000	0.000
	(0.029)	(0.031)	(0.028)	(0.024)	(0.029)
Profitability	-0.009	-0.008	-0.008	-0.008	-0.008
	(-0.148)	(-0.142)	(-0.144)	(-0.131)	(-0.143)
Public	0.053***	0.053***	0.053***	0.053***	0.053***
	(5.575)	(5.563)	(5.579)	(5.585)	(5.581)
Age	-0.003***	-0.003***	-0.003***	-0.003***	-0.003***
	(-7.405)	(-7.403)	(-7.405)	(-7.404)	(-7.405)
Country controls					
Bank credit $_{ct}$ x FD$_s$	-0.003	-0.009	-0.002	-0.005	-0.001
	(-0.505)	(-1.355)	(-0.329)	(-0.820)	(-0.145)
Internet $_{ct}$ x FD$_s$	0.002	0.011	0.001	0.007	-0.001
	(0.206)	(1.108)	(0.064)	(0.703)	(-0.104)
Constant	0.360***	0.385***	0.355***	0.368***	0.351***
	(8.336)	(8.658)	(8.185)	(8.521)	(8.043)
Sector FE	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y
# Sectors	19	19	19	19	19
Observations	55,333	55,333	55,333	55,333	55,333
Adj. R^2	0.018	0.018	0.018	0.018	0.018

We next examine whether our main finding—that fintech credit, through all its components except crowdfunding, enhances corporate financial stability—remains robust when controlling for other variables, specifically bank credit and internet penetration. Previous studies on financial technology emphasize the significance of various factors. For instance, Ayyagari et al. (2011) underscores the critical role of bank credit in supporting firm innovation and investment, especially in emerging markets, making it a vital control variable in financial studies. Additionally, Kshetri (2018) and Goldfarb and Prince (2008) discuss how internet penetration influences the

adoption and effectiveness of emerging financial technologies, such as blockchain, which are integral to the fintech sector. This study highlights the importance of accounting for internet penetration in economic research, particularly in studies focused on technology adoption and its economic benefits. As shown in Table 3, fintech lending significantly increases firm capital expenditures, reaffirming its essential role in financing business development and investment. Controlling for bank credit and internet penetration is crucial in this analysis. Bank credit constraints ensure that observed effects are attributed to fintech loans rather than traditional banking. Similarly, assessing internet penetration helps isolate the impact of fintech since internet connectivity is vital for fintech operations. Table 3 demonstrates that even after controlling for these factors, fintech lending continues to have a substantial positive impact on capital expenditures. Fintech lending to firms, along with balance sheet fintech credit, remains a key driver of growth in capital expenditures, with coefficients of β = 0.131 and β = 0.692, respectively. No evidence supports the impact of crowdfunding credit on firm growth, possibly due to the nature of crowdfunding, which often involves small, one-time contributions from a large number of individuals, insufficient for consistent and substantial financing. These findings further suggest that specific types of fintech credit consistently increase capital expenditures, even after considering other variables. P2P fintech credit remains significant (β = 0.139), while crowdfunding does not have a major impact. The continued significance of balance sheet and peer-to-peer fintech credit highlights their role in fostering corporate growth. These results underscore fintech's transformative potential in enhancing financial inclusion and promoting economic development (Chen et al., 2019; Thakor, 2020).

This table reports the results estimating $G_{ist} = c + \gamma.\boldsymbol{Fintech}_t \times \boldsymbol{FD}_s + \delta.X_{ist} + s + t + \varepsilon_{ist}$ where the i subscript refers to a firm, the s subscript to a sector and the t subscript to a sample year. G_{ist} is growth in capital expenditure $Fintech_t$ denotes fintech credit as a percentage of GDP, FD_s measures the degree to which industry $s$depends on external sources of financing, X_{ist} is a vector of firm-level variables that vary over time, and ε_{ist} stands for the error term.. For detailed definition of variables, see Appendix, Table A1. All specifications includes sector and year fixed effects. The statistical inferences are based on robust standard errors (associated t-values reported in parentheses) clustered at the firm level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 4: Sensitivity tests

	Using growth in tangible assets	Using FD from Hsu et al. (2014)	Dropping high-tech industries	Dropping mature firms
	[1]	[2]	[3]	[4]
Fintech (business)$_t$ x FD$_s$	0.158**	0.198*	0.132**	0.123**
	(2.068)	(1.787)	(2.032)	(2.001)
Firm controls $_{ist}$				
Size	-0.028***	-0.024***	-0.023***	-0.008**
	(-6.838)	(-7.366)	(-7.022)	(-2.173)
Leverage	0.200***	0.255***	0.229***	0.305***
	(5.627)	(8.919)	(7.823)	(10.507)
Liquidity	-0.004	0.000	-0.000	0.008***
	(-1.025)	(0.029)	(-0.059)	(2.629)
Profitability	0.063	-0.008	-0.013	-0.078
	(0.831)	(-0.136)	(-0.203)	(-1.288)
Public	-0.071***	0.053***	0.057***	0.099***
	(-5.551)	(5.597)	(5.484)	(10.049)
Age	-0.004***	-0.003***	-0.003***	-0.030***
	(-5.861)	(-7.403)	(-7.160)	(-23.088)
Constant	0.540***	0.233***	0.341***	0.417***
	(13.190)	(3.294)	(9.436)	(11.693)
Sector FE	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
# Sectors	19	19	19	19
Observations	53,850	55,333	42,524	48,115
Adj. R^2	0.009	0.018	0.018	0.033

Next, we check the robustness of our findings by applying four sensitivity tests. We first use growth in tangible assets as an alternative to growth in capex dependent variable (Model 1). Second, we use financial dependence from Hsu et al. (2014) as an alternative to Duygan-Bump et al (2015) (Model 2). Third, we drop high-tech industries (Model 3). Last, we drop mature firms (Model 4). Our results remain robust to all alternative specifications.

Table 4 provides additional evidence that fintech credit increases the capital expenditures of firms but finds no difference when ANC-only contracts and handshake enforcement are taken into account. It is important because each component accounts for variations in economic conditions, regulatory environments, and financial market development that could otherwise interfere with the relationship between fintech credit and capital expenditures.

Overall, our results suggest that fintech credit contributes to the host countries' corporate investment. This is the case for business fintech components, such as balance sheets, P2P, and other instruments but not crowdfunding.

CONCLUSION

This study examines the association between firm growth in capital expenditure and fintech credit to businesses in China over the period 2013–2019. We further check the impact of fintech credit's broken-down components. Our results demonstrate the critical role that fintech credit plays in supporting the long-term expansion of businesses. Our findings indicate a positive correlation between fintech financing and capital expenditure growth in China. All fintech financing does not, however, serve this purpose; P2P and balance sheet lending are the ones that have an impact on the rise in capital expenditures. Our work contributes to the body of knowledge currently available

on the relationship between financial development and economic growth—a topic that stakeholders, decision-makers, and financial regulators find crucial.

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Appendix

Table A1: Main variables definition and sources.

Variable	Definition	Source
Dependent variable		
Growth in capital expenditure	Yearly growth in a firm's total fixed assets. It indicates an increase in the firm's opportunities in maintaining its growth	Bureau van Dijk, ORBIS, and own calculation.
Fintech credit		
Total	Total volume of fintech credit to business sectors as percentage of its GDP.	Cambridge Center for Alternative Finance. Ziegler et al. (2021).
Balance sheet	Total volume of balance sheet to business sectors as percentage of its GDP.	"
P2P	Total volume of P2P lending activities to business sectors as percentage of its GDP.	"
Crowdfunding	Total volume of raising funds to business sectors through crowdfunding as percentage of its GDP.	"
Other	Total volumes of funds raised to businesses sectors through other alternative finance models, including community shares, pension-led funding, and other models that fall outside the above taxonomy as percentage of its GDP.	"
Financial dependence		
FD	External financial dependence of U.S. firms by 2-digit SIC codes. This is an industry-level median of the ratio of capital expenditures minus cash flow over capital expenditures. Cash flow is defined as the sum of funds from operations, decreases in inventories, decreases in receivables, and increases in payables. Capital expenditures include net acquisitions of fixed assets.	Duygan-Bump et al (2015).
Other controls		
Size	Natural logarithm of a firm's total assets.	Bureau van Dijk, ORBIS, and own calculation.
Leverage	Firm total debt to total assets ratio. It shows the degree to which a company has used debt to finance its assets.	"
Liquidity	Liquidity ratio, which is calculated by taking current assets less inventories, divided by current liabilities. A higher ratio indicates the firm can better pay its obligations.	"
Profitability	Profitability of a firm as defined by EBIT as percentage of total assets.	
Public	A dummy variable that takes value 1 if the firm is a public firm, and 0 otherwise.	
Age	Age of a firm, calculated by subtracting the firm's incorporation year from the year of data.	"
Bank credit	Domestic credit to private sector by banks, which refers to financial resources provided to the private sector by banks, such as through loans.	World Bank - WDI.
Internet	Fixed broadband subscriptions (per 100 people)	"

ECOTOURISM ACTIVITY

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Abstract

Tourism or travel is the whole of the trips made for the purposes of resting, having fun, seeing and getting to know, and the economic, cultural and technical measures and studies taken to attract visitors (tourists) to a country or a region. Ecotourism is one of the types of tourism that is developing at the highest speed especially in recent times and attracting more and more tourists. Ecotourism is a sensitive travel to natural areas that protects the environment and cares for the well-being of local people. Ecotourism typically involves traveling to places where flora, fauna and cultural heritage are the main attractions. This kind of tourism can focus on educating travelers about the local and natural environment, while paying attention to conservation biology. In the tourism market, ecotourism, defined as nature-based tourism, is seen as a sustainable development tool. The International Ecotourism Society (TIES) defines ecotourism as follows: "It is usually implemented in small groups. Accommodation and food and beverage type services are mostly provided by small and medium-sized companies at the local level". According to the definition of the International Union for Conservation of Nature, ecotourism is environmentally responsible visits to unspoiled natural areas that promote understanding and conservation of nature and cultural resources, have low visitor impact and provide socio-economic benefits to local people. Terms such as green tourism, alternative tourism, nature tourism, wild tourism, adventure tourism and cultural tourism are used in the concept of ecotourism. If ecotourism is carried out in accordance with its purpose, it is a tool that can create resources for the691rganizatin of sensitive ecosystems and the socio-economic development of the population living in and around these regions. Considering the poverty of the people living in villages in mountainous and forested regions with significant ecotourism potential, it can be understood that ecotourism is a factor can reduce the imbalance between social classes.

Key words: Green nature, modern approaches towards ecotourism, protection of the environment

INTRODUCTION

One of the most widespread types of tourism in the modern world is ecological tourism or, in other words, ecotourism. Ecotourism is a type of tourism based on environmental care as a form of nature tourism. Ecological tourism (ecotourism) is a form of tourism based on the principles of minimal impact on nature and protection of the integrity of the ecological system, which includes familiarization with the country's nature, natural ecological system, biological and cultural diversity. The development trend of ecotourism has been defined by the World Tourism Organization (UNWTO), a specialized branch of the United Nations. There are a great number of rules of ecotourism that can lead to both the preservation and flourishing of nature.

Ecotourism is a type of tourism in which, activities are carried out in natural areas that are less damaged by people than other types of tourism, including the interaction of tourism activities with the local population. At the same time, the process of ecotourism, carried out by specialists with the appropriate competence and skills, does not cause the destruction and deterioration of the quality of the environment.

MATERIALS AND METHODS

A number of various local and international literatures and sources have been referred to in writing this article. I used geographical research methods to analyze the materials I acquired about ecotourism and its progression aspects. With the help of the mentioned methods, I discovered the fact that this young type of tourism, which is almost new and promises a good future, is mainly implemented in which natural areas and which types of sports and cultural activities form its basic principles. At the same time, these applied methods demonstrated us that the type of ecotourism activity is especially significant in the tourism industry of countries with a geographically favorable climate and landscape with a massive greenery.

FINDINGS

Ecotourism, which is a Latin word, is purposeful travel to natural areas for the purpose of deepening interest in the state of the environment and local nature, studying and understanding it all. During such journeys, the integrity of the ecosystem must be preserved. In addition to all this, the process of protecting the ecosystem should be carried out in a way that benefits the local population. One of the main purposes of ecotourism is to create conditions for indigenous humans to enjoy and explore the nature. The primary principles of ecotourism are:

1) Protection of biological richness and diversity of recreational natural areas

2) Increasing the economic stability of regions where ecotourism is implemented

3) To implement necessary measures in the field of raising the cultural outlooks of the participants engaged in ecotourism activities

4) Preservation of ethnographic features and status of recreation zones

This term was first proposed in 1983 by the Mexican economist Hector Ceballos-Lascuria. That phrase means enjoying nature and knowing its value. In the 1990s, this area began to experience its development period as a type of tourism. In this connection, associations were created in the international world, decisions were made, and projects were prepared. Such planning aims at the protection of natural and cultural resources, the development of the local population, the more responsible attitude of tourists and the local population towards the resources of nature, and the careful use of blessings that are likely to be exhausted.

The main objects of the Ecotourism

As ecotourism has its main subjects – tourists, it also has a number of objects. Among them, we can especially distinguish botanical areas (zoological, geological and similar areas), ecological-ethnographic areas (archaeological, ecological-cultural tours as a whole), agro-tour areas (trips to villages, various farms) and cave areas (mountain, water tours). Of course, all the listed concepts vary from each other according to their own specific characteristics. For instance, during botanical tours, tourists have brilliant opportunities to get to know a considerable number of various sorts of plants and animals that have been wide-spreaded in the natural environment that surrounds us. The main aim of ecological-ethnographic tours is to figure out the archaeological and natural monuments of any visited area that have been preserved from the past to the present day and contain deep traces of the past, and to form comprehensive ideas about them in tourists. Agrotours, in turn, are an indispensable type of ecotourism for tourists who want to discover themselves while experiencing rural life. At this time, they stay in the houses of the villagers and help them in their daily household chores, feed on the various types of crops they grow and take in the clean, pleasant village air. Finally, in the cave type of ecotourism, travelers have the opportunity to enter underground treasures that relive ancient historical times, touch stone walls, and experience the lifestyles of ancient people.

The primary sorts of the Ecotourism

Being one of the newest and most profitable industries of the current century, tourism, which is constantly maintaining its profitability in the conditions of market competition and is developing at a dynamic pace, has created a fertile ground for the development of ecotourism as well as its classification. Thus, most of the important tours that tourists participate in during their tourism trips are among the main components of ecotourism. These include scientific tours, natural history tours, adventure tours and tours to specially protected natural areas. During scientific ecotours, tourists participate in various types of nature studies, make scientific observations about their fields of study. During the natural-historical tours, tourists gain a chance to understand the local culture (architecture, cuisine, clothing-household, etc.) and the surrounding nature. Other tours, called adventure, combine all trips related to sports achievements and improving the physical shape of tourists, relaxing in nature and performing various activities (out door) and extreme actions. The last tours, which are called as tours organized to specially protected natural areas, in turn, include going to national parks, nature reserves, sanctuaries, etc. and getting acquainted with the living entities there. In general, in addition to the most common types of ecotourism activities, hiking, bird watching, film and photo shoots, ecosafari, rest in tent cities, trips to the mountains and mountaineering, fishing, water tourism, observation of aesthetic butterflies, etc. are attributed.

The development forecasts of Ecotourism

Analyzing the ideas of experts from different countries, the forecasts of international tourism organizations (WTO, WTTC), the dynamics of international travel, we can say that there are high expectations for the future in the direction of the development of modern international tourism in general and ecotourism in particular. But even in the current conditions, we can talk about a better forecast of the development of this field. In the near future, the most promising types of tourism will be cruises, environmental, adventure, awareness and theme tourism. According to some experts, new tourists will appear as tourism develops. This shows that the traditional type of family tourism, which deals with spending their vacations somewhere at sea every year, will gradually give way to new types, namely ecotourism, adventure and awareness tourism. The fashion for passive recreation will pass, the orientation of tourist flows will begin to change. A high rate of growth will be typical for going to the mountains, as well as for a trip rich in elements of adventure and risk. At the same time, it is predicted that ecotourism will be the most effective tool for sustainable development and economic growth of underdeveloped regions of the world. All this also applies to mountainous areas. Taking into account all the above-mentioned considerations, it can be said that the rate of development of ecotourism will allow it to compete in the world market in the future. If this competition is going to be conducted based on the right strategy, not only individual countries, but also the whole world will benefit greatly from the cultural and economic aspects of this sort of tourism.

DISCUSSION AND CONCLUSION

In the article, we learned a great deal of valuable and detailed information about the concept of ecotourism, what are its main features and characteristics. At the same time, we paid attention to the role played by this type of tourism in the tourism industry, and mainly emphasized in which areas it is more widely used. It was found out from the researches that ecotourism is a type of tourism that is created by relaxing in nature, as well as performing various activities in green areas. In addition, I came to the conclusion that by revealing his ability to form communication between the local population and nature, he caused a radical change in society's attitude towards the environment in a positive direction.

In addition to all this, the article looked through the future development potential of ecotourism and emphasized the possibility that it could become a leading force in the global tourism market in the near future, while maintaining its profitability. In particular, a significant amount of young people participating in this tourism as an active subject suggests that this newly formed type of tourism will travel a long evolutionary distance in the following years and hit its deserved marginal level. This, in turn, will have a direct impact on the tourism industry becoming a new and rapidly developing profitable branch, and the nations where this industry is highly developed will be able to make considerable profits.

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TRUST INFLUENCING CONSUMERS OF DIGITAL AND NON-DIGITAL NEWS MEDIA – FRAMEWORK & LITERATURE REVIEW

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Abstract

As consumers of information, we have our own filtration processes which define our propensity to accept or reject the information brought forth to us. This filtration can have various check gates encompassing the source of information, format of information, quantum of information, and perceived quality of information. While our personal biases arising out of our attitudes, beliefs, socio-economic background, culture play their roles in processing of information, nonetheless, they are peppered with other factors which are more experiential such as trust and credibility. As we transition from web 2.0 to web 3.0 environment, these experiential factors have accentuated as part of consumer behaviour. There have been various studies on the role and impact of trust in mainstream and non-mainstream media. The way trust impacts media consumption habits and its consequences in this fragmented media environment has far reaching implications for traditional media houses and social media companies. Basis the literature review, we understand the various concepts and findings related to trust in media, identify the research gaps and propose a framework that identifies causes and consequences of trust in media.

Keywords: Trust, Believability, Reliability, Mainstream Media, Social Media, TAM, SCM.

INTRODUCTION

With the passage of time, the world has moved from Analog to Digital. With this transition, the modes of communication and sharing of information underwent adaptation. We live in an interconnected world where information surrounds us. It's not just the quantum of information, but the pace at which it gets generated, circulated, stored, and shared that characterizes our ability to process, and synthesize this information available to us in verbal, written (text), audio, visual, animation (emoticon) formats or any combination thereof.

The advancements in technology are creating new possibilities in the Digital world. The movement from web1.0 (static) to web 2.0 (participative) now on the thresholds of web 3.0 (Virtual, blockchain, AI enabled) has redefined the way in which information is owned, generated, shared, consumed, collaborated, and reacted. As interactions move from a world characterized by Physical presence to Phygital (Physical + Digital) towards a Digital (Virtual) world, the experiential factors are gaining prominence. Factors such as trust, believability, subject proficiency, and reliability, are gaining prominence during information processing by consumers. Given the fact that there is little or no in person contact between the originator and consumer of information in some instances, these experiential factors are increasingly impacting the various stages of information processing. The reasons and motives behind the consumption of information in mainstream and non-mainstream media encompass various factors.

The web has changed the conventional belief that relationships are strengthened over a period where face to face, in-person interactions have been the norm. Relationships developed virtually are as much a reality today. Social media (SM) platforms have allowed the users to transcend geographical boundaries and create relationships based on virtual interactions. SM allows users to choose their platforms based on communities, interests, mode of interactions, and open or closed groups (subscription basis). The emotional expressions, so much a part of the

physical world interactions, are symbolized in the Digital world by emoticons, gifs, texts, comments, retweets, reposts, likes, audio and video files, which allow users to express their emotions in as close a manner as in the physical world.

The absence of templates or formulae which govern the success or failures of relationships in the physical world, holds true in the virtual world as well. Acts of conceit, deception, and impersonation plague the relationships equally in the physical and digital (virtual) world. Virtual relationships are built on the same foundations as that of non-virtual relationships albeit, with the absence of physical presence. Many of us manage relationships simultaneously in physical and digital world; at times we share our feelings and channelize our thoughts with relative ease in the virtual world.

LITERATURE REVIEW

Information has been regarded as an intangible (non-physical) asset which can be collected over a period as a byproduct of interactions and can be used to make decisions (Henderson, S. and Peirson, G, 1998). Web is a unique example pointing to the fact that information is infinitely shareable. Information per se, has little value on it own and becomes valuable only when people use it. Research have shown that humans have limited capacity for information processing (Miller, 1956) (Newell A., 1972). However, people are generally unaware of their cognitive limits due to which they tend to include more information than can be processed efficiently (O Reilly, 1980). This state of information overload stems from human belief that more information is always better (Moody, 1999).

The web has enabled seamless flow of information in large quantities while enabling search, storage and sharing. This has created new scenarios where information asymmetry is getting reduced with potentially all users having equal opportunity to access the information. Availability of information is no longer a problem. The challenge is how does one sift through so much information to make use and draw relevant sense. Much information on the web is accessible through websites and applications (mobile and computer based) in various formats (text, picture, video, audio et al.) as part of user generated content (UGC) or firm generated content (FGC) within the realms of social media and beyond. The technology driving this flow of information is ever evolving.

While web 1.0 which treated web as a publishing medium Web 2.0 is mostly a social revolution allowing interaction and participation. Web 3.0 has laid standards that support open data and a view of information processing wherein emphasis is more on information than processing. It is a symbiosis of web technologies and knowledge representation, a sub-field of artificial intelligence (Hendler, May-June 2007). As we step from web 2.0 to web 3.0 environment, the adoption of technologies becomes an important factor of consumer usage. New applications targeted at addressing specific consumer needs are being developed regularly.

The two theoretical constructs of perceived usefulness (PU) and perceived ease of use (PEOU) of technology are important determinants of usage. The technology adoption model (TAM) theory delineates these 2 important aspects. Perceived usefulness is defined here as “the degree to which a person believes that using a particular system would enhance his or her job performance.” This follows from the definition of the word ‘useful’: “capable of being used advantageously”. Perceived ease of use, in contrast, refers to “the degree to which a person believes that using a particular system would be free of effort.” This follows from the definition of ‘ease’: “freedom from difficulty or great effort.”

Usage was far more closely correlated with usefulness than with simplicity of use. A system not performing a useful function cannot be compensated by the ease of use of the system itself. User acceptance is strongly correlated to the user’s perception of usefulness. It is imperative that this fact is remembered and not ignored to ensure success while designing or implementing systems (Davis, 1989). While consumers have limited capacity for information processing, the TAM theory framework aptly describes our propensity to adopt the technology weighing both perceived usefulness and perceived ease of use of technology. As consumers of digital information, we evaluate the information being consumed by us on various dimensions encompassing the source, the message or content, the medium and the platform. At each of these stages of this information flow, the consumer carefully weighs and evaluates whether to fully accept or reject or partially accept the contents. It is only natural to then view each of these stages of information flows as check gates.

The source credibility model (SCM) studied the effects of the credibility of the source on the acquisition and retention of the communicated material. It was established that while consumers learned equitable amounts of

factual information from both 'trustworthy' and 'untrustworthy' sources, the opinions hence formed were changed significantly in the direction advocated by the 'trustworthy' sources. However, over a period, the resistance to acceptance of information from 'untrustworthy' sources diminishes while the content is forgotten more slowly (Weiss, 1951-52).

Another interesting follow up to the above study was the identification of the difference in opinion formation when the communicator (source) drew conclusions from the material presented by him/her versus when the conclusion was left to be drawn by the receiver (audience) from the same material. It was shown that when a communication's conclusion was made clear to recipient(s), as opposed to leaving interpretation upto the audience, the recipient(s) shifted their opinion in favour of those supported by the source. The un-biased source who drew the conclusion was the most effective communicator compared to the suspicion arousing communicator who did not draw the conclusion (Mandell, 1952).

The above studies showed that once usefulness of technology is accepted by consumers, they end up consuming information alike from 'trustworthy' and 'untrustworthy' sources. However, the effects on opinion formation by audience are impacted by the conclusion drawing ability of the source. This has far reaching impact on the content consumption and its impact on audience (consumers). It would be advisable if the content generators, such as users, firms, or professionals, presented their opinions to the audience while sharing content so that desired impact on audience may be achieved. Both TAM and SCM models when studied in continuum of the communication process highlight that consumers filtration of content takes place both at the technology and communication source entities. Since communication is not a single instant occurrence, the experiences with both technology and the source of communication create accumulated learning.

With web being a repository of content and consumer interaction with content updating regularly, it is pertinent to note that whom and what to trust is challenging. Infact, knowing whom not to trust is equally important. Most of the social networking sites today allow users to manifest their trust by means of various emoticons or actions such a 'like', 'comment', 'share' etc. Trust is a complex social relationship since it is very personal in nature (Thomas DuBois, 2011). In another research, users of online media did not view the news media consumption from trusted sources with the specific intention of being informed. Quite contrary, their use of online news media for news consumption happened to be a by product of their surfing habits. Trust in news organisations was more profound compared to journalists (Fisher, 2016).

Friends doing endorsements about an article or news have been found to boost credibility perceptions. The status of such articles or news items which are deemed popular by others increased in the eye of friends. Research showed that beyond content, technical affordability of digital media can influence credibility assessments. This model known as M (modality). A (agency). I (interactivity). N (navigability) has its foundation in a web of cues and heuristics that ultimately provide inputs for credibility judgements (Sundar, 2015). Millennials today, given the technological advances, have access to a substantial and wide range of peer recommended information in the various online networks (MIP, 2015).

A person's belief in the 'reliability' and 'truth' of something or someone is defined as 'trust' (Cambridge & Oxford dictionaries online version sourcing). It was revealed by researchers from Yale that the key determinants of perceptions of credibility are 'expertise' and 'trustworthiness' of those who provide information (Kiousis, 2001). In relation to news media specifically, and media in general, the concepts of trust and credibility are used interchangeably (Kohring, 2007). The credibility of news can be described and measured by various adjectives such as believability, trust, accuracy, bias, fairness, completeness, ease of use, reliability, and attractiveness of presenter or coverage (Metzger, 2003).

Over the years, researchers through their researches have not been able to arrive on a consensus defining either trust or any model thereof which adequately explains trust across all news media irrespective of traditional or online. The evolution of technologies has led to divergence in the conception of trust resulting in response variation which is dependent on the aspect of trust being measured along the variable of source, message or the medium whether individually or in combination (Fisher, 2016).

While we define trust, it is important we understand distrust. Distrust can be thought of "confident negative expectations regarding another's conduct" and trust as "confident positive expectations regarding another's

conduct." Summarily, less uncertainty or risk is associated with information or trustee when high level of trust exists and vice versa. Low trust is not the equivalent of distrust (Lewicki, 1998). The past experiences and expectations of a positive outcome based on the trustor's conscious decision to expose him/her to vulnerability from a trustee define trust (Blöbaum, 2014). The active decision leading to dependence or reliance on trustee defines conscious exposure to vulnerability (Mayer, 1995). The side that places trust is known as trustor whilst the side being trusted is the trustee (Tsfati, 2003).

The698rganizatnty and risks associated with trust are steeped in its orientation towards future as trustee's actions are free of control of the trustor and fraught with risks of disappointment based on positive expectations (Grosser, 2016). Under both instances of the inability of trustor's to verify information or have partial information, trust can lead to reduction in social complexity (Barber, 1983).

Source credibility is increasingly concerned with trust in the provider of information. It was also established that trust in news media drew from perceptions of trust in the journalistic process. The study of trust or credibility can be viewed in 3 parts: message credibility, source credibility and medium credibility (Kohring, 2007). An individual's performance expectation based on own requirements or societal values cum norms, derived from wilful vulnerability to objects in media define trust in news media.

Cultural theories and institutional theories, the two competing paradigms, can be regarded as causes of media trust. While cultural theories emphasize rooting of trust in individual socialization, institutional theories assume trust arises from perceived or actual performance of institutions (Nayla Fawzi, 2021). The expectation on the part of the trustor (citizens) that interactions with trustee (news media) will lead to gains rather than losses for the trustor are generic including for news media trust (Tsfati, 2003).

News media sources can be broadly classifieds into mainstream and non-mainstream sources. While mainstream news sources have print or radio or television legacy irrespective of the mode of their access (online or offline), non-mainstream sources don't have such legacy and are inherently born digital or accessible online only such as social media platforms or information aggregator platforms (Park, 2017).

Four elements of news sharing were shown to have an effect on how credible people perceive them viz., 'news browsing', 'news personalizing', 'news recontextualizing' and 'news endorsing' (Choi, 2016). Youngsters in particular, strongly base their credibility judgements based on surface features such as navigability, download speed, ease of interaction and design appeal even at the peril of ignoring the site sponsor (Flanagin, 2007) (Metzger, 2003) (Dochterman, 2010).

The traditional discrete zones of source, media, and message are becoming more muddled, making it harder to distinguish between news media and other types of information via social media and internet platforms (Metzger, 2003). The credibility of a website may be understood through Prominence Interpretation theory which identifies five key aspects that influence people to notice distinct elements on website such as topic, user motivation, user task, web conventions experience and, the levels of literacy, cognition, and type of learning style (Fogg, 2003).

Aside from technical prowess, a user's interpersonal connections with other users are a major factor in assessing the veracity of information supplied. With the sharing of links in emails, the posting of news items, the highlighting of news stories in tweets, and the occasional argument about the interpretation of events in discussion threads, getting news is becoming for many people a shared social experience (Purcell, 2010). Another interesting observation is that an increasing number of news consumers are turning to acquaintances, family, and friends to alert them on items of interest. Additionally, it is not unusual for users of mobile and internet platforms to come across news by happenstance as they navigate through their media-rich life. The idea that news consumers evaluate trust according to conventional notions of correctness and dependability falls short of explaining the hows and whys of news consumption. (Hermida, 2012).

Due to the popularity of social media, news consumers now frequently view news via the filters of the people who shared it, rather than directly from the news source. According to a study, people who consume news are more inclined to believe an article or piece of news if it is provided by a prominent person they trust rather than someone they don't. Along with elements like topic interest and familiarity with social media news, the news sharer has a larger and more consistent effect on confidence in social media. The fact that trust in news on social media is

impacted more by the credentials of the sharer than the credibility of source has implications for the news 699rganization (David Sterrett, 2019).

In yet another study on news in social media it was found that a news story recommended by a friend increases trust in the news outlet compared to a scenario when such story is received directly from news outlet. Additionally, this also leads to an increase in intent to seek information in future from the news outlet. Readers trust in news outlet decreased when social recommendations were shared by people perceived as poor opinion leaders (Turcotte, York, Irving, Scholl, & Pingree, 2015).

This is quite contrast to the belief that characteristics of the news media somewhat impact the media trust (Arceneaux, 2012). These researches show that while attentiveness to news is affected by perceived credibility and media trust of a news outlet, the manner of information receipt is impacted by the credibility of those who share news. As the media environment continues to gradually become more fragmented, the exposure to news is increasingly facilitated by the opinion leaders (Mutz, 2011).

The honest and expert perception attributes of the message sender act as heuristic cues apprising the user whether the content from the source is useful and trustworthy (Chaiken, 1980).

Non-mainstream news sources are preferred by users who have low trust in news media and are more likely to engage in online news participation. The main sources of news for such users are blogs, social media or news outlets bereft of print or radio or television legacy. In a nutshell, non-mainstream news media has a positive correlation with media scepticism and traditional mainstream news media exposure has a positive correlation with trust (Tsfati, 2003).

However, in another research on media trust the resultant findings did not support the view that non-mainstream news media exposure is negatively associated with trust. Undue business and political influences on news media has significant and negative influence on trust (Antonis Kalogeropoulos, 2019). Social media and online news aggregators provide quick access to a range of news sources offering varied perspectives often acting as filtration tools for the users. The behaviour of sharing or commenting on social media, indicative of user expressions, points to low trust in the news coverage and hence its disapproval (Park, 2017).

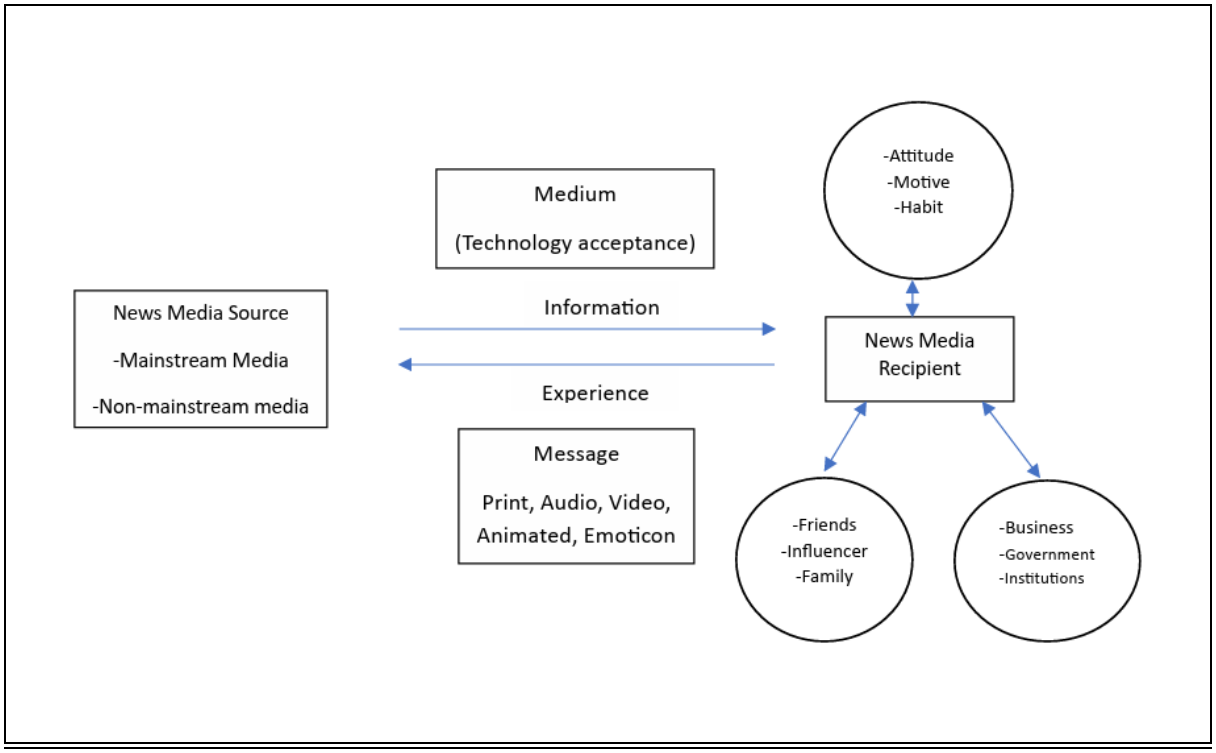
Mainstream media has been known to be capital intensive to setup. Intensive resources encompassing manpower, technical resources, infrastructure including plant & machinery are required to run daily operations. Businesses run on such scale are often prone to indirect influences or interferences by government (I., 2008). This then has the potential to create biases in reporting the events which eventually has an impact on the consumer of news mainstream media. To a certain extent, this reflects an element of self-censorship on part of mainstream news media ostensibly to avoid a run-in with the ruling dispensations or governments.

Non-mainstream media, by the very essence and nature of its operations allows a lot more flexibility and freedom in reporting. Not only it is free from the capital-intensive requirements, it allows entities to report in a relatively free and unbiased manner without a direct government or ruling dispensation influence. As a consumer, this leads us to believe that the news is more impartial, and factual. This potentially drives an element of more credibility and trust among the consumers of non-mainstream news media. The concept of self-censorship is fluid as each person or platform reporting the news have their own sets of beliefs, principles and guidelines which give consumers to more uncensored content when compared with the mainstream news media.

People have the opportunity to not only be consumers of news but also generators of news which gives them the unparalleled opportunity to explore the other facet of news, arguably the truth (Rosenstiel, 2005). Owners of blogs, cellphones, videographers, or anyone having ability to access to social media sites can be a creator of news. In essence the credibility or trust of the medium acts as a defining criterion for the credibility or trust in the information on the medium (S.B. MacKenzie, 1989).

Today news is always readily available and usually at the click of a button. We are living in times wherein there is information overload and consumers of news are having to continuously use filters to know which news to trust. If trust issues with the medium persists for a consumer, it is likely that this will percolate to the information contained in the medium (J.J. Moore, 2005).

Proposed framework



DISCUSSION AND RESULTS

1) The studies referenced here are mostly based on quantitative surveys (partly representative), and evidence on correlation of trust in news media from surveys or experiments.

2) Most studies referenced have geographical representations from Europe or American continent. Studies on South Asia are fewer and rare.

3) Studies considered above mostly focus on the predictor factors of media trust. However, there is little body of research on the consequential effects of trust on aspects such as political leanings & learnings, social interactions, or perceptions of reality.

4) More research is needed to draw definitive correlation between trust and non-mainstream media since multiple studies have resulted in divergent conclusions.

5) Clarity is required on the finer aspects defining and delineating trust, mistrust and distrust as societal and individual settings are known to impact the same.

6) The studies mostly evaluate trust and its effects based on media genres rather than specific media vehicles such as Newspapers, magazines, radio, or news aggregators.

7) Scope of study exists in granular understanding of trust as a function of source, message and medium and the interplay between the three entities.

8) Trust is ever evolving where learnings are drawn continuously from past experiences and future expectations.

9) The concept of trust is independent of the media (print, radio, television) or digital. It is an attribute which impacts all transactions between the trustor and the trustee.

DECLARATION OF INTEREST

All the authors declare no conflicts of interest.

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ENERGY EFFICIENCY GAINS AND THE REBOUND EFFECT: INVESTIGATING THE EUROPEAN HOUSEHOLD FOR ELECTRICITY CONSUMPTION THROUGH STOCHASTIC FRONTIER MODELING

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Abstract

This paper estimates the macro (region-wide) rebound effect for a balanced panel comprising 25 European countries using a two-step procedure. In the first step, the country-specific energy efficiency scores are derived from the energy demand function, empirically estimated through three variants of Stochastic Frontier Analysis (SFA) modeling. A sharp disparity between transient and persistent efficiencies emerges. Persistent efficiency shows a larger inefficiency gap, advocating for more serious policy actions. In the second step, the Least Squares Dummy Variable (LSDV) estimator is performed to obtain the elasticity of household electricity consumption with respect to the electricity efficiency gains. A state of partial rebound effect is evident in both short- and long-term. The rebound effect is equal to 81.7% in the short-term and 43.4% in the long-term. These findings point to less-than-optimal amounts of household energy conservation in response to this sector's energy efficiency gains across the region. This underscores the need for more effective energy-saving measures and long-term policy actions.

Keywords: Energy consumption; energy efficiency; rebound effect; Stochastic Frontier Analysis; Panel data; Europe.

INTRODUCTION

The European Union (EU) is a global leader in the pursuit of sustainable green growth. The EU's ambitious goal of achieving region-wide climate neutrality by 2050, as outlined in the European Commission's (EC) Green Deal Proposal, is a significant step towards mitigating climate change. The carbon pricing policy, a key component of the Green Deal Proposal, is adopted by all EU member states and is a testament to the region's commitment to climate change resilience. The European Emission Trading System, the core carbon pricing tool of the Green Deal Proposal, is already showing impressive levels of energy efficiency gains for the region.

The residential sector in Europe constitutes approximately 27% of total energy demand region-wide (European Commission, 2021). Electricity consumption contributed by the residential sector amounts to 29% of the total power consumption (European Commission, 2021). For the last decade, the region demonstrated a growth rate of 2% annually in household power consumption, despite all the efforts made in various forms to curtail its growing demand. Looking back at the last two decades, the gradual liberalization of the European electricity market is aimed at increasing competition and freedom of consumer choices. The initiative was first taken in the early 1990s by only a handful of European states (including Norway and the United Kingdom) and was subsequently followed by a significant number of other regional members like Germany, Spain, and Italy. The region, on the whole, demonstrated a promising degree of commitment towards opening the regional power market, which is well-evident from Directive 96/92/EC. Raising the degree of openness of the European electricity market was actually meant for (a) bringing more competition to the market so that consumer welfare could be ensured by reduced price levels, (b) maintaining smooth and unhindered power supply region-wide, (c) stimulating the use of alternative (renewable) energy sources, and (d) warranting efficiency gains at regional level (Willems and Ehlers, 2008). Nevertheless, in contrast to hopes and anticipations, electricity prices have recorded a soaring trend during the last two decades (Eurostat, 2021). The rising price trends have over-shadowed the much-hoped efficiency and welfare gains largely backing a variety of energy-related initiatives taken in the region, including Directive 96/92/EC, which principally was aimed at establishing a regional energy market followed by the Directives of 2003/54/EC3 and 2009/72/EC determining power-related emission targets and the means of integrating renewable energy sources into the already existing systems of electricity generation.

Owing to its importance in determining region-wide energy demand, the household sector demonstrates significant potential for cost-effective savings, which tend to be around 30% (EC 2021). However, efforts towards materializing this huge potential of the household sector are largely hindered by insufficient investment funds, deficient information, lack of incentives for landlords and tenants, and a variety of institutional barriers. Among

others, the energy rebound effect is a relatively less explored factor (Saunders, 1992; Berkhout et al., 2000). The phenomenon of the energy rebound reflects more on energy efficiency gaps; it, therefore, will be a very insightful activity to estimate the degree of the region-wide rebound effect so that policies could be devised to take control of rising trends of energy demand in more objective ways. The idea of the rebound effect originally stems from the Jevons' paradox (Jevons, 1866), according to which a more efficient steam machine does not necessarily lead to a fall in coal consumption. Rather, the opposite happened, and machine efficiency led to increased coal use. These findings are confirmed by other studies, like Brookers (1979) and Khazzoom (1980). The concept of the rebound effect investigates how the monetary savings of individuals resulting from energy saving and the consequent efficiency gains may (directly or indirectly) lead to soaring energy demand, and thus, erosion to initial gains occurs at substantial rates. Such erosion does not occur only in the form of rising energy demand. Still, rising trends in health spending (both private and public) owing to increased carbon dioxide (CO2) emissions can also be seen as a precarious part of this effect (Ishaq et al., 2022). More precisely, the idea of the energy rebound effect takes into account the expected and actual energy savings resulting from the efforts directed toward energy conservation and the hope of reaping associated efficiency gains. The literature on energy efficiency measurement and the resultant gains has brought the idea of the energy rebound effect into the discussion for the last four decades. Although there is vast agreement among researchers on the valid existence of a rebound mechanism, an ongoing dearth of consensus on the most accurate measuring technique for this effect (Gonzalez and Ho, 2022) and its factual magnitude still exists.

Figure 1: Household electricity consumption (thousand tonnes of oil equivalent).

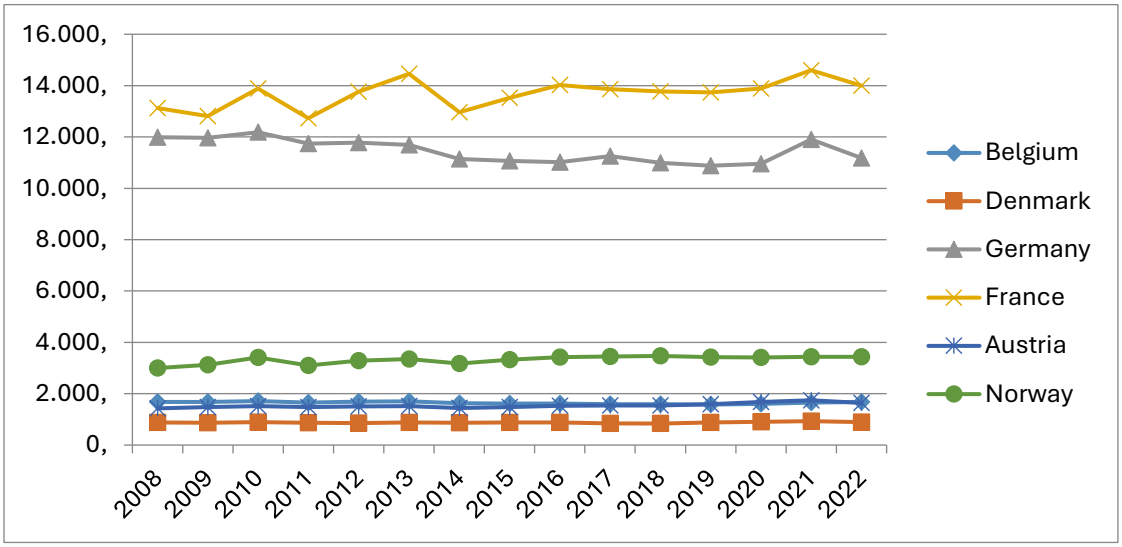
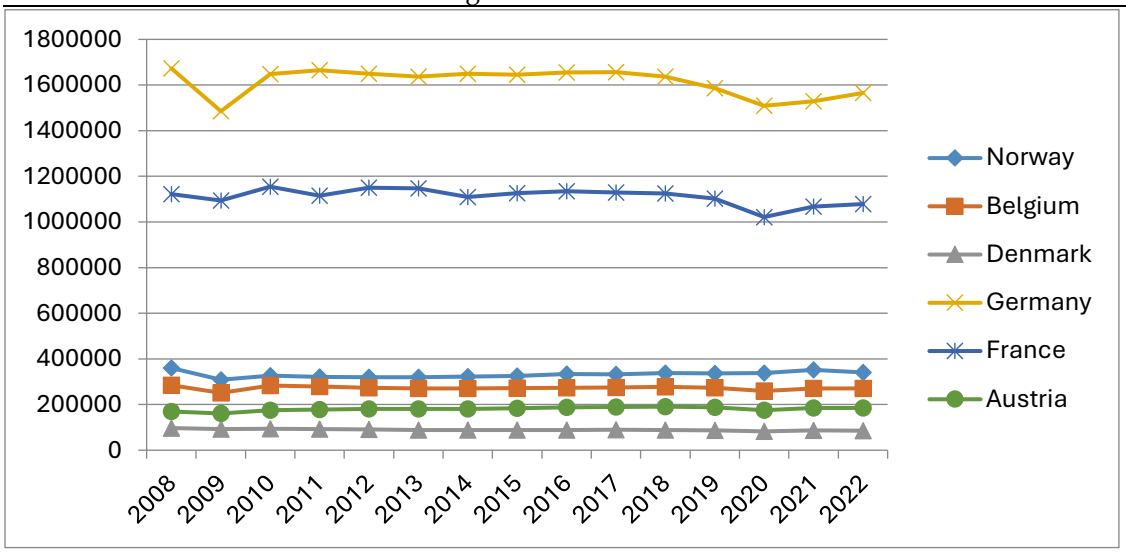


Figure 2: Non-household electricity consumption (thousand tonnes of oil equivalent).



The aim of the study is to estimate the size of the region-wide (macro) rebound effect of household electricity consumption in Europe, by using country-wise data on aggregate electricity consumption by household sector. Past research measured the macro rebound effect of electricity demand both at the country level as well as region-wide. Nevertheless, this study has the novelty of choosing the estimation methodology used for reaching the efficient levels of electricity consumption as well as the rebound effect. For the first stage of estimations, we employ the Energy Demand Frontier (EDF) to measure the levels of energy efficiency. EDF is a more sophisticated form of Input Demand Function (IDF), a concept proposed by Filippini and Hunt (2011, 2012) from Stochastic Frontier Analysis (SFA). EDF takes into account the minimum amount of energy demanded by households for various outputs. Having information about actual energy input and how much of its minimal amounts are demanded helps us to estimate precisely the levels of technical efficiency as well as allocative efficiency of energy consumption. In the second stage, the macro rebound effect for Europe is calculated using a dynamic panel data estimator. The long-term coefficient value of the estimated rebound effect is then obtained through the Least Squares Dummy Variable (LSDV) model (Kiviet, 1995). The model is specifically designed to efficiently estimate the coefficients in panel datasets with a small sample size.

The paper is organized as follows: Section 2 reports a detailed review of the literature on measuring macro rebound effects of energy consumption. Section 3 discusses the empirical methodology applied and the dataset collected. Section 4 presents the results. Section 5 contains the conclusions.

LITERATURE REVIEW

The earlier works on household electricity consumption and the energy efficiency determinants were typically conducted across two broad research approaches. The first strand of literature took a more pragmatic view of the relationship using national (macro-level) aggregates of sectoral electricity prices, income level, climatic conditions, and some socio-economic determinants, with a special emphasis on the degree of urbanization (Barker and Ekins, 2007; Barker et al., 2009; Jin and Kim, 2019; Rajabi, 2022). The other group of studies comprises household-level survey data to analyze the determinants of power consumption, the potential role of household characteristics, energy prices and usage of electronic appliances, residents' demographics, and construction features of residences (Räty and Carlsson-Kanyama, 2010; Fetie, 2014; Aydin, 2017). From the two strands of literature, the results obtained are considerably varying and, sometimes, even contrasting. Furthermore, the degree of sensitivity of electricity consumption and the associated efficiency levels are not always found to behave in a predictable manner.

It is imperative to consider the research on the energy rebound effect separately. The phenomenon views the benefits associated with energy efficiency gains from a very different lens. The concept originated from Jevons' paradox (Jevons, 1866). So far, an extensive amount of literature has been produced on household and industry energy efficiency measurement. Nevertheless, less attention has been paid to the indispensable interactions occurring among energy efficiency gains, the associated monetary savings, and the resultant rising demand recognized under the phenomenon of the rebound effect. The concept of rebound effect is typically studied in economic and engineering-related studies, theorizing that energy efficiency gains yield energy conservation and

lead to monetary savings. However, such a rise in the real purchasing power of the masses may bear direct and/or indirect implications for the energy demand, entailing significant erosion to initial efficiency gains. Thus, the expected volumes of energy savings and the realized ones may be in stark differences from each other, as clarified by the energy rebound effect. In extreme situations, the rebound effect is found to be counter-productive, even if the energy efficiency gains acquired from conservation efforts end up yielding higher volumes of energy consumption.

There is an ongoing debate on the nature and the magnitude of the rebound effect for various non-renewable and renewable energy products. A significant amount of empirical evidence can be found in earlier research on the authenticity and widespread existence of the phenomenon. However, no consensus has been reached so far on the concern that the rebound effect is always a negative thing. Literature on this line of research comprises both micro and macro-level explorations. A number of studies investigating the economy-wide rebound effect offer a detailed insight into the topic (Liang et al., 2009; Sorrell, 2009; Van den Bergh, 2011; Thomas and Azevedo, 2013; Saunders, 2013; Broberg et al., 2015; Lin and Du, 2015; Lu et al., 2017; Yang and Li, 2017; Jin and Kim, 2019; Liu et al., 2019; Khosroshahi and Sayadi, 2020; Adha et al., 2021; Saras and Turner, 2021; Cansino et al., 2022; Miao and Chen, 2022; Sun et al., 2022; Wu and Lin, 2022). The type of energy products, intra-country and inter-country heterogeneity of consumer demand, sector-wise consumption needs, and the type of methodological and econometric approaches are some of the few important spectrums across which the macro rebound effect was studied in earlier works.

It is noticeable that a vast majority of studies estimated the sector-specific rebound effect, assuming this as heterogeneous across different sectors of the economy. Studies exploring the phenomenon investigated it for a single sector as well as multi-sector investigations are also numerous. Regarding the household and/or residential sector, only a handful of studies have been produced so far. Ouyang et al. (2010) inspect the energy efficiency behavior among Chinese households and find a rebound effect of at least 30 up to 50% for the household sector of the country. Wang et al. (2014) investigate the direct rebound effect of electricity consumption by Chinese urban households. Empirical findings strongly suggest the existence of both short- and long-term rebound effects of 72 and 74%, respectively. The evidence for the rebound effect when obtained from high-income and industrialized economies is not very different. Alfredsson (2004) studies the short-term rebound effects resulting from 'green' energy policies targeted at reducing energy consumption for Swedish households. The study reveals the value of the short-term rebound effect to be ranging between 10 to 20%. The realized levels of energy consumption are, however, small, and in some cases, the total emission volumes are even larger. This happens particularly when the economy grows; even meager growth rates taking place in the country are sufficient to offset the efficiency gains. Sorrell et al. (2009) discuss the theoretical and methodological issues related to the estimation of the direct rebound effect for OECD economies. The study claims that the accurate measurement of the direct effect is difficult to achieve for a variety of reasons, primarily owing to the data availability, particularly for the subset of energy services. Their findings also indicate that given the saturation of energy demand and the income growth of OECD countries in the near future, the direct rebound effect should decline in the future. Furthermore, the effects should be meager for the consumer energy, constituting a smaller proportion of total costs. Orea et al. (2015) re-estimate the energy demand frontier model originally proposed by Filippini and Hunt (2011, 2012) for 48 US states, with the aim of violating the unrealistic assumption of a 'zero' rebound effect. Using the SFA, the paper introduces a novel estimation framework, allowing for transmitting the final effects of efficiency improvements on state-wise energy consumption of the country. The average values of the energy rebound effect tend to remain within the range of 56-80%. Also, the more energy inefficient states of the country are subject to rather elastic energy demand, a pattern suggesting lower values of rebound effect for these states. Aydin et al. (2017) highlight the significance of the rebound effect while devising energy efficiency policies for household consumers. The study associates the energy rebound effect in the residential sector with the eventual advancements occurring in technology and the consequent reduction in the perceived cost of energy consumption, compelling household consumers to increase their demand. The study estimates the direct rebound effect for a sample of 560,000 dwellings in the Netherlands for the anticipated and realized levels of their gas consumption using an Instrumental Variables (IV) approach. It turns out that the average rebound effect for tenants and house owners is 41% and 27%, respectively. Assuming double efficiency for an average dwelling may lead to a substantial reduction in energy consumption for both rental and owner-used dwellings. Studying China's rural and urban residential sectors for the rebound effect of their energy efficiency gains, Lin and Liu (2015) empirically find a "back-fire" effect in rural residential buildings ranging between 127 and 236.3% (but with a falling trend), and a rebound effect of magnitude 66.5-88.5% (demonstrating a rising trend) for their urban counterpart. Overall, it is evident that a larger portion of targeted energy conservation from efficiency improvement efforts is offset by increased demand for energy services. It is

speculated that the general changing trends of the rebound effect might be decreasing for a while, then slowly rising, and finally leveling off.

As stated earlier, the exploration around the rebound effect in earlier studies is done economy-wide as well as industry/sector-wide. A number of studies have been produced on measuring industry-specific rebound effects, given the state of resource endowment, market information, and policy stance. Bentzen (2004) investigates the US manufacturing sector for the rebound effect of the energy efficiency measures taken from 1949 to 1999. Allowing for asymmetric price effects, the rebound effect value turns out to be overwhelmingly high at 24%. Barker et al. (2007) measure the effects of UK Climate Change Agreements (CCAs) and the related energy efficiency directives on the energy demand and CO2 emissions by the national industrial sector. Their findings suggest a significant curbing effect of efficiency-related efforts, causing a reduction in final energy demand by 2.6%, accompanied by a rebound effect of 19%. Lin and Li (2014) estimate the rebound effect for Chinese heavy industry. Taking asymmetric price responses (own price elasticity of energy prices) into consideration, the study obtains a more precise and accurate rebound effect for the heavy industry of the country. Results reveal the valid existence of a direct effect with an average value of 74.3%, indicating serious obstructions to most of the expected energy conservation from efficiency improvement efforts. The study also suggests that energy supply bottlenecks of heavy industry can be a potential cause of this extensively large rebound effect. Zhang et al. (2015) estimate the magnitude of short- and long-term rebound effects for the road passenger transport sector of the Chinese economy as a whole as well as the individual parts of the country in eastern, central, and western China covering 30 provinces. Empirical evidence is obtained in favor of the existence of a direct rebound effect not only for the entire country but also for its eastern, central, and western parts. Nevertheless, the short- and long-term rebound effects tend to be substantially different from each other. The size of the short-term rebound effect for western, eastern, and central China turns out to be 23.39%, 26.61%, and 41.45%, respectively, making western China the most suitable candidate for implementing the energy efficiency policies. On the other hand, eastern China demonstrates the lowest size of direct rebound effect, i.e., 31.30%, followed by western China (42.67%). Central China is observing a state of 'backfire' effect, demonstrating a size of the rebound effect of a value of 100.36%.

The theoretical framework and the empirical methodology used for estimating the rebound effect hold critical importance in reaching the most factual and truly reflective values of this effect. A variety of approaches and methodologies have been used in earlier studies, each one holding its individual significance. The most extensively used of these is the SFA. A vast majority of studies on rebound effect employ SFA to measure the energy efficiency levels, given the state of various climatic, economic and demographic features of the subject economies (Reinhard et al., 2000; Filippini and Hunt, 2011; Kuosmanen et al., 2013; Llorca and Jamasb, 2017; Amjadi et al., 2018; Sun et al., 2019; Moutinho et al., 2020; Haider and Mishra, 2021; Hossin et al., 2023; Lu et al., 2023; Rita et al., 2023; Karakaya, 2024; Zheng et al., 2024). Several of these studies establish the underlying connection between energy consumption patterns and efficiency levels through the EDF.

Therefore, we seek to develop the theoretical relationship between energy demand and the associated efficiency gains (losses) through EDF. EDF is characterized by a special feature of modeling the price of energy consumption and the consequent output, thus, in a way, representing the effects of minimized cost of energy services and the market price of energy products. Furthermore, EDF being capable of accounting for the least amounts of energy usage by household, it is a more comprehensive and efficient measure of the overall efficiency of energy consumption, recognizing the sub-components of technical and allocative efficiencies individually, thus describing the state of energy demand and its aftermaths in a more proficient way (Filippini and Hunt, 2011). In addition, adopting this methodology warrants us to take the estimated coefficient value of the energy efficiency parameter from the dynamic panel data as the macro rebound effect for the subject sample of countries. Lastly, this model is adaptive to the energy demand determinants specific to both developed and developing member states of Europe, given its tendency to capture country-specific conditions.

METHODOLOGY AND DATA

The broad objective of conducting this exploratory study is to determine the magnitude of the economy-wide (macro) rebound effect for household electricity consumption. The formulation of the macro-level rebound effect proposed by Saunders (2000) is adopted. The approach is widely employed in earlier works on this topic (Wei, 2007; Li and Yonglei, 2012; Turner, 2013; Lu et al., 2017). According to Saunders (2000), the macro-level rebound effect (R) can be defined as:

$$R = 1 + \eta_{Eff}^{EC} \quad (1)$$

where η_{Eff}^{EC} indicates the magnitude of energy (electricity) conversation, resulting from energy efficiency gains. The composition of η_{Eff}^{EC} is hence based on the ratio of electricity consumption (*EC*) to electricity efficiency gains (*Eff*).

$$\eta_{EEG}^{EC} = \frac{\delta EC}{\delta Eff} \quad (2)$$

From equation (1), *R* is the percentage measure of the rebound size. According to Saunders (2000), five possible outcomes may arise estimating the macro-level energy rebound effect. *R* = 0 (when $\eta_{Eff}^{EC} = -1$) gives rise to no or zero rebound effect; *R* =1 (when $\eta_{Eff}^{EC} = 0$) yields full rebound effect; *R* >1 (when $\eta_{Eff}^{EC} > 1$) refers to the state of backfire; 0 < R <1 (when -1 < η_{Eff}^{EC} < 0) is the partial rebound; and, finally, *R* < 0 (when $\eta_{Eff}^{EC} < -1$) is the state of super conservation.

However, prior to estimating the size of the economy-wide rebound effect, the energy efficiency scores and the elasticity coefficient for efficiency performance should be calculated, which together comprise the building blocks of the macro rebound effect for this study. Following Filippini and Hunt (2011, 2012), Liorca et al. (2017), and Paramati et al. (2018), the energy efficiency scores are obtained employing the EDF. According to this approach, residential demand for various energy products is actually a derived (from various household, environmental, demographic, and socio-economic factors) demand. The concept of derived demand can be traced back to the conventional household production theory, where a typical household purchases and consumes 'market commodities', serving as inputs for the production of those goods and services that constitute the household utility function. From the lens of household production theory, aggregate household energy demand can, therefore, be seen as an IDF. Under the assumption that household energy consumption is provisioned by the given energy production technologies, households are subject to maximizing their energy consumption for a unique set of economic, environmental, and demography-related consumption determinants as per the energy demand function:

$$EC = F(EP, RGDP, RC, EPC, HH, POP, CDD, HDD, GHG, EF) \quad (3)$$

Since the study aims to examine a panel of EU member states, a typical household EDF for panel data should look like:

$$EC_{it} = f(EP_{it}, DPI_{it}, RC_{it}, EPC_{it}, HH_{it}, POP_{it}, CDD_{it}, HDD_{it}, GHG_{it}, EF_{it}) \quad (4)$$

where *t* is the time subscript and *i* refers to each cross-section included in the sample. *EC* denotes the household electricity consumption measured as household final energy consumption equivalent to thousand tons of oil; *EP* is the residential electricity price kilowatt per hour; *DPI* is the household real disposable income per capita (chain linked volumes with base year 2010); *RC* is the residential construction spending as percentage of GDP; *EPC* is the electricity production capacities for renewable (hydro only); *HH* is the number (thousands) of households by degree of urbanization; *POP* refers to each country's population (in units); *CDD* and *HDD* are the cooling and heating degree days, respectively; *PRP* is a socio-economic determinant referring to persons by risk of poverty, material deprivation, work intensity of the household and hold composition; *GHG* is greenhouse gas emissions (tons of CO2 emissions) measured as ratio of energy-related GHG emissions and gross inland energy consumption; and *EF* is the level of (estimable) underlying energy (electricity) efficiency in European household.

The energy demand determinants described in equation (2) can be modeled empirically through SFA as inter-country efficiency differences can be attributed to the cross-country observed heterogeneity. Notwithstanding, the under-representation of such observed heterogeneity – a feature inherent to conventional SF models – is often accused of yielding biased results against technology determinants in addition to technology in(efficiency) estimates (Sherlund et al., 2002; Amaza and Ogundari, 2008; Rahman and Hasan, 2008). However, the misspecification of the production function and/or statistical errors may represent another potential source of biased efficiency estimates despite controlling cross-country heterogeneity induced by household, environmental, demographic, and socio-economic determinants (Greene, 2008; Kumbhakar et al., 2015).

This study gauges the sensitivity of efficiency measures against both observed and unobserved heterogeneity, which can either be time-variant or time-invariant (Greene, 2008). Time-variant factors may include the price of electricity for household consumers, the country's GDP per capita levels, etc., whereas time-invariant factors can be the sex ratio of the country, religion, and customs, geographical area, etc. As already stated, this paper employs time-variant SF panel data modeling techniques, which are designed to control for time-variant inefficiencies. We conduct the econometric investigation of the hypothesized EDF by employing the family of Random Effects (RE) panel SF models devised to model the time-variant stochastic features of each country's production function. Two

different types of SF models are used, differing from each other based on how the individual's inefficiency and its specific heterogeneity are taken into account. Starting from Kumbhakar and Heshmati (1995) Random Effects Model (KHREM), the model distinguishes between the time-invariant country-specific effects (heterogeneity) and the time-varying country-specific effects while estimating the overall inefficiency of a country. The former type of inefficiency is recognized in the literature as persistent technical inefficiency, which has never been modeled before in a distinctive manner in the earlier approaches to SFA modeling. Gauging the true degree of persistent inefficiency is of critical importance, especially in the event of small panels. Also, taking care of country/region-specific factors (like long-term policy stance taken by the government, unobserved production inputs, etc.), which tend to vary across cross-sections but usually are time-insensitive, makes a substantial difference to SFA estimates. Against persistent inefficiency, the model also allows for estimating the transient (residual) component of technical inefficiency, which typically arises as an outcome of time-varying factors included in SFA models. Each of the two types of technical inefficiencies bears their implications for policy-making, and the distinctive determination is therefore justified. The second type of model was proposed by Greene (2005a, 2005b). Known as the True Random Effects (TRE) model, unlike the family of Battese and Corelli (1992) and Kumbhakar and Heshmati (1995) models, this model considers all the time-invariant country-specific effects as part of country-specific heterogeneity, instead of technical inefficiency. The third type of model is proposed by Kumbhakar et al.(2014) and is more diversified, being characterized by a more detailed treatment of inefficiency. Kumbhakar et al. (2014) named their model the General True Random Effects (GTRE) model for containing the features of both RE and TRE models. The type of models proposed by Battese (1992), Kumbhakar (1990), and Kumbhakar and Heshmati (1995) treat firm effects as persistent (long-term) inefficiency, in addition to having another component for taking account of time-varying technical inefficiency. Such a treatment mixes firm effects with long-term inefficiencies, which is intuitively incorrect and holds serious implications. The model tends to inculcate an upward bias in inefficiency estimates, with firm effects being treated as inefficiency. Therefore, to reach reliable inefficiency estimates, it is of critical importance to distinguish between the two types of effects (Kumbhakar et al., 2015). Regarding the TRE approach, the model does not offer any mechanism to recognize persistent inefficiency; hence, it is also suspicious of yielding overall inefficiency estimates with downward bias. The GTRE model by Kumbhakar et al. (2014) is characterized by such a mechanism to overcome the insufficiencies of the other two modeling approaches and sees inefficiency into four distinctively different components by disentangling the model error term. The first component accounts for the cross-sectional heterogeneity, following the theoretical intuition of Greene (2005a, 2005b). The second component recognizes short-term/transient (time-varying) inefficiency. The third component accounts for the long-term (persistent and time-invariant) inefficiency, a phenomenon proposed by Kumbhakar and Hjalmarsson (1993) and Kumbhakar and Heshmati (1995). And the fourth component recognizes a random noise term. The purpose of employing different sets of SF models is to establish the robustness and consistency of the efficiency estimates obtained across two varying approaches of SF modeling. In what follows, we identify and discuss briefly the basic distinguishing features and the associated underlying dynamics of each of the three types of econometric models.

Kumbhakar and Heshmati (1995) Random Effects Model

Starting from the standard panel data formulation under basic half-normal specification:

$$y_{it} = \alpha + f(x_{it}, \beta) + \varepsilon_{it} \tag{5a}$$

the specific form of model (5a) is:

$$y_{it} = \alpha + x'_{it}\beta + \varepsilon_{it} \tag{5b}$$

where y_{it} is the logarithm of energy consumption levels; α is the common intercept terms for all the cross-sections (countries) included in the sample; β represents the model parameters. Considering x_{it} as a linear function of (log of) energy demand inputs, the SF RE specification of model (5b) can be given as:

$$y_{it} = \alpha + x'_{it}\beta + v_{it} - u_{it} \tag{5c}$$

where $v_{it} - u_{it} = \varepsilon_{it}$ and $v_{it} \sim N(0, \sigma_v^2)$ is the statistical noise term, which is normally distributed with zero mean and constant variance (σ_v^2). u_{it} is the overall technical inefficiency of each cross-section, further disaggregated into persistent (u_i) and transient (residual(τ_{it})) inefficiencies. Both types of inefficiencies are non-negative, where u_i is country-specific but time-insensitive, whereas τ_{it} varies across both cross-sections and time.

For the empirical estimation of model (5c), we can reformulate it as:

$$y_{it} = \gamma_i + x'_{it}\beta + \omega_{it} \tag{5d}$$

where $\gamma_i \equiv \alpha - u_i - E(\tau_{it})$, $\omega_i = v_{it} - (\tau_{it} - E(\tau_{it}))$.

The statistical properties of the model (5d) are well-compatible with the standard panel data model specifications. It is characterized by country-specific effects that are assumed to be random in nature (for RE panel data models only) and can be estimated econometrically using the Generalized Least Squares (GLS) method.

Greene (2005) True Random Effects (TRE) Model

Contrary to Kumbhakar and Heshmati (1995) RE model, the TRE model proposed by Greene (2005) allows for a country-specific intercept term in the panel SF modeling structure. Introducing a country-specific intercept term permits us to take into account the unobserved country-specific heterogeneity:

$$y_{it} = (\alpha + w_i) + f(x_{it}, \beta) + v_{it} - u_{it} \quad (6a)$$

where all the model parameters are the same as defined earlier. Regarding w_i, this is a time-invariant random term (normally distributed with zero mean and constant variance) responsible for capturing country-specific unobserved heterogeneity:

$$w_{it} \sim N(0, \sigma_w^2) \quad (6b)$$

Greene's TRE model is a highly regarded approach in SF modeling in the existing works on this subject. However, the model is somewhat deficient in the sense that it does not take into account those time-invariant country-specific effects that may serve as a potential source of persistent inefficiency of individuals (Kumbhakar, 1991; Kumbhkar and Heshmati, 1995; Kumbhakar and Hjalmrsson, 1993, 1998). Persistent inefficiencies are therefore assumed away in this model, and hence, the model is suspected of yielding downward bias in the estimated inefficiency level.

Kumbhakar et al. (2014) and Colombi et al. (2014) General True Random Effects (GTRE) Model

As mentioned earlier, GTRE model allows for an estimation technique which decomposes the error term of the model into four distinct components: country-specific effects (heterogeneity), transient (short-term) inefficiency, persistent (long-term) inefficiency, and the statistical noise term. With all its four components, GTRE model can be specified as:

$$y_{it} = \alpha + f(x_{it}, \beta) + (w_i - h_i) + v_{it} - u_{it} \quad (7a)$$

where $w_{it} \sim N(0, \sigma_w^2) > 0$, $h_i \sim N^+(0, \sigma_h^2) > 0$, $v_{it} \sim N(0, \sigma_v^2)$, $u_{it} \sim N^+(0, \sigma_u^2)$, $\varepsilon_{it} = v_{it} - u_{it}$, $\emptyset_i = w_i - h_i$.

In this model, $\alpha, \beta, \varepsilon_{it}, v_{it}, u_{it}$ and w_i are the same as defined for previou models. h_i is the half-normally disturbed persistent technical inefficiency term with variance σ_h^2. $\emptyset_i = w_i - h_i$ allows for a skew-normal distribution (Kumbhakar et al., 2014; Filippini and Greene, 2016).

Estimation Procedure

Before estimating the energy demand function (Equation 4) through three different types of SF models, the model variables should be scaled by their (arithmetic) mean values. Afterward, each variable is transformed using the (natural) logarithmic transformation. Once the EDF is estimated, the parameters obtained are used to derive the country-specific technical efficiency estimates using the conditional expectations predictor proposed by Jondrow et al. (1982).

$$TE_{it} = E[\exp(-u_{it})\varepsilon_{it}] \quad (8)$$

The persistent technical efficiency from KHREM can be obtained as:

$$PE_{it} = E[u_i/\omega_{it} - u_i] \quad (9)$$

Likewise, the persistent technical efficiency estimates from GTRE model can be obtained as:

$$PGTRE_{it} = E[\exp(-h_{it})/\varepsilon_{it}] \quad (10a)$$

While the transient technical efficiency estimates from GTRE model will be:

$$TGTRE_{it} = E[\exp -(u_{it})/\varepsilon_{it}] \quad (10b)$$

Finally, the overall (aggregate) technical efficiency can be obtained as a product of persistent and technical efficiency estimates:

$$OTE_{it} = PGTRE_{it} \times TGTRE_{it} \quad (11)$$

The empirical exercise considers a panel of 25 high-, middle- and low-income European states. The sample of countries include Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Greece, Ireland, Italy, Latvia, Lithuania, Luxembourg, the Netherlands, Poland, Portugal, Slovenia, Slovakia, Spain, and Sweden. The mentioned model series of EDF for the whole sample is sourced from Eurostat, with the sample study period ranging from 2012 to 2021.

RESULTS

As mentioned in the preceding section, the efficiency analysis for this study is conducted in two distinct steps. In the first step, the basic SFA model is estimated through the energy consumption model. In the second step, the region-wide rebound effect is estimated by employing dynamic panel data analysis using efficiency estimates deriving from the SFA model in the first step. Since the model variables are scaled by their arithmetic mean and log-transformed, the coefficients can be considered elasticities.

Parameters Estimated through the Energy Demand Function

Table 1 reports the results of the energy consumption model. Starting with the model intercept term, all three models yield statistically significant coefficients. Nevertheless, the coefficients' magnitude is inconsistent across the models and varies largely. GTREM produces the highest intercept coefficient, whereas KHREM yields the smallest one. The substantial difference in the magnitude of the intercept coefficients can be attributed to country-specific heterogeneity significant enough to affect their estimated technical efficiency (Greene, 2008; Kumbhakar, 2015). The betas seem less sensitive toward the model specifications for the household energy (electricity) consumption parameters. These findings align with the theoretical intuitions and the existing literature on SFA (Greene, 2008; Kumbhakar, 2015). The electricity price series exhibits a statistically significant coefficient, holding the expected sign. The magnitude of the coefficients obtained from KHREM and TREM is very close (-0.113 and -0.115, respectively) and substantially higher than the one obtained from GTREM model (-0.017). Interpreted as electricity consumption elasticity against its prices, electricity consumption tends to be inelastic, with a negative relationship with electricity prices ranging from 1.7% to 11.5%. The effects of household disposable real income on their electricity consumption tend to be high as the estimated coefficient ranges between 59% and 61% across the three estimators. However, in comparison to KHREM and TREM, GTREM supports this relationship at a relatively weaker level of statistical significance. Regarding the other determinants of household energy consumption, like electricity price and household income levels, residential construction shows comparable elasticity values across all models. The variable implies a direct effect on household electricity consumption of a value of 3% (approximately) against a percent change in residential construction volumes.

Table 1: SFA estimation results.

	KHREM	TREM	GTREM
c	0.113*** (0.017)	0.434*** (0.131)	0.866** (0.410)
β_{prices}	-0.113** (0.056)	-0.115** (0.056)	-0.017*** (0.002)
β_{dpi}	0.608*** (0.094)	0.594*** (0.094)	0.612* (0.341)
β_{rc}	0.029* (0.018)	0.029* (0.015)	0.027*** (0.010)
β_{epc}	0.211*** (0.067)	0.208*** (0.057)	0.231** (0.113)
β_{urban}	-0.039 (0.068)	0.042* (0.022)	0.044 (0.037)
β_{pop}	-0.000 (0.009)	0.001 (0.008)	0.000 (0.010)
β_{heat}	0.121** (0.055)	0.122** (0.055)	0.192*** (0.036)
β_{cool}	0.072 (0.054)	0.074 (0.054)	0.081 (0.070)
β_{prp}	-0.001 (0.001)	-0.001 (0.000)	-0.003 (0.004)

β_{ghg}	-0.211** (0.082)	-0.217*** (0.082)	-0.221*** (0.061)
σ_u	-9.067** (4.072)	-2.236 (3.354)	-5.334* (3.110)
σ_v	-0.423*** (0.090)	-0.376 (0.097)	-0.755*** (0.068)
Log-likelihood	-305.512	-305.407	-310.814

Notes: Robust Standard Errors in parentheses. *** p<0.01, ** p<0.05, * p<0.10.

Electricity production capacities of renewables appear to be another important determinant of household electricity demand, though its effect has not been extensively studied in earlier works on energy consumption efficiencies. Across all three models, we obtain a statistically significant coefficient value, ranging from 21% to 23%, with a positive sign. In the literature, the effect is found to be channelized through energy prices since renewable energy technologies (with minimum marginal cost) are found to have a significantly dampening effect on wholesale prices of energy products (Macedo et al., 2020; Kolb et al., 2020; Cevik and Ninomiya, 2023). The degree of urbanization and population have a lower effect on energy demand. For urbanization, only TREM gives a significant coefficient value. For population, the models unanimously reject a relevant effect on energy demand. Heating and cooling degree days reflect the state of atmospheric conditions that affect household energy demand levels. Only heating tends to produce valid inference, through all models, with an elasticity value varying between 12% to 19%. The persons at risk of poverty are found to exert a negligible role in determining electricity consumption. This is evident from all models. Lastly, the greenhouse gas emission intensity has been found to impact European household electricity consumption in a highly effective manner.

The State of Technical Efficiency and the Relative Importance of Transient and Persistent Efficiencies

Table 2 reflects the state of technical efficiency and the role of country-specific heterogeneity showing the exploratory data analysis. TREM, on average, provides an estimate of 83.2% on technical efficiency. The other two models split the technical efficiency into two components (persistent and transient efficiencies). The estimates for persistent efficiency range between 67% and 70%, while transient efficiency varies between 79% to 87% across these models. The larger transient efficiency from KHREM and GTREM implies that the energy-saving strategies and actions adopted by households (like increased use of energy-efficient appliances) impart a more significant impact on efficiency levels relative to the policy-related actions devised and implemented by governments.

Table 2: Descriptive statistics of the efficiency scores for the estimated SFA models.

Frontier Model	Mean	Std. Dev.	Min.	Max.
Eff._TREM	0.722	0.041	0.308	0.802
Persistent Eff.				
KHREM	0.673	0.113	0.156	0.874
GTREM	0.703	0.141	0.167	0.852
Transient Eff.				
KHREM	0.791	0.011	0.215	0.882
GTREM	0.871	0.125	0.224	0.931
Overall Eff.				
KHREM	0.532	0.070	0.323	0.921
GTREM	0.612	0.060	0.140	0.963

A recent strand of the literature endorses this disparity between transient and persistent efficiencies of household energy consumption levels (Filippini and Zhang, 2016; Filippini and Hunt, 2016; Adha et al., 2021). Yet, recent contributions emphasize the significance of persistent inefficiencies relative to transient inefficiencies, particularly in small cross-sections (Oumer et al., 2022; Bokusheva et al., 2023). Persistent efficiencies yielding larger inefficiency gaps of value 49% from KHREM [(1-0.673)/0.673*100] and 42% from GTREM [(1-

0.703)/0.703*100] call for more serious policy actions to address the factors responsible for causing structural inefficiencies. On the other hand, the transient inefficiencies are found to be 26% [(1-0.791)/0.791*100] and 15% [(1-0.871)/0.871*100], respectively. These findings are in line with those of Kumbhakar and Heshmati (1995) for Swedish dairy farms and Kumbhakar et al. (2014) for Norwegian grain farms and established that the magnitude of persistent inefficiencies is substantially larger than that of transient inefficiencies. Therefore, it is suggested to focus on the effects of persistent inefficiencies since both KHREM and GTREM in our analysis produce a larger relative value of persistent inefficiencies. Another remarkable finding reveals an inverse relationship between the intercept values of frontier models and the mean of technical (overall) efficiency estimates. KHREM and GTREM show larger intercept coefficients associated with lower mean values for overall efficiency. In contrast, TREM provides a (relatively) smaller intercept value with the largest technical efficiency value. Such a pattern points to the possible existence of heterogeneity bias, which (plausibly) appears as inefficiency.

Efficiency Elasticity Scores and the Region-Wide Rebound Effect

After having estimated the energy demand parameters and the level of technical efficiencies, the next step is to gauge the size of the region-wide rebound effect. For this purpose, the LSDV estimator is employed. Unlike other dynamic panel data models, which usually are asymptotically efficient, LSDV is proven to perform well in the instance of small sample size (Bruno, 2005).

$$EC_{it} = \beta_{ec}EC_{it-1} + \beta_{pr.}Prices_{it} + \beta_{dpi}Income_{it} + \beta_{eff.}Efficiency_{it} + \mu_i + \varepsilon_{it} \qquad (12)$$

where EC_{t-1} is the one period (year) lagged household energy consumption series, *Efficiency* is the technical efficiency series obtained from the SFA models, μ_i is the time-invariant country-specific technical inefficiency, and ε_{it} is the random shock (error) term. The rest of the model variables are defined as earlier. The LSDV model is estimated against two fundamental determinants of energy demand: electricity prices for household sector and household income level, in addition to the efficiency scores series estimated above. All the model variables exhibit the expected signs, with electricity price and efficiency showing negative elasticity coefficients and the household income a positive one. In the context of region-wide rebound effect, looking at the elasticity coefficient of efficiency, we get a value of -0.183 for the short-term and -1.561 for the long-term. The short-term elasticity value implies that a percentage increase (decrease) in energy (electricity) efficiency is associated with a decrease (increase) of 18.3% in its consumption. The effect of efficiency gain is therefore lesser than proportional in short-term. The impact, however, seems to be more promising in the long-term. In fact, a percentage increase in electricity efficiency tends to impart a reduction of 1.561%. Such a size disparity in short- and long-term rebound effects is also found in some recent studies (Gillingham, 2016; Ullah et al., 2022).

Table 3: LSDV estimates.

	Coefficient	
$\beta_{ec(t-1)}$	0.564*** (0.125)	
β_{prices}		-0.120* (0.064)
β_{dpi}		0.216* (0.120)
$\beta_{eff.}$		-0.183*** (0.076)

Notes: Robust Standard Errors in parentheses. *** p<0.01, ** p<0.05, * p<0.10.

Having obtained the efficiency elasticity scores, it is possible to estimate precisely the region-wide rebound effect for Europe in Equation (1). Using the beta coefficient value of $\beta_{eff} = \eta_{EEG}^{EC} = -0.183$, a state of partial rebound effect is evident in both short- and long-term. In the short-term, a rebound effect of 81.7% is obtained, whereas in the long-term the magnitude of this effect is equal to 43.4%. A smaller rebound effect in the long-term calls for policy actions bearing long-term impact, particularly in favor of technology innovation, so that the energy-saving targets could be met.

CONCLUSIONS

This study aims to measure the size of the region-wide rebound effect of the efficiency gains associated with household electricity consumption for 25 European countries. The short-and long-term rebound effects are estimated over a sample study period between 2012 and 2021. Under the theoretical composition of the energy demand frontier, energy efficiency scores are calculated in the first stage using the SFA. Then, the elasticity values are estimated for energy efficiency in the second stage through the LSDV estimator.

A partial rebound effect emerges from the empirical findings. The size of this effect turns out to be 81.7% in the short-term and 43.4% over longer time horizons. A smaller rebound effect size in the long-term points to household's achievement in cutting off the soaring electricity demand and eroding initial benefits arising as a consequence of efficiency gains of electricity consumption by this sector. Such success can be attributed to the growing influx of technology improvements as well as rigorous policy actions at both the country and regional levels. Estimating the efficiency scores, the overall efficiency is split into transient and persistent efficiencies. A sharp disparity between transient and persistent efficiencies is obtained. Persistent efficiency yielding a larger inefficiency gap calls for new policies to address the factors responsible for causing structural inefficiencies in household electricity consumption patterns.

Given these results, some policy recommendations can arise. Government policies for improving energy efficiency and its conservation are effectively playing their role for the household sector, but in the long-term only. Nevertheless, in the short-term, such policies are failing to cut down the energy consumption levels. To solve this, governments should design and implement energy efficiency and conservation programs. Such programs should entail bringing technological innovation to household electrical appliances so that affordable, efficient, and environment-friendly products can be promoted at a large scale. Secondly, considering the significance of residential construction and electricity production capacities, governments and relevant authorities must take some steps towards improving these two spheres. The state of residential arrangements must be improved, particularly, for those countries where the short-term rebound effect is excessively large. Similarly, bringing in technological innovations may certainly expand the capacities of already existing power generation plants and may also pave the path to developing renewable energy technologies in some viable manners.

The paper is subject to a few limitations which if addressed can make one to reach more comprehensive and inclusive scores for energy efficiency. Firstly, the relationship proposed between energy consumption and its determinants is somewhat devoid of demographic and geographical parameters. This significance of demographic parameters is unquestionable, especially for household energy consumption. Similarly, geographical factors explaining energy consumption patterns hold immense importance for non-household consumers; transport and construction in particular. Secondly, technology plays a crucial role in improving the efficiency of energy consumption across various sectors. As of now, only handful of studies has empirically investigated the role of technology in improving energy efficiency gains. Our empirical analysis conducted in this paper is also limited in the sense that it does not take into account inter-country disparities pertaining to energy related technology adoption, which may plausibly explain efficiency estimates in a more pronounced way. Identifying the true degree of technology influx at cross-country level for optimizing energy consumption may serve as a future line of research.

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INCREASING THE SUSTAINABILITY OF GEO-ECONOMIC DEVELOPMENT OF THE MODERN EURASIAN SPACE STATES: SCENARIO AND FORECASTS

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Abstract:

The article deals with the issues of the systemic organization of the economy and management in the Eurasian space. Methodological principles of modern understanding of the problems of geoeconomics of world and Eurasian economic and civilizational development are analyzed. The tools and technologies of geoeconomic analysis, forecasting modeling are analyzed: geoeconomic civilizational space, geoeconomic weapons, geoeconomic wars, geoeconomic atlas. The issues of scenarios for the strategic choice of tools for the development of national and regional economic systems, the methodology of functioning of the geo-economic atlas of the modern Eurasian space through analytical categories related to the concepts of "problem field", "vectors of challenges", "modeling of development" are considered from a systemic standpoint, issues of sustainable functioning are analyzed and the development of the economic and civilizational model of the states of the Eurasian space.

Key words: geoeconomics of the Eurasian space, Eurasian space, socio-cultural code, tools and technologies for the development of regional economic systems, geoeconomic weapons, geoeconomic atlas, geoeconomic wars, countries-systems of geoeconomic space, catching up with economic development, post-industrial and neo-economic, economic and civilizational paradigm, geo-economic map of world economic development, poles of economic power, wandering reproduction nuclei, economic and civilizational model of the states of the Eurasian space

INTRODUCTION

Managing the development of countries and regions of modern Eurasian space is a rather complex and multifaceted problem, the quality of which determines many components - economic, political and socio-cultural.

Successful solution of development problems, and therefore effective functioning, require understanding the genesis, essence and terms on the basis of which complex national and multinational models, projects, scenarios and forecasts are developed.

The problems of analysis and forecasting of development in solving economic and managerial problems and ensuring strategic goals in solving problems of increased complexity are possible in the development of special methodological foundations based on the geoeconomic paradigm and interdisciplinary scientific idea, which is in alliance with the methods of strategic analysis.

MATERIALS AND METHODS

As a scientific hypothesis, we will outline the contours and content of the modern vision of the geoeconomic atlas of Eurasian space.

The Eurasian space is presented as one of the world centers of geopolitics and geoeconomics, in the space of which the socio-cultural, historical, economic traditions of Russia and Turkey as "country-systems" are being restored.

For the purposes of the study, defining the boundaries of the Eurasian space is of fundamental importance.

The principles of forming a modern vision of the Eurasian economic space can be:

- Common geoeconomic historical code.
- Common geoeconomic axiological code.
- Common ethno-confessional geoeconomic code.
- Common sociogeographic code - Turkey, Russia, Kazakhstan.
- Common geoeconomic code associated with the immanent characteristics of the country-systems - Russia, Turkey, Iran.

The strategic goal of the economic models of the Eurasian space is to create a competitive regional economic system on the geoeconomic map, which allows one to speak about itself as a real pole of economic power. We believe that the reason for the formation of new poles of economic power is the collapse of the unipolar world, the geo-economics of which has been firmly held by the United States and the European Union in recent years.

FINDINGS

In our opinion, in the near future, the geopolitical and geoeconomic confrontation of countries-systems for states that have not yet determined their civilizational choice will continue in the Eurasian economic space.

This list includes most of the states of the former Soviet Union and Yugoslavia.

The goal of the United States in the unfolding new world geoeconomic war is clearly the fight against the formation of a new global player - the Eurasian Economic Union, and, accordingly, the weakening of the current global players - the European Union, China, Russia, Turkey.

Entering the economic zones of interest of China, associated with the Silk Road projects, with the tasks of consolidating the positions of the Euro-Atlantic civilizational model through the technologies of hybrid wars, creating a pole of instability, inciting medieval religious wars, including between Western and Eastern Christianity, between Catholicism and Islam, between Orthodoxy and Islam in the civilizational and economic dimension - is a trend of the modern world order. It has been repeatedly stated about the formation of a cooperation zone from Lisbon to Vladivostok based on free trade relations and mutually beneficial cooperation, the integration processes of which include Europe and China, as well as the Middle and Near East, as powerful stabilization factors that contribute to overcoming the global crisis and create new opportunities for development, the realities of the Eurasian space dictate a new configuration of interests of global and local players on the economic atlas. This is due to the continuous geo-economic wars waged on the borders and within the Eurasian space.

At present, the Eurasian economic space is divided into four poles of economic power according to the civilizational principle:

- Western European macroregion, uniting countries with the Western Christian civilizational system; - The Eastern European macro-region understood by us as a real heartland of the Eurasian space, uniting countries and peoples on a multi-confessional basis: Orthodoxy, Islam, Buddhism.
- The Turkic macro-region represented by Turkey and the countries of Europe and Asia, which have common confessional interests, a common history, and shared common civilizational values.
- The remaining states of the Eurasian space are wandering reproductive nuclei or are in a specific, rather delicate situation in an alien civilizational field. Thus, Bulgaria, Romania, Greece and Cyprus are for some reason the most problematic and poor relatives of the Euro-Atlantic civilizational model of functioning and development.

In the civilizational space of the modern vision of the Eastern European macro-region, dramatic events are taking place associated with geopolitical and geo-economic doctrines that have all the attributes of geo-economic wars:

- The doctrine of "Greater Albania";
- The doctrine of "Old Serbia”.
- The doctrine of radical Islamism.
- The doctrine of pan-Europeanism.
- The doctrine of the "Russian world".

In the near future, a serious geo-economic confrontation between countries that are wandering reproductive cores will unfold in the Eurasian economic space.

The future of the Eurasian economic space, the effectiveness of the nationally oriented development model of states and peoples united by the capacious name of "Modern Eurasia" depend on the results of the predicted geo-economic war.

The basic geoeconomic characteristics of the countries of the Eastern European civilization model are:

- A pronounced model of catch-up economy in the system of priorities of economic development of states.
- Adaptation of the economic model to the standards of the European Union objectively reduces the possibilities of diversification of economic development of states, including in matters of formation of

development institutions and their communication with the poles of economic power outside the European Union.

- The catch-up economic model turns the countries of Eastern, Southern and Central Europe into the second and third echelon of the European Union, characterized by an increasing gap in the levels of socio-economic development with the first echelon - the core of the European Union.
- The realities of the modern geoeconomic situation are the following:
- The states of the Eastern European civilization model are the heirs and successors of the economic and industrial model formed in the second half of the twentieth century.
- The transition of the economic model from the socialist mode of production to the market system objectively led to the transformation of the industrial economy to the economy - trade and agrarian.

Industrial heritage is the remnants of state property or the consequences of its privatization. The industrial model is either in a state of static stagnation or falls under the strategy of industry specialization of the European Union, which in general has no relation to the national economic interests of the states of the Eastern European civilizational model.

The negative trend of the catch-up economy requires understanding and continuous search for models and tools for sustainable progressive development of economic and regional systems.

In a generalized form, the neo-industrial model is characterized by the following systemic features and includes:

- A new paradigm of world order and worldview following the post-industrial model.
- A civilizational model of the global system associated with a new list of axiological norms and rules.
- The formation of a new geo-economic system and the inclusion of a symbiosis of synergetic, technogenic and non-systemic factors in it - mega-institutional, regionally decentralized, ethno-national, socio-cultural in order to create a new image of the geo-economic space.
- The construction of fundamentally new supra-territorial economic and political entities, the strategic effect of the creation of which is the technology and tools of operating on the geo-economic atlas of the world using a new generation of geo-economic weapons and a new generation of protection of national interests from its use with the aim of achieving strategic balance and forming growth points of the type of institutionalized reproductive cores.

In the strategy of geoeconomic development of Eurasian space, the processes related to the issues of geoeconomic interests are relevant.

Geoeconomic interests are determined by the following features:

- Further restructuring of the institutions of the unipolar world in order to determine the points of geoeconomic interests.
- The transition of national economies from a geopolitical model to a geoeconomic one, and as a consequence, the transition from a trade model of development to a reproductive one.
- The formation of a model of the national economy adequate to the emerging reproductive cores operating in the eurasian geoeconomic space.
- The definition of decision-making tools in the field of designing organizational and managerial forms, development institutions corresponding to the emerging neo-industrial economic and civilizational model.

Following the mainstream of the industrial and post-industrial model will inevitably reduce the competitiveness indicators of the national economy, and therefore throw the subjects of the modern Eurasian economic space into a catch-up mode. The neo-industrial horizon will adopt an economic and managerial paradigm consisting of megasystems – ethnoeconomic transnational, innovative-industrial, strategic project areas, etc., allowing the formation of competitive economic-reproductive cores as the basis for an effective national economy of the 21st century.

DISCUSSION AND CONCLUSION

Thus, following the industrial and post-industrial model will inevitably reduce the competitiveness indicators of the national economy, and therefore throw the subjects of the Eurasian economic space into the catch-up mode. The neo-industrial horizon will adopt an economic and managerial paradigm consisting of megasystems - ethnoeconomic transnational, innovative-industrial, strategic project in the field of logistics, etc., allowing the

formation of competitive economic-reproductive cores as the basis for an effective national economy of the 21st century.

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EURASIAN SPACE STATES STRATEGIES: FOCAST AND SCENARIO

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Abstract

the article examines modern global challenges, analyzes the main economic strategies of Eurasian space countries, and provides recommendations for improving country development strategies based on strategic perspectives and management decisions aimed at developing human capital. Interstate development institutions are proposed in the Eurasian space for the knowledge economy, based on international cooperation in supporting scientific research and investing in education and innovation.

Key words: country strategy, global challenges, concepts characterizing the modern world, basic economic strategies of countries, model of stages of economic growth, human capital index, improving country development strategies, human capital development

INTRODUCTION

The world is developing along the path of globalization of all spheres of international life, which is characterized by high dynamism and interconnectedness of events. Contradictions between states have intensified due to uneven development and the widening gap between the levels of well-being of countries. Values and development models have become the subject of global competition.

The vulnerability of all members of the international community in the face of new challenges and threats has increased. A qualitatively new geopolitical and geoeconomic situation is developing. A tendency is forming to find solutions to existing problems and resolve crisis situations on a regional basis without the participation of non-regional forces.

Against the background of structural imbalances in the global economy and financial system, growing sovereign debt, and volatility of the energy market, the risk of a recurrence of large-scale financial and economic crises remains high.

The global information confrontation is intensifying, threats to the stability of industrial and developing countries of the world, their socio-economic development and democratic institutions are growing. Global challenges that the world is facing at the present stage:

- Globalization processes that are widening the gap between the levels of well-being of countries;
- Growth of global and regional instability;
- Geoeconomic fragmentation;
- Structural imbalances in the global economy and financial system;
- Disruptions in global trade in raw materials;
- Intensification of global information warfare;
- Aggravation of the global demographic situation and environmental problems;
- Uncontrolled and illegal migration.

MATERIALS AND METHODS

Among the concepts that describe the conditions that characterize the modern world, the following should be highlighted: the VUCA Concept and the BANI Concept.

The VUCA Concept (Volatility, Uncertainty, Complexity, Ambiguity) - serves as a basis for analyzing and understanding the current and future challenges that countries face.

Volatility:

Rapid and unpredictable changes that can occur in any aspect of the environment. These can be economic fluctuations, technological innovations, or natural disasters. Example: Sharp fluctuations in oil prices or sudden technological breakthroughs.

Uncertainty:

The inability to predict future events due to a lack of information. This causes difficulties in decision-making and planning. Example: Uncertainty in the political environment affecting business decisions.

Complexity:

Many interrelated factors and variables that influence each other, creating complex and confusing situations. Example: Global supply chains, where a single failure can impact the entire system.

Ambiguity:

The presence of conflicting or incomplete information, making it difficult to understand a situation and make good decisions. Example: Different interpretations of the same economic indicator.

VUCA emerged as a concept in a military context but is now widely applied in business and management to describe and manage modern challenges. Understanding and adapting to a VUCA environment requires flexibility, adaptability, and a proactive approach to management and leadership.

The BANI (Brittle, Anxious, Nonlinear, Incomprehensible) concept has emerged as an alternative to VUCA to describe today's increasingly chaotic and complex environments.

Brittle:

Systems and structures are becoming more fragile and prone to failure. Even small disruptions can have major consequences. Example: The vulnerability of global supply chains, which can collapse due to a single failure.

Anxious:

A persistent feeling of uncertainty and stress caused by an inability to predict the future and adapt to rapid change. Example: Increased anxiety among workers due to economic instability and changes in the labor market.

Nonlinear:

Problems and events unfold unpredictably, with unexpected and disproportionate consequences. Example: The Butterfly Effect, where small changes lead to large and unpredictable results.

Incomprehensible:

Difficulty understanding current events and trends due to information overload and inconsistency. Example: Information overload and fake news making it difficult to make informed decisions.

BANI emphasizes the need for new approaches to leadership, management, and strategy in an environment where traditional methods are becoming less effective. It calls for flexibility, resilience, and adaptability in response to current and future challenges.

FINDINGS

A country strategy is an action plan developed by a state to achieve its political, economic and social goals in the international arena.

Let's look at the main economic strategies of the countries of the Eurasian space:

Russia

Import substitution and economic diversification: Development of domestic production in key industries such as agriculture, mechanical engineering, and defense industry.

Innovation and technological development: Support for research and development projects, development of information technology and digital services.

Eurasian integration: Strengthening economic ties with post-Soviet states, formation of a common market for goods, services and capital.

Economic cooperation and investment: Development of transport infrastructure, joint energy projects, attracting investment into the Russian economy.

Turkey

Industrialization and export development: Strong industrial sector, including automotive, textile and electronics.

Support for export-oriented industries, entry into new markets.

Megaprojects: Construction of new airports, bridges, highways and other large infrastructure facilities. Development of urban agglomerations, improvement of housing conditions and public transport.

Regional and International Integration: Cooperation with the EU and the Middle East: Seeking to strengthen trade and investment ties, participation in regional initiatives. Energy Hub: Developing Turkey as a key transit hub for energy resources between the East and the West.

China

Belt and Road Initiative: Developing transport corridors, ports and other infrastructure facilities in various countries. Strengthening China's economic influence through trade and investment ties.

Innovation and High Technology: Focus on artificial intelligence, biotechnology, information technology.

Special Economic Zones and Industrial Parks to stimulate innovation.

Transition to Domestic Consumption: Strengthening the domestic market and increasing consumption, reducing dependence on exports.

Serbia

Integration with the European Union

Attracting foreign investment

Agriculture and agro-industrial complex

Tourism and services

Kazakhstan

Development of non-resource industries

"Kazakhstan-2050", "Nurly Zhol"

Infrastructure projects

Attracting foreign investment

Azerbaijan

Development of non-resource industries

Diversification programs and strategies

Transport and urban infrastructure

Regional and international integration

Country strategies have a direct impact on the country's economy, for example, Turkey has launched several major infrastructure projects, including the construction of a new airport in Istanbul (one of the largest in the world), bridges across the Bosphorus, new highways and railway lines. This has improved the country's logistics and transport infrastructure, making it more attractive for international trade and tourism. The development forecast is based on models, one of the models is the stage of economic growth: from a traditional society, whose economy is based on agricultural labor and primitive production technologies to an information society, where the economy is based on knowledge and high technologies. The leading role in the information society belongs to science, research and development (Fig. 1). The question of the causes of economic development in different countries of

the world is one of the main ones in economic theory and in applied economic analysis. At different times, geographical, resource, technological, human, institutional factors were considered determinants of economic development - both separately and in various combinations.

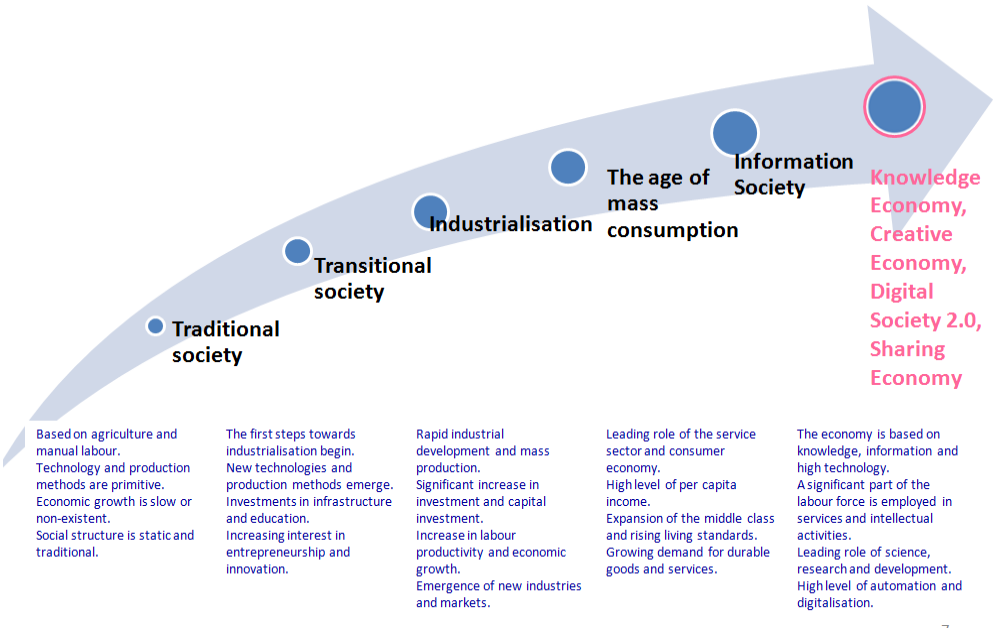

Figure 1: Model of economic growth stages

Basic indicators for assessing the level of economic development of a country: GDP growth rates, GNP per capita. Indicators by country are presented in Table 1.

Table 1 – Indicators for assessing the level of economic development of countries

Country	GDP growth rate 2023 Forecast 2024	GDP growth rate 2023 Forecast 2024	GDP per capita 2023
China	5,2	4,6	$14,068
Russian Federation	3,6	3,2	$12,388
Türkiye	4,5	3,1	$11,300
Serbia	2,7	3,0	$11,270
Azerbaijan	1,1	2,8	$ 6,500
Kazakhstan	5,1	3,1	$13,088
World	3,2	3,2	

[1, 2]

The assessment of the level of the knowledge economy is supplemented by the Human Development Index and the Global Innovation Index; the indicators for the analyzed countries are presented in Table 2.

Table 2 – Human Development Index and Global Innovation Index

Country	Human Development Index (2023)	Global Innovation Index (2023)
China	0.768	55,3
Türkiye	0.838	38,6
Russian Federation	0.822	33,3
Serbia	0.802	33,1
Kazakhstan	0.800	26,7
Azerbaijan	0.745	23,3

[5, 6]

To improve country development strategies, it is recommended to:

- Develop flexibility, sustainability and adaptability in response to current and future challenges;
- Use opportunities for integration and cooperation;
- Strengthen economic integration between countries in the region;
- Improve governance and institutional reforms;
- Increase transparency and efficiency of public administration;
- Develop human capital and support scientific research.

And also, which is important for the current economic stage - investing in education and innovation.

Answering the question of which institutions can be used to improve country strategies, we will present a classification by levels of interstate interaction, examples are presented in Table 3.

Table 3 – Institutions of interstate interaction

Global International Organizations	UN, World Health Organization (WHO), International Monetary Fund (IMF)
Regional Organizations and Agreements	European Union (EU), Association of Southeast Asian Nations (ASEAN), African Union (AU)
Bilateral Relations	Bilateral agreements, visits of heads of state, joint economic projects
Associations and Initiatives of the Non-Profit Sector	Youth organizations, sports, culture, science, education
International Conferences and Forums	Global Shapers Community (World Economic Forum), Generation Unlimited (GenU), Voices of Youth

[3, 4]

DISCUSSION AND CONCLUSION

We will offer strategic perspectives and management decisions aimed at developing human capital, so in the field of science and technology, DEVELOPMENT COALITIONS can be formed: including advanced R&D groups, educational leaders and innovative businesses.

Scientific, educational and production CLUSTERS can be formed in COMPETITIVE areas: NOPK = technological universities + corporations.

One of the options can be search platforms "the future in the present" based on universities, the congress is also an international platform that promotes the improvement of interstate cooperation in the field of human capital and science development.

Proposed interstate development institutions in the Eurasian space for the knowledge economy:

- Association of Universities and Schools of Management "Eurasian Meridian" ;
- International scientific and practical journal "Eurasian Space: Economics, Management, Development Institutions";
- Competence Center.

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SYSTEM DYNAMICS OF ELECTRICITY DISTRIBUTION NETWORK PRODUCTIVITY

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Abstract

The magic triangle of energy policy includes the triple dilemma of energy issues, i.e. competitiveness, energy security and sustainability. Although these three components may be incompatible with each other, all three goals can be achieved by controlling some key factors, especially energy intensity and productivity. Considering the importance of electricity consumption in sustainable development and significant losses in the electricity transition and distribution (T&D) network, a dynamic model for electricity T&D productivity is presented in this paper. In this regard, a mental model as well as causal loop and stock flow diagrams for the closed boundary of electricity T&D productivity have been designed, presented and analyzed.

Keywords: Electricity Distribution Productivity, System Dynamics, Causal Loop Diagram, Stock Flow Diagram.

JEL Classification: Q47, Q41, Q43.

INTRODUCTION

The figure (1) shows the magic triangle of energy policies. As shown in this figure, policy makers must make decisions about three important and perhaps inconsistent policies. While thinking about security, they may be challenged with sustainability. In this framework, they may focus on some factors to achieve all actions, including improving the environment, making the economy more competitive, and ensuring security of energy supply.

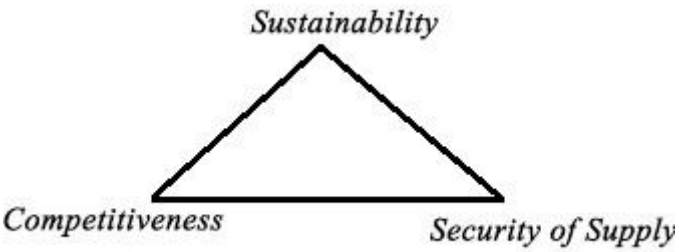

Figure (1): Magic Triangle of Energy Policies

One of the important secondary energies is electricity, which directly and indirectly pollutes the environment. It is necessary to control its consumption as well as improve its productivity to less energy intensity. In this framework, the energy loss in the energy system is relatively low, especially in developing countries. For example, power electricity losses in the Transition and Distribution (T&D) network in developing countries are estimated to be around 20%, while in developed countries it is less than 7 percent, mainly due to technical reasons.

Energy loss in T&D is due to loss of electrical power in power lines and equipment, and pilferage. Losses of 5%-7% are normal, which is usually for developed countries. In developing countries, the amount of electricity losses varies among countries. For example, the average power loss in T&D is 18.8% in south Asia and 13.5% in the Middle East and North Africa. Using productive and efficient electricity grids can control and minimize these losses.

The main purpose of this paper is to model the electricity productivity in the T&D network. For this purpose, we use System dynamics (SD), and Causal Loops (CLDs) and Stock-Flow (SFD) diagrams. This paper is organized as follows. The introduction is given in the first section. The second section is dedicated to SD methodology. CLDs and SFD of electricity productivity in T&D are presented in the third section. References are given in the last section.

METHODOLOGY

A system consists of two or more components with two characteristics, firstly, the whole has a certain function, and secondly, each component of the system can affect the behavior of the whole (Ikaf, 1994). The four general characteristics of this system are system boundary, system components, resource flow, and feedback.

The closed boundary is the field of interaction among different variables for the survival of a phenomenon over time. Unnecessary expansion of the closed boundary makes the model away from the objectivity, and accordingly, the necessary variables and any variable that interacts with one of the variables inside the boundary should be placed inside it. Interaction between variables leads to flow from sources to reservoirs and from reservoirs to sinks, where reservoirs are placed inside the closed boundary and sources and sinks are placed outside this boundary. A closed boundary is not a blockage around a system, but a closed feedback loop. The result of the interactions between the variables of the system will determine the behavior of the loop as well as the system. Decisions are made according to the conditions, and the results of the decisions affect the conditions and may lead to a new decision.

System dynamics are created by causal feedback loops. According to Foster (2007), any dynamic system that changes over time follows a hierarchical structure including closed boundaries, open loops, state and rate variables. Based on these four components of the complex systems, Sterman (2000) believes that changing the social, technological and economic environment imposes many conflicts on decision makers. Also, due to the time-varying nature of the environment and its dependence on past activities, simple models may not only not help to deal with such problems but may make the situation worse and more complicated. Such environments lead decision makers to think systemically and improve their mental models and understand how to determine complex system structure and behavior. System dynamics is a method for learning in complex systems and modeling these systems. According to this method, in complex systems, cause and effect are not simple and are far apart in terms of time and space, while we consider them to be related in time and space, which causes damage to the system and weakens policies. It simulates real-world systems using some technical tools to exploit the nature and complexity of the constantly changing system. This method is based on feedback which can easily model nonlinear systems with time delay and multiple loops.

System dynamics leads to a quantitative as well as qualitative model. According to the quantitative interpretations and analytical frameworks, experts have considered "thinking in terms of graphs over time" as an integral part of the system dynamics approach. They believe that to solve any problem, variables with specific values that change over time must be defined. In this way, system dynamics literature, like other quantitative methods, assumes some factors to be constant and then studies others. These limitations are caused by the limitations of human dimensions. If the model is quite complex, it will not solve the problem, but a model should be provided to simplify the real phenomenon. System dynamics studies should have two characteristics of dynamics and feedback. Dynamics means that variables change over time and feedback is their interrelationship.

System Dynamics of Electricity Distribution Productivity

Electricity distribution and transmission is the last stage of electricity supply and it distributes electricity to the final consumers through the transmission system. Distribution substations are connected to the transmission system and, using a transformer, they adjust the transmission voltage to a medium voltage of 2 kV to 35 kV.

Figure (2) shows the CLD diagram for electricity productivity in a typical T&D network. In this figure, the network (grid) density represents the operational capacity of the power cable. In particular, due to increased load, power lines reach their thermal limit, and simply put, in this condition, cables are used beyond their operational capacity. This factor has a negative effect on the efficiency of the network, i.e. the useful power divided by the total electrical power. Another factor that has a positive effect on the efficiency of electricity distribution and transmission is the load factor of the transformer, which is the ratio of the effective power taken to the effective power given. In simpler words, this coefficient shows the efficiency of the transformer and its loss coefficient. Two other factors are electricity losses and saving resources, which have negative and positive effects on the efficiency of electricity distribution and transmission, respectively. Resource saving is itself influenced by labor and equipment (capital).

Energy efficiency is defined as the increase in the level of useful energy services provided by a given physical amount of energy (Proskuryakova and Kovalev, 2015). In this framework, three inputs including saving resources (labor and equipment) and quality play an important role in effectiveness. Equipment and labor are affected by the power company's income and the population, respectively. Also, quality is logically influenced by technology and skill. The efficiency of electricity in a T&D network is affected by the efficiency, effectiveness and factor capacity which is the ratio of the actual output (generation) to the theoretical energy output or capacity. Given that large power plants are state-owned, it is reasonable to assume that the size of the government affects their technology and capital, but capital may be financed through the utility revenue, which is itself subject to tariff revenue (after pecuniary discounts or incentives) and the number of customers. In this diagram, the polarity of connections and loops is specified. These polarities determine the behavior of the system.

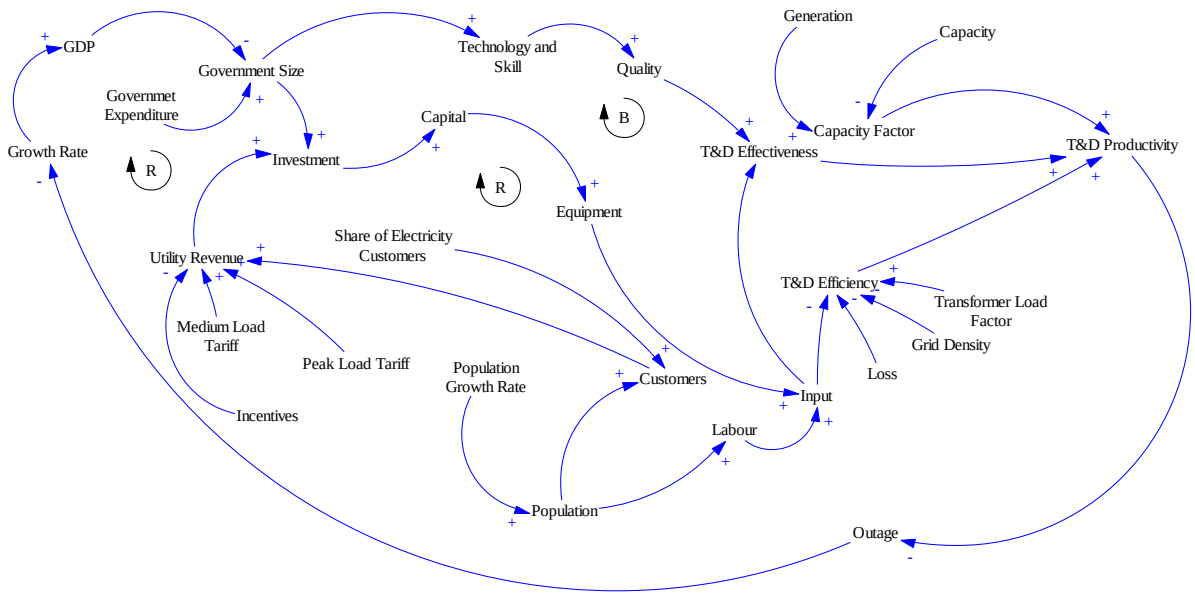

Figure (2):the CLD diagram for electricity productivity in a typical T&D network

Reference: Present Research

Before presenting the SFD, the equation of each variable is presented in Table (1). Based on this table, four variables of GDP, population, capital and productivity have been introduced as stock variables and their changes as rate ones. Accordingly, their equations are written based on integral and differential. For other variables, the proposed equations are presented in the table. These variables are auxiliary and constant.

Table (1): The equation of the system dynamics of the productivity

Variable	Equation
T&D Productivity	$\int (Change\ in\ T\&D\ Productivity)dt$
Change in T&D Productivity	$T\&D\ Efficiency^{\alpha_1} T\&D\ Effectiveness^{\alpha_2}(1 - Capacity\ Factor)$
T&D Efficiency	$Grid\ Density^{\alpha_3} Input^{\alpha_4} Loss^{\alpha_5} Transformer\ Load\ Factor^{\alpha_6}$
Capacity Factor	$Generation/Capacity$
Capacity	Constant
Generation	Lookup
Transformer Load Factor	Constant
Grid Density	Constant
Loss	Constant
T&D Effectiveness	Input. Quality
Input	$\text{Equipment}^{\alpha_7} Labour^{\alpha_8}$
Labour	α_8Population
Equipment	α_9Capital
Customers	Share of Electricity Customers. Population
Share of Electricity Customers	Lookup
Population	$\int (\text{Population Change})dt$
Population Change	Population. Population Growth Rate
Utility Revenue	α_{10}Medium Load Tariff$(1 - \text{Incentives}) + \alpha_{11}$Peak Load Tariff$) * \text{Customers}$
Capital	$\int (\text{Investment})dt$
Investment	$(\alpha_{12}/\text{Government Size})$Utility Revenue
Government Size	Governmet Expenditure/GDP
Government Expenditure	Lookup
GDP	$\int (\text{GDP Rate})dt$
GDP Rate	GDP. Growth Rate
Outage	α_{13}/T&D Productivity
Growth Rate	α_{14}/Outage

Reference: Present research

After mathematical modeling, it is time for SFD, which can be calculated and simulated. This model can be simulated with software such as Vensim or Stella. Figure (3) shows the SFD of power productivity in a typical T&D network.

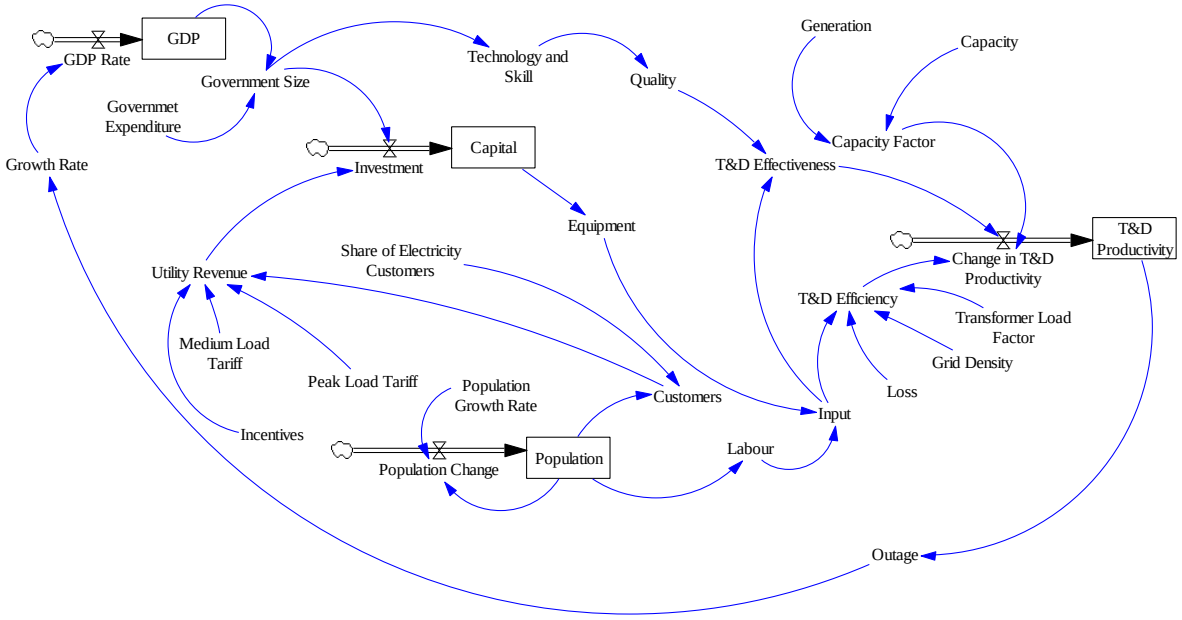

Figure (3): the SFD of power productivity in a typical T&D network

Reference: Present Research

CONCLUSIONS

The main purpose of this article is to model electricity productivity in the transmission and distribution network. For this purpose, a mental model was first designed and based on it, a causal loop diagram was presented. After designing the CLD, the next step is to present a model that can be calculated and simulated, and in this framework, the equations of all the variables are first proposed and then the stock-flow diagram is drawn. This step, which is computational, requires detailed data.

According to the results, the two dimensions of efficiency and effectiveness affect the productivity of electricity distribution and transmission. Efficiency and effectiveness are affected by some economic and technical factors such as government policies, income from customers, network density, transformer load factor and losses.

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THE EFFECT OF CULTURE ON INTERNATIONAL TRADE

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Abstract

Along with other tangible and intangible factors affecting international trade, culture has an undeniable effect on foreign trade. However, our knowledge of the impact of this intangible factor on international trade is limited. The main purpose of this research is to test the hypothesis that culture has a positive effect on international trade. To test this hypothesis, a panel data model has been used for ECO member countries in the period 1991-2021. The findings of this study confirm the hypothesis. Therefore, cultural capacities are an important factor in the development of economic relations. Among other results of this research, we can mention the positive effect of economic structure, competitiveness and foreign direct investment on international trade.

Keywords: Culture, Competitiveness, International Trade, Panel Data, ECO.

JEL Classification: F12, F14, O24, Z13.

INTRODUCTION

Culture is the foundation of any kind of behavior, policy and economic activity. Culture is a scientific concept that is famous for the impossibility to define (Hartley, et al. 2013). Baldwin et al. (2006) provided fewer than 300 definitions, and these authors claimed that these definitions were actually composites of an even larger corpus. Williams describes culture as "one of the two or three most complicated words in the English language". Borofsky suggests that trying to define culture are is like trying to encage the wind (Throsby, 2001). According to Hartley et al. (2013), culture can be defined as a deposit of knowledge, experience, beliefs, values, attitudes, meanings, hierarchies, religion, notions of time, roles, spatial relations, concepts of the universe, and material objects and possessions that a group of people have acquired over generations through individual and group efforts. In this framework, culture as a way of life includes manners, dress, language, religion, rituals, art, behavioral norms, such as law, ethics and morality, and belief systems.

Since the 1980s, especially after the end of the Cold War, economic activities in a homogeneous cultural environment have increased more than before. For example, trade among ASEAN1 members, Taiwan, Hong Kong, South Korea, and China increased from 10% in the 1950s to more than 30% in the 1990s (Guo, 2004). Although there is no doubt about the influence of the culture on international trade, few studies were conducted in this field until the 1990s (Guo, 2004). Regarding the significant influence of language, we can refer to Havrylyshyn and Pritchett (1991), Foroutan and Pritchett (1993), Frankel and Wei (1995), Frankel et al. (1997) and Rauch (1999). Of course, in these studies, only language has been discussed and other cultural factors such as religion have been neglected. In this regard, we can mention Guo (2001) and Guo and Hwang (2002) who consider the role of religion in economic development to be more important than language. Guo (2004) also concluded that religious heterogeneity plays a greater role of religion in US exports than China, while it plays a greater role in China's import compared to the US. Of course, it should not be overlooked that although culture can contribute to the development of economic relations among countries, without taking into account other main factors, this influence is weak and can even disappear. The clear evidence of this argument is the comparison of the two economic integrations of ASEAN (1967) and ECO (1964), which, although they were created in almost the same period of time and the cultural similarities of the member countries are more or less comparable, but the economic results of the two are completely different.

[1] Association of Southeast Asian Nations (ASEAN)

Cultural proximity affects trade flows through preferences and/or trade costs. Two countries that are culturally similar and/or have lower trade costs have a strong preference for each other's products and are therefore more likely to trade between them. Of course, international trade theories generally refer to the second channel to explain trade. Also, based on the macro (country) and micro (enterprise) levels, culture has significant effects on the initiation, continuation and sustainability of international trade. Based on this, the present research seeks to answer the question, what is the effect of culture on international trade? For this purpose, panel data of ECO member countries were used in the period of 1991-2021 and the hypothesis that culture has a positive and significant effect on international trade was tested.

This article is organized in such a way that after the introduction, the second section is dedicated to culture and trade. The specifications and estimation of the selected model are given in the third section. Conclusion is presented in the fourth section. Finally, the last section is devoted to references.

CULTURE AND TRADE

Almost no economic development and evolution of societies is desirable and possible without cultural development and evolution. Since the late 1970s, the thought was formed that technology transfer alone cannot solve the problems of developing countries and that it may be necessary to accompany this transfer with appropriate cultural measures. Cultural development became serious from this time and showed that the import of tools gradually loses its efficiency due to lack of harmony with the culture and after a short period of time the capital spent for their preparation cannot be justified in any way. Therefore, cultural development is increasing the power and efficiency of a culture in responding to the cultural, spiritual and material needs of humans. According to the definition of UNESCO (1982), cultural development is a process during which special personalities are created by making changes in the perceptual, cognitive, value and tendency fields of humans, their abilities and beliefs. The result is specific beliefs, capabilities, behaviors, and actions that are appropriate for development.

The influence of culture on trade can be examined at two levels, macro and micro. According to Linder's hypothesis, the potential range of export goods is determined by domestic demand, and for a good to be potentially exportable, it is necessary (not sufficient) that this good be consumed or invested in domestically. When the growth of domestic firms is limited by domestic demand, these firms turn their attention to foreign markets. Therefore, according to Linder (1961), international trade is nothing but the development of the network of activities of domestic firms. Likewise, if there is domestic demand, some goods are considered to be potentially imported to meet domestic demand. On the other hand, Hunter and Markusen (1988) presented a model in which a country with low (high) per capita income produces and exports necessary (luxury) goods. They proposed the opposite of Linder's hypothesis, according to which, when the per capita income (consumption patterns) of two countries converges, international trade disappears. However, following successful empirical tests, Linder's hypothesis became the leader of new trade models. The remarkable point in Linder's hypothesis is that trade depends on the demand structure, which, as Linder (1961) has pointed out, is also dependent on cultural factors in addition to various economic factors. In this framework, countries with relatively similar cultures are expected to have similar consumption patterns and subsequently experience mutual trade, especially in differentiated goods.

From another point of view, with the increase of international interactions, awareness of national and international culture becomes necessary and important. Meanwhile, international trade is formed and developed based on structural differences. Among the structural differences, we can mention the difference in productivity, which is itself affected by the domestic and international work culture, the difference in technology, the difference in demand patterns that directly and indirectly depends on the culture, and the differences on the supply side. In this context, cultural differences can lead to international trade. Culture can also be seen as an obstacle to trade because it may not be possible to form trade at least in a part of the goods group due to linguistic and religious differences.

Considering the micro (firm) level, the factors affecting the selection and entry into the target market are also important (Takayama, 2017). At the macro level, firms select the target market and plan for market development based on economic components such as GDP, consumer purchasing power and willingness to consume. But this neglects other components, especially culture, and perhaps that is why, in practice, market penetration and development strategies fail. Gemawat (2001) introduces a framework called CAGE, which includes cultural, administrative, geographic and economic components. In the cultural part of this model, the linguistic, ethnic, social and religious differences and the parts affected by these components are mentioned. In this regard, products that have a high linguistic content such as food items have received the attention of Gemawat (2001). In this regard, some researchers have concluded that firms enter a country where they observe a similar culture (Takayama, 2017).

Another theory proposed by the Scandinavian school states that firms tend to aggressively enter countries that are geographically and culturally similar to their country after operating and experiencing in the domestic market (Johanson and Wiedersheim-Paul, 1975). The reason is that adapting to a foreign culture is time-consuming and costly, and cultural differences can increase market entry costs, reduce operational benefits, and hinder the ability to transfer basic competencies to foreign markets (Palich and Gomez-Mejia, 1999). Cultural familiarity theory also states that companies are less likely to invest in countries that are culturally distant, and if they invest in these countries, they will perform worse (Lee et al., 2008).

Trade is not frictionless and there are many barriers to trade that increase the costs of trading goods and services. Until the 1980s, trade theories focused on an ideal, unrealistic world and even assumed zero transportation costs. This issue was due to the simplification of the model, its generalizability, as well as the lack of promotion of public understanding of important trade issues. Since the 1980s, the literature on new trade theories has developed and, in addition to other generalizations, transaction costs have been added to these models in the iceberg framework. In this framework, cultural capacities theoretically and practically play an important role in international trade, so that the role of culture in determining trade and development cannot be neglected.

MODEL SPECIFICATION AND ESTIMATION

The main purpose of this research is to test the hypothesis of the positive effect of culture on trade. For this purpose and based on the theoretical and empirical background, the following equation (Equation 1) has been specified and estimated based on the panel data of ECO member countries in the period 1991-2021:

$$Trade_{i,t} = \beta_0 + \beta_1 CUL_{i,t} + \beta_2 GDP_{i,t} + \beta_3 STRUCTUREi,t + \beta_4 RER_{i,t} + \beta_5 FDI_{i,t} + \varepsilon_{i,t} \quad (1)$$

Where, $Trade_{i,t}$ is the total trade of country i in year t. Also, $CUL_{i,t}$ is cultural globalization, which is the social globalization sub-index of KOF[2]. Other variables of the selected model are $GDP_{i,t}$, $STRUCTUREi,t$ $RER_{i,t}$, and $FDI_{i,t}$, which are respectively the size of the economy (GDP), economic structure (share of industry in GDP), competitiveness (real exchange rate) and foreign direct investment, all for country i in year t. Finally, $\varepsilon_{i,t}$ represents the error term. This equation is estimated using FGLS for panel data of ECO member countries during the time period 1991-2021. All data are collected and processed from the World Bank and KOF Swiss Economic Institute.

Table (1) shows the estimation results of equation (1). According to Wald's test, the null hypothesis that all coefficients are zero is rejected at the significance level of 1%. As Table (1) shows, all the variables are $I(0)$ and even the co-integration test shows that there is a long-run relationship between dependent and independent variables and the regression is not spurious. Based on this table, the model is properly specified and is statistically significant.

As Table (1) shows, all coefficients of the variables are statistically significant. According to this table, culture has a positive effect on the foreign trade of ECO member countries. This result seems logical because from both macro and micro aspects, culture reduces trade costs and facilitates market entry and continuation of activities in the international market. Also, the estimation results of the selected model show that GDP improves foreign trade. This variable shows both economies of scale and the ability of countries to enter foreign markets. The positive and significant effect of the economic structure (the share of industry in GDP) indicates the great importance of industrialization in the development of international trade. The interesting thing to note is the similar effect of this variable and cultural globalization, which can show the equal weight of the two variables in some ways. The effect of foreign direct investment on foreign trade is also estimated to be positive and significant. This finding is not far from expected because the capital inflow not only leads to the entry of technology and improvement of economic efficiency, but also in terms of market development and taking advantage of economies of scale, it can be effective on foreign trade. Finally, the real exchange rate as an index of competitiveness shows a positive effect on foreign trade, which shows the importance of this index in international trade.

[2] KOF globalization measures the economic, social, and political dimensions of globalization. Cultural globalization is the sub-index of social globalization. This sub-index includes trade in cultural goods, trade in personal services, international trademarks, McDonald's restaurants and IKEA stores (https://kof.ethz.ch)

Table (1): Estimation results of equation (1) using Feasible Generalized Least Squares (FGLS)

Variable	Coefficient	z	Prob.	Stationary Test, H0: All panels are stationary
$Trade_{i,t}$	--	--	--	54.8492 (0.0000)
$CUL_{i,t}$	0.1010584	2.08	0.037	44.5736 (0.0000)
$GDP_{i,t}$	4.45e-10	25.79	0.000	52.2627 (0.0000)
$STRUCTUREi,t$	0.1062426	3.03	0.002	13.3328 (0.0000)
$FDI_{i,t}$	9.72e-10	3.18	0.001	29.5187 (0.0000)
$RER_{i,t}$	0.0009752	2.78	0.005	15.6333 (0.0000)
Number of Observations	310			
Wald Chi2	0.0002			
Co-Integration test	1.7879			0.03

Note: Present study using STATA 17

CONCLUSIONS

The main purpose of this research is to test the hypothesis of the positive effect of culture on trade. For this purpose, a model of panel data of ECO member countries during the time period 1991-2021 has been specified and estimated.

According to the results, culture has a positive and significant effect on the foreign trade of ECO member countries. This result seems plausible because from both macro and micro aspects, culture reduces trade costs and facilitates market entry and continuation of activities in the international market. The effect of foreign direct investment on foreign trade is also estimated to be positive and significant. This finding is not far from expected because the capital inflow not only leads to the entry of technology and improvement of economic efficiency, but also in terms of market development and taking advantage of economies of scale, it can be effective on foreign trade. This variable can also indicate the effect of culture in international trade because foreign investment can contribute to cultural similarity and provide the basis for the development of foreign trade. Other results show that GDP, economic structure and competitiveness improve foreign trade.

The last word is to understand the importance of the influence of culture in international relations and international trade, which is the extract of this research.

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BANK PROFITABILITY AND COVID-19 PANDEMIC IN TURKISH BANKING SECTOR: A SUR ANALYSIS

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Abstract

All countries have lowered their interest rates as an initial response to the Covid-19 pandemic. Turkey is the country that has reduced its interest rate the most in the world. The bank credit channel has become the main policy implementation to mitigate the negative effects of the pandemic on the economy. Therefore, an analysis of profitability in the banking sector in Turkey is important during this period. This study examines the effects of bank internal variables and the Covid-19 pandemic on the profitability of the top 10 banks operating in the Turkish banking sector by balance sheet size between 2002 and 2021, using the seemingly unrelated regression (SUR) analysis method. The findings reveal that Total Loans/Total Assets and Non-Interest Income/Total Income variables have positive and significant effects on profitability for all banks. The effects of Equity/Total Assets and Deposits/Total Assets variables on profitability vary among banks. The Covid-19 pandemic has negatively and significantly affected the profitability of public banks. On the other hand, no significant relationship between profitability and the pandemic dummy variable has been detected for private banks. According to the mean group SUR model results, there is a positive and significant relationship between profitability and Total Loans/Total Assets and Non-Interest Income/Total Income variables, and a negative and significant relationship between profitability and Equity/Total Assets, Deposits/Total Assets and covid dummy variables.

Keywords: Bank profitability, Covid-19 pandemic, Seemingly unrelated regression, Turkish banking sector.

Özet

Covid-19 pandemi döneminde tüm ülkeler ilk tepki olarak faiz oranlarını düşürmüşlerdir. Türkiye, dünyada en fazla faiz oranını aşağı çeken ülkedir. Salgının ekonomide yaratacağı olumsuz etkileri bertaraf etmek için banka kredi kanalı temel politika aracı olmuştur. Bu nedenle, bu dönemde Türkiye'de bankacılık sektöründe karlılığa ilişkin analiz önem arz etmektedir. Bu çalışma, banka içsel değişkenleri ve Covid-19 pandemisinin 2002-2021 yılları arasında Türk bankacılık sektöründe faaliyet gösteren bilanço büyüklüğüne göre ilk 10 bankanın karlılığı üzerindeki etkilerini, görünüşte ilişkisiz regresyon (SUR) analiz yöntemini kullanarak incelemektedir. Bulgular, Toplam Krediler/Toplam Varlık ve Faiz Dışı gelirler/Toplam Gelirler değişkenlerinin tüm bankalar için kârlılık üzerinde pozitif ve anlamlı etkileri olduğunu ortaya koymaktadır. Özsermaye/Toplam Varlık ve Mevduat/Toplam Varlık değişenlerinin karlılık üzerine etkileri bankalar arasında farklılık göstermektedir. Covid-19 pandemisi kamu bankalarının karlılığını negatif ve anlamlı şekilde etkilemiştir. Buna karşın, pandemi kuklası ile karlılık arasında özel bankalar için anlamlı bir ilişki tespit edilememiştir. Ortalama grup SUR modeli sonuçlarına göre, karlılık ile Toplam Krediler/Toplam Varlık ve Faiz Dışı gelirler/Toplam Gelirler arasında pozitif ve anlamlı bir ilişki, Özsermaye/Toplam Varlık, Mevduat/Toplam Varlık ve covid kukla değişkenlerinin arasında ise negatif ve anlamlı bir ilişki vardır.

Anahtar Kelimeler: Banka Karlılığı, Kovid-19 Pandemi dönemi, Görünürde ilişkisiz regresyon analizi, Türk bankacılık sektörü

INTRODUCTION

The basic function of banks is to establish a link between individuals and institutions with excess funds in an economy and individuals and institutions in need of funds. Banks, which are one of the important elements of monetary and credit policy in the economy, aim to maximize profits while fulfilling the function of transferring resources from units with financing capacity to units with financing deficits. In order to maintain their profitability, banks need to operate more efficiently with a wider range of products in the face of pressures and risks brought

about by some factors such as technological developments, globalization, state intervention and capital adequacy. Especially as a result of globalization, the operation of foreign banks in domestic markets has increased competition between banks and narrowed profit margins.

Bank profitability refers to the financial performance and the ability of a bank to generate profits from its operations. It is a key indicator of a bank's financial health and sustainability. Profitability is essential for a bank's long-term success as it allows the institution to cover operating expenses, maintain capital reserves, and provide returns to shareholders. Several factors contribute to a bank's profitability, the Net Interest Margin (NIM) is one of the primary sources of income for banks. It represents the difference between the interest earned on loans and investments and the interest paid on deposits and borrowings. A higher NIM typically indicates better profitability. Moreover NIM banks generate revenue from various non-interest sources, such as fees, commissions, trading activities, investment banking, and asset management as Non-Interest Income. Diversifying income sources can enhance profitability. Furthermore controlling operating expenses is crucial. Banks need to manage costs efficiently to ensure that expenses do not erode profits. This is also effects to operating efficiency and asset quality. The quality of a bank's loan portfolio affects profitability. Non-performing loans can result in losses and higher provisioning expenses. In connection with these parameters Capital Adequacy: Maintaining an adequate level of capital is essential for absorbing unexpected losses and ensuring the bank's solvency. Inadequate capital can lead to lower profitability.

Bank profitability in Turkey varies depending on similar factors in all countries in the world. In general, the profitability of banks in Turkey is primarily determined by macroeconomic parameters, as in all economic activities. Economic growth GDP, unemployment rates and inflation are the main ones. Since these variables form the basis of structural problems in the economy, it is inevitable that they will also affect bank profitability. Interest rates, crrency exchange rates, regulatory institutions (TCMB, BDDK), credit quality, Competition in the finance market, inovative applications, political developments and stability, rates of capital adequacy, foreign developments and operations are can be said as main determinants of Bank profitability in Turkey. Furthermore, Turkey's banking sector can be subject to unique challenges and opportunities based on its economic and geopolitical context, and these factors can evolve over time. Therefore, when making a comparative analysis of the profitability of banks in Turkey, the factors that need to be taken into consideration are very diverse. In our study, both the world literature and the characteristics of the banking sector in Turkey were taken into consideration in the selection of variables while making comparative analyses.

LITERATURE REVIEW

Profitability of a bank is influenced by its internal factors, which are referred to as bank-specific factors. These factors comprise operational efficiency, risk aversion (capital ratio), liquidity, and credit quality. Bank-specific factors exert a significant effect on the bank's profits. The determinants of bank profitability in emerging economies have been a subject of long debate. Various bank-specific factors that influence profitability have been empirically investigated by numerous studies. Some of these studies are summarized below.

Total Loans/Total Assets and profitability relationship: Credit is an essential element of a bank's operational activities. Most banks rely on lending as their main source of income, which accounts for a large share of their business income (Andrianto et al., 2019:84). Hence, expanding the amount of loans to the community can increase the bank's income. Several studies have investigated the relationship between loan growth and bank profitability and found empirical evidence for a positive relation between credit and ROA (Rossi et al., 2019; Dang, 2019; Negara & Sujana, 2014; Koten 2021; Wijayanti and Mardiana 2020). This suggests that loan growth positively affects bank profitability in the following years. However, some studies have reported different findings. Fahlenbrach et al., (2018) and Sukmawati & Purbawangsa (2016) reported that bank loan growth negatively influenced profitability. Paul et al., (2016) and Menicucci & Paolucci (2016) reported that bank loan growth had a positive but insignificant influence on profitability.

Deposits/Total Assets and profitability relationship: This topic has received inconclusive results in the literature. Some studies have asserted that deposits positively affect profitability, while others have suggested a negative or negligible effect. The proponents of the positive effect have reasoned that deposits are a cheap and stable source of funds, which increase the banks' interest margins on loans and lower their risk (Kosmidou 2016; Sufian and Habibullah 2017; Erbir 2020). Those who support the negative effect have argued that deposits have a high cost, that banks have to increase their interest payments due to competitive pressure, and that credit quality is impaired (Zarruk 1989; Berrios 2013; Otekunrin et al., 2019).

Equity/Total Assets and profitability relationship: Profitability is a function of the equity/total assets ratio, which varies depending on several factors. These include the cost and risk of debt, the tax implications of debt financing, and the growth potential of the firm or bank. Empirical evidence is mixed on the direction of this relationship. Some studies indicate that a higher equity/total assets ratio enhances profitability by reducing interest and financial distress costs. (Mateev et al., 2023; Shafee et al. 2021) Other studies suggest that a lower equity/total assets ratio boosts profitability by increasing leverage and tax benefits. The optimal equity/total assets ratio may be contingent on the industry, country, and time context. According to Chan and Karim (2010), there is a negative relationship between equity to total assets ratio and efficiency, implying that higher efficiency can be achieved by either using more debt in financing bank operations or relaxing regulatory constraints. Similarly, using multiple regression model, Birru (2016) examined the effect of capital structure variables on the financial performance of commercial banks for the period 2011 to 2015 and found a significant negative effect of equity to total assets ratio, as a proxy for capital structure, on bank profitability.

Non-interest income and profitability relationship: The relationship between non-interest income and bank performance has been extensively examined in the literature on developed and developing countries, but the findings are inconclusive. According to some studies, profitability can be enhanced by non-interest income, as it diversifies the revenue sources and reduces the exposure to interest rate risk (Baele et al. 2007; Meslier et al. 2014). However, some studies have reported that non-interest activities may adversely affect bank profitability by increasing the operational costs and regulatory burdens associated with them, such as staff salaries, technology investments, compliance requirements, etc. (Lee et al., 2014; Stiroh, 2004). Moreover, non-interest activities may entail conflicts of interest and moral hazard problems for banks, as they may induce them to engage in risky or unethical practices that harm their customers or shareholders (Williams, 2016; Boungou, 2019).

Bank profitability during the pandemic period: The financial performance of banks, especially their profitability, was severely affected by the COVID-19 pandemic. The pandemic resulted in high non-performing loan rates, increased liquidity holdings, excessive hedging capital, and suboptimal bank size, which reduced the banks' profitability (Demirgüç-Kunt et al., 2021). The pandemic had an adverse economic effect that led to a tightening of credit standards and a decline in demand for various types of loans (Acharya et al., 2020; Altavilla et al., 2020; Li et al., 2021).

DATA AND METHODOLOGY

Methodology

Zellner (1963) developed the Seemingly Unrelated Regression (SUR) model and applied the Generalized Least Squares (GLS) technique, which Aitkin (1935) had used earlier, to estimate the parameters of the whole system of equations. He found that the system-wide GLS estimates were more efficient than the separate Ordinary Least Squares (OLS) estimates for each equation (Zellner, 1962: 363). He also confirmed his findings in a later study using a two-equation model and obtained similar results to his previous work (Zellner, 1963: 988-989).The Seemingly Unrelated Regression model was developed by Zellner (1962). The model in question is as follows.

$y1t = \beta_1^{`} x1t + u1t$

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.

$yNt = \beta_N^{`} xNt + uNt$

(i = 1, …….., N)

(t = 1, …..…, N)

yNt is the dependent variable, xNt is the vector of explanatory variables, and uNt is the error term.

A seemingly unrelated regression model is a regression between more than one dependent variable and one or more independent variables. An apparently unrelated regression model consisting of n observation numbers, n dependent variables and n independent variables is shown in matrix form as follows.

$$\begin{bmatrix} y_1 \\ . \\ . \\ . \\ . \\ . \\ y_N \end{bmatrix} = \begin{bmatrix} x_1 & 0 & . & . & . & 0 \\ 0 & x_2 & . & . & . & 0 \\ . & . & . & . & . & . \\ . & . & . & . & . & . \\ . & . & . & . & . & . \\ . & . & . & . & . & . \\ 0 & 0 & . & . & . & x_N \end{bmatrix} \begin{bmatrix} \beta_1 \\ \beta_2 \\ . \\ . \\ . \\ . \\ \beta_N \end{bmatrix} + \begin{bmatrix} u_1 \\ u_2 \\ \\ \\ \\ \\ u_N \end{bmatrix}$$

$Yt = Xt\beta + Ut$

The OLS method can estimate the SUR model by creating separate equations for each dependent variable in the above model. However, if the error terms across the equations are highly correlated and the explanatory variables in different equations are unrelated to each other, the joint estimation of the equations that form the GIR model will be more efficient than the OLS method, which is applied to each equation separately. This is because the OLS method produces unbiased and consistent but inefficient parameter estimates. The GLS method, which can account for the correlation among the equation errors, improves the efficiency of the estimation (Aksakal & Çilan, 2015).

The GLS method is used to estimate the SUR model. In the GLS method, the variance-covariance matrix of the error terms is incorporated into the regression. The elements of the variance-covariance matrix are unknown in applied studies. Zellner proposed to use the error terms obtained from the separate OLS estimation of each equation. Then, the estimated variance-covariance matrix is used in the β estimator, and the GLS estimator of the SUR model is obtained as follows.

$$\hat{\beta}_{GEKK} = \left(X'\Omega^{-1}X\right)^{-1} X'\Omega^{-1}Y$$

This estimator is also called the Zellner estimator or Aitken's two-stage generalized least squares estimator.

Data and Descriptive statistics

The study conducted a profitability analysis using internal variables specific to 10 banks (Akbank, Denizbank, Garanti, Halkbank, QNB, Türkiye Ekonomi Bankası, Vakıflar Bankası, Yapı Kredi, Ziraat Bankası, İş Bankası) operating in the Turkish economy. The data for the banks covered the period from 2002 to 2021. The data were obtained from the official website of the Banks Association of Turkey. The table below shows the variables and their definitions.

Tablo 1. Variable definitions

Variable	Definition
ROE	Return on equity
NNII	Ratio of non-interest income to net operating income
LOANS	Ratio of loans to total assets
DEPOSITS	Ratio of deposits to total assets
EQUITY	Ratio of equity to total assets
COVID	Dummy variable equal to 1 for the coronavirus period

The table below presents the descriptive statistics of the variables for the 10 banks. The table shows the mean and standard deviation values of the variables.

Table 2. Descriptive statistics

Variable	N	Mean	Standard Dev.	Min	Max
ROE	200	15.995	6.682	-1.3	40.3
NNII	200	85.017	7.252	63.88	103.86
LOANS	200	54.533	14.222	10.5	73.95
DEPOSITS	200	63.403	6.675	49.66	84.32
EQUITY	200	10.968	2.401	4.83	19.84

EMPRICAL RESULTS

Table 3. Correlation Matrix of Error Terms Obtained from Models Related to Banks

	ROE1	ROE2	ROE3	ROE4	ROE5	ROE6	ROE7	ROE8	ROE9	ROE10
ROE1	**1.000**									
ROE2	0.339	**1.000**								
ROE3	0.524	0.187	**1.000**							
ROE4	-0.017	-0.097	0.482	**1.000**						
ROE5	0.523	0.257	0.447	-0.274	**1.000**					
ROE6	0.473	0.303	0.132	-0.058	0.018	**1.000**				
ROE7	0.224	-0.147	0.472	0.358	0.376	-0.326	**1.000**			
ROE8	-0.046	-0.018	-0.134	0.132	-0.259	-0.401	0.129	**1.000**		
ROE9	0.317	-0.134	0.142	0.301	-0.254	0.241	-0.129	0.129	**1.000**	
ROE10	0.404	0.134	0.736	0.286	0.173	0.151	0.301	-0.274	0.195	**1.000**
Breusch-Pagan test of independence: chi2(45) = 80.280 Pr = 0.0010										

The correlation matrix of the error terms obtained from the model for each bank and the results of the Breusch-Pagan Cross-Sectional Dependence (Lagrange multiplier) test are shown in Table 3. When Table 3 is examined, it is seen that there is a high degree of correlation between the error terms of Akbank-Garanti, Akbank-QNB, Akbank-Türkiye Ekonomi Bankası, Akbank-İş Bankası, Garanti-Halkbank, Garanti-QNB, Garanti-Vakıflar Bankası and Garanti-İş Bankası equations. In addition, the probability value of the Lagrange Multiplier test has been realized below 0.05 (0.010) and the null hypothesis that there is no cross-sectional dependence has not been rejected. In this context, due to the fact that the error terms of the equations related to the sample banks in the study are related to each other, that is, there is cross-sectional dependence, the "Seemingly Unrelated Regression (SUR)" estimation method can be used (Yerdelen Tatoğlu, 2012: 52). The basic logic behind this model is that although the equations are assumed to be independent of each other, the error terms of the equations are correlated with each other (Vogelvang, 2005: 174). The Seemingly Unrelated Regression method has certain advantages in terms of using the units in a system and taking into account the dependence that is not thought to be apparent between them in its estimates, as well as producing separate results for each unit.

Table 4. Pesaran and Yamagata (2008) Test Results

	Delta	P-value
Δ	3.478	0.001
Adj-Δ	4.313	0.000

The results of the delta tests in Table 4 indicate that the null hypothesis of "the slope coefficients are homogeneous" is rejected because the p probability values of the D and adj-Δ tests are lower than 0.05. Therefore, the panel has a structure with cross-sectional dependence and heterogeneous slope coefficients.

Table 5. Overall Statistical Significance of Equations

Equation	RMSE	R2	Chi2	Probability
ROE1	2.27	0.6896	105.91	0.0000
ROE2	3.22	0.5732	27.21	0.0001
ROE3	4.09	0.4296	55.13	0.0000
ROE4	3.26	0.8308	153.32	0.0000
ROE5	5.14	0.4470	49.97	0.0000
ROE6	1.88	0.6345	84.10	0.0000
ROE7	4.35	0.6330	58.32	0.0000
ROE8	27.77	0.5776	36.17	0.0000
ROE9	4.76	0.7150	56.90	0.0000
ROE10	1.88	0.6650	89.51	0.0000

The p values in Table 5 show that the equations estimated for each bank are statistically significant at the 1% level. The R2 values of the 10 equations indicate that they have a high explanatory power. Table 6 presents the panel SUR estimator results for each bank.

Table 6. Panel SUR Estimations for Turkish banks

Dependent Variable	Independent Variables	Coefficient	Std. Error	z	P>|z|
ROE1 (Akbank)	LOANS	-.0840226	.0513988	-1.63	0.102
	DEPOSITS	-.1832762	.1213603	-1.51	0.131
	EQUITY	-.6861222	.1624176	-4.22	0.000
	NNII	2.951823	.4021255	7.34	0.000
	COVID	-1.394848	1.390447	-1.00	0.316
	Constant	34.93302	8.613608	4.06	0.000
ROE2 (Deniz Bank)	LOANS	.0885836	.0874654	1.01	0.031
	DEPOSITS	-.4488031	.1630604	-2.75	0.006
	EQUITY	.6030218	.5664601	1.06	0.287
	NNII	3.026322	1.123075	2.69	0.007
	COVID	-5.107534	2.178212	-2.34	0.019
	Constant	25.52327	15.80089	1.62	0.106
ROE3 (Garanti)	LOANS	.5472005	.1126071	4.86	0.000
	DEPOSITS	-.1396058	.2504383	-0.56	0.577
	EQUITY	-1.988939	.4096116	-4.86	0.000
	NNII	4.899566	.8464073	5.79	0.000
	COVID	-6.048882	3.354256	-1.80	0.071
	Constant	8.254405	19.29064	0.43	0.669
ROE4 (Halkbank)	LOANS	.2094646	.0577492	3.63	0.000
	DEPOSITS	.9379052	.1315435	7.13	0.000
	EQUITY	-.8405108	.5180768	-1.62	0.105
	NNII	7.206375	.9194637	7.84	0.000
	COVID	-5.910564	2.998193	-1.97	0.049
	Constant	-60.67085	13.10079	-4.63	0.000
ROE5 (QNB)	LOANS	.3654866	.1354315	-2.70	0.007
	DEPOSITS	.4092899	.1366961	2.99	0.003
	EQUITY	-1.177606	.6538058	-1.80	0.072
	NNII	1.918802	.4532366	4.23	0.000
	COVID	-1.358795	3.886035	-0.35	0.727
	Constant	25.54812	12.26877	2.08	0.037
ROE6 (Türkiye Ekonomi Bankası)	LOANS	.1281127	.0413418	3.10	0.002
	DEPOSITS	.3139403	.1171088	2.68	0.007
	EQUITY	-1.950963	.2529924	-7.71	0.000
	NNII	3.396635	.6198218	5.48	0.000
	COVID	1.230371	1.679271	0.73	0.464
	Constant	-1.86122	8.378984	-0.22	0.824
ROE7 (Vakıf Bank)	LOANS	-.1704501	.1048385	-1.63	0.104
	DEPOSITS	.2068666	.2077035	1.00	0.319
	EQUITY	-2.148426	.4851658	-4.43	0.000
	NNII	.0929073	1.160669	0.08	0.093
	COVID	-11.89232	3.283754	-3.62	0.000
	Constant	34.55896	16.83978	2.05	0.040
ROE8 (Yapı Kredi)	LOANS	1.592568	.8616748	1.85	0.065
	DEPOSITS	-12.47681	2.625011	-4.75	0.000
	EQUITY	-2.726468	2.962271	-0.92	0.357
	NNII	34.28498	8.095399	4.24	0.000
	COVID	-23.86546	20.95781	-1.14	0.255
	Constant	616.6273	188.225	3.28	0.001
ROE9 (Ziraat Bankası)	LOANS	.2768892	.1389281	1.99	0.046
	DEPOSITS	.9509614	.2503476	3.80	0.000
	EQUITY	-.896269	.8670436	-1.03	0.301
	NNII	3.171624	3.386479	0.94	0.349
	COVID	-12.64567	3.722562	-3.40	0.001
	Constant	-52.71044	27.5309	-1.91	0.056
ROE10 (İş Bankası)	LOANS	.1526775	.0532644	2.87	0.004
	DEPOSITS	.4200196	.1051018	4.00	0.000
	EQUITY	-1.031309	.1718466	-6.00	0.000
	NNII	1.226277	.5187214	2.36	0.018
	COVID	-2.441025	1.354461	-1.80	0.072
	Constant	-9.44012	9.281482	-1.02	-1.02

Table 7. Panel SUR-MG Results

Variable	Coefficient	Standard Error	t-statistic
LOANS	0.237554	0.090663	2.620195
DEPOSITS	-1.00095	0.267606	-3.74039
EQUITY	-1.28436	0.332666	-3.86081
NNII	6.217531	0.906611	6.857991
COVID	-6.94347	2.259523	-3.07298
Constant	62.07624	19.40224	3.199438

Table 6 shows a positive and significant relationship between the LOANS variable and profitability for all banks. Previous studies have suggested that the relationship between the ratio of total loans to total assets and profitability may depend on bank characteristics, market conditions and economic factors. Our results are in line with Koten (2021) and Wijayanti and Mardiana (2020). The DEPOSITS variable has a positive and significant relationship with profitability for Halkbank, QNB, Türkiye Ekonomi Bankası, Ziraat Bankası and İş Bankası, whereas a negative and significant relationship is found for Denizbank and Yapı Kredi Bankası. No significant relationship is observed for Akbank, Garanti and Vakıfbank. The different results of the DEPOSITS variable among banks could be explained by the downward trend of net interest margin over the years and the different shares of foreign currency deposit accounts in total deposits for each bank. The results show that the EQUITY variable negatively affects profitability for all banks except Ziraat and Yapı Kredi banks. This could be explained by the fact that banks increase their equity to raise their capital adequacy ratio, which in turn increases their operating costs. The results are consistent with Chan and Karim (2010) and Birru (2016). The results reveal a positive and significant relationship between the NNII variable and profitability for all banks except Ziraat Bank. This could be attributed to the fact that non-interest income provides more income diversification and reduces the dependence on interest income for banks. Moreover, non-interest income offers higher margins and protects banks from interest rate fluctuations and enables them to increase their lending capacity. The findings on the relationship between the NNII variable and profitability are consistent with Baele et al. (2007) and Meslier et al. (2014). The results of the dummy variables added to the model for the Covid-19 period indicate that state-owned deposit banks have lower profitability than other banks due to the role they play in stimulating the market. These banks also have lower capital adequacy ratios than the sector average, as they allocate excessive resources through state-owned deposits. The COVID dummy variable has a negative and statistically significant effect on the ROE of banks. This reflects the adverse economic impact of the pandemic, which led to tighter lending standards and lower demand for various types of loans. Consequently, banks experienced a predictable decline in their profitability during the COVID-19 period.

CONCLUSION

Covid-19 has caused a macro-level recession in Turkey, as in all countries in the world. The contraction in question is not only supply-side but also demand-side. Governments have created a variety of policies to prevent recession during this period. Interest rate instruments have been used more within the scope of these policies. Because interest rates are an instrument that has both supply-side and demand-side effects against recession. Turkey, like the rest of the world, has reduced interest rates. Thus, while financial support was provided to producers, the decreasing demand level was also supported. Turkey has been the most generous country in the world in terms of interest rate reductions.

Although the interest rate reduction made in Turkey increased inflationary pressures, it achieved its goal in terms of increasing the total demand, which entered a decreasing trend during the Covid-19 pandemic. As a matter of fact, Turkey has been the country that made the highest interest rate reductions in the world during the pandemic period.

The main policy implementation used within the scope of the pandemic period exit policy, also referred to as the Covid 19 crisis, is the interest rate reduction. This was implemented through banks. The effects of the interest rate reduction process on macroeconomic parameters such as total demand and/or inflation are as important for the banking sector as they are for all developed and developing countries. Because the banking sector is the most important sector for the Turkish economy as well. It is both the locomotive of the service sector, which constitutes two-thirds of the gross national product. It also has a complementary role as it is the source of financing for the real sector. In this case, it is extremely important how the interest rate reduction policy operating on the banking sector affects the banking sector.

Regardless of the sector, the most important indicator that determines the performance of a sector is its profitability. Similarly, the profitability of banks, which are at the center of the interest rate reduction policy, is especially important. For this purpose, a profitability analysis was conducted for our banks using the SUR method mentioned above.

In this context, the 10 largest banks operating in Turkey by balance sheet size were included in the analysis. It reveals that the variables Total Loans/Total Assets and Non-Interest Income/Total Income have positive and significant effects on profitability for all banks. In addition, no significant relationship was found between the pandemic dummy and profitability for private banks. According to the average group SUR model results, it was concluded that there is a positive and significant relationship between profitability and Total Loans/Total Assets and Non-Interest Income/Total Income, and a negative and significant relationship between Equity/Total Assets, Deposits/Total Assets and Covid dummy variables. In light of these results, interest rate cuts for the Turkish economy during the interest rate cut process have given different results for different banks and different indicators on bank profitability. As a result, it cannot be stated that interest rate cuts have a positive result on profitability in the Turkish banking sector. Because the aim of interest rate cuts is not to increase bank profitability anyway.

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APPLICABILITY OF THE" POLLUTER PAYS" PRINCIPLE IN ENVIRONMENTAL LAW RELATIONSHIPS

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Abstract

The" polluter pays" principle, which is enshrined differently in national laws and international texts, is inspired by economic theory, according to which the external social cost of industrial production must be internalized, i.e. taken into account by economic agents in their production costs. Put simply, the principle aims to charge the polluter with the social cost of the pollution he generates. [1]

In this context, it should be noted that this principle expresses the idea that the polluter, i.e. the natural or legal person who causes damage by polluting the environment, will be held liable regardless of whether or not his or her act is culpable.

The question has been raised as to who ultimately bears these costs and what is the object of payment?

According to the Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Helsinki 1992) [2], (...) the costs of measures to prevent, control and abate pollution shall be borne by the polluter" (Article 2, paragraph 5(b)).

Thus, lato sensu, the aim is to impute the social cost of the pollution caused, covering all the effects of pollution (both those produced on goods and persons and those produced on the environment) and stricto sensu, the aim is only to impute the cost of anti-pollution and pollution abatement measures.

Keywords: environment, principles, protection activities, environmental policies, polluter pays principle

INTRODUCTION

As environmental issues are becoming increasingly complex and contentious, environmental protection concerns are reflected in the application of principles common to national and international law. Although their concrete content has been clarified and formulated in various ways, their essential legal significance remains the same.

The "polluter pays" principle, which is enshrined differently in national laws and international texts, is inspired by economic theory, according to which the external social cost of industrial production must be internalized, i.e. taken into account by economic agents in their production costs. Put simply, the principle aims to charge the polluter with the social cost of the pollution he causes. [1]

In this respect, it should be noted that this principle expresses the idea that the polluting agent, i.e. the polluter - the natural or legal person who causes damage by polluting the environment will be held liable regardless of whether or not his or her act is culpable.

This principle is inspired by economic theory, according to which the external social costs that accompany industrial production must be internalized, i.e. taken into account by all economic agents in their production costs.

Thus, the activity of obtaining material goods, as a result of the industrial production process, cannot fail to include environmental reproduction. However, the production of material goods presupposes the existence of a set of raw materials and materials, also called objects of labor, taken from nature. Subsequently, once they have been processed by means of human-operated or supervised labor, they become economic goods intended to satisfy society's consumption needs.

In the light of the above, we conclude that in the end the consumer pays, but initially the polluter pays.

Following on from this, the question arises on the issue of liability in environmental law, as follows: who will bear these costs, the polluter or the economic operator? Is the object of the payment a compensation, a clean-up or a technical change? In view of the fact that legal liability is one of the most important means of combating environmental pollution, we cannot remain indifferent to the rules governing the legal relationship of liability in environmental law. [3, p. 82]

Therefore, it is imperative to note that in environmental law relations the principles governing civil liability are established both by the normative framework of environmental protection and by civil legislation. Thus, the applicability of these principles is conditioned by the nature of the damage caused, whereas the rules on full compensation for damage resulting from a polluting act are used in a distinct manner. In other words, the principle of full compensation for damage and the principle of compensation in kind of the damage are applicable in the case of a finding of civil damage, whereas in the case of a finding of environmental damage caused by a polluting act, the principle of liability without fault and the polluter pays principle apply in addition to the principle of full compensation for damage and the principle of compensation in kind of the damage.

AIM OF THE STUDY

The "polluter pays" principle is analyzed in the following pages, with the aim of studying the field, its justification, the development of regulation and case law and the difficulties that may arise in its application.

METHODS AND MATERIALS APPLIED

Theoretical, normative and empirical material was used in this study. Thus, the research of the respective subject was possible by capitalizing on research methods specific to legal theory and legal doctrine, such as: the logical method, the method of comparative analysis, systemic analysis, description, deduction, historical method.

RESULTS AND DISCUSSION

In view of the importance and topicality of the general issue of lawful activities of a state that may cause transboundary damage, the 1968 Council of Europe Declaration on Combating Air Pollution states that all costs incurred in preventing or reducing pollution should be borne by the polluter. The same provision also appears in the Guiding Principles for International Economic Relations Influenced by Policies for the Protection of the Environment and the Exploitation of Natural Resources, adopted by the member countries of the Organization for Economic Cooperation and Development in 1972.

The 1987 Single European Act enshrines the "polluter pays" principle in Article 130(r), which in fact has two interpretations: the first concerns measures taken to meet standards, and the second interpretation concerns external costs.

This principle, being a market-oriented principle that concerns external social costs, creates contradictions with regard to the efficient allocation of resources and the reflection of the "ecological truth". However, any producer, in order to achieve the most efficient production, seeks to reduce his own production costs as much as possible, as this is the main way of increasing profits. At first sight, it could be said that this is a way of allocating resources efficiently, with each producer seeking to minimize costs by economizing its own resources. However, economic processes, as they intensify and multiply, produce and release into the environment ever-increasing quantities of polluting waste, with serious effects, causing ever-increasing damage to the environment of general interest and, in so doing, to society as a whole. In this case, it is no longer possible to talk about efficient allocation of resources, because there is a contradiction between the general interests of society and the local interests of the economic unit in minimizing expenditure. The economy as a whole must therefore cover both the costs of production and the costs of externalities (pollution).

However, the content of the "polluter pays" principle is somewhat imprecise. Thus, in the broad sense (*lato sensu*), the principle seeks to charge the polluter with the social cost of the pollution he causes. This implies the triggering of a liability mechanism for environmental damage, covering all the effects of pollution, both those caused to property and persons and those caused to the environment as such. In this sense, in legal terms, the fundamental human right to a healthy and ecologically balanced environment is recognized.

On the other hand, in the narrow sense (*stricto sensu*), it means that polluters are only required to bear the cost of anti-pollution and clean-up measures. This is only partial internalization, allowing the imposition of taxes or charges by public authorities.

In such a system, subsidizing polluters by the state to help them financially for anti-pollution investments is contrary to the polluter pays principle. Neither of the two meanings necessarily implies the use of economic incentives (e.g. royalties or pollution rights auctioning), even if these are often cost-related.

Realizing the meanings of this principle can take many forms, such as the establishment of anti-pollution standards, the use of tax incentives, the definition of a strict liability regime, independent of fault for environmental damage, etc.

Several appropriate instruments, such as pollution taxes, the imposition of standards and various compensation mechanisms, have been envisaged to implement the principle at international level. At European level, the OECD has adopted a system of anti-pollution standards, which, although not directly in the financial field, makes it possible to reduce pollution by imposing on a single polluter the investment burden of establishing legally binding technical anti-pollution standards. [4]

At EU level, the principle is laid down in Art. 191 para. (2) of the Treaty on the Functioning of the European Union.

At the national level, this economic instrument is aimed at reducing pollution, and the respective payments, which are directed to the state budget, are used to finance environmental protection programs, according to the areas established in art. 84 of Law no. 1515/1993 on environmental protection (waste management, air quality improvement, nature protection, water resources protection, biodiversity, etc.), through the National Ecological Fund (FEN). c) of the Law no. 1540/1998 on payment for environmental pollution, one of the objectives of the Law is the formation of the NENF for the improvement of environmental quality.

If, in the case of damage resulting from a polluting act, the injured person is not obliged to make a claim for compensation, then in the case of environmental damage, the authority performing the functions of ensuring the protection of environmental factors is not only entitled, but also obliged to make a claim for compensation. It may not waive its right to file a claim, and it is not entitled to waive the claim it has filed. That fact arises primarily from the public interest that has been harmed by the environmental damage, as well as from the 'polluter pays' principle. On the same basis, this authority cannot, either on its own initiative or following negotiations with the person liable, claim compensation for only part of the amount of the damage. This does not prevent the conclusion of the settlement, which, however, will in no way concern the possibility of reducing the amount of compensation in relation to the actual amount of environmental damage. [5, p.78]

CONCLUSIONS

Sustainable development of the country and of the whole society is possible by ensuring qualitative environmental factors that contribute to maintaining the quality of life and health of the population.

The Republic of Moldova being a country with an economy in transition and having agriculture as its basic branch, is dependent and vulnerable to climatic conditions, which from year to year by the frequency and intensity of adverse weather phenomena cause enormous damage to the national economy, sometimes exceeding the annual budget of the country, the latter delays the socio-economic development of the country.

Unfortunately, the 'polluter pays' principle has nowadays remained less a legal instrument to force those responsible to face the consequences of their actions than a convenient means of financing environmental policies. Without determining individual responsibilities, the only consequence of the principle is to make certain industries bear the overall responsibility for the costs of the fight against pollution.

In the application of the general meanings of the principles of environmental law, a number of legal requirements have been developed as "additional principles" or, rather, as technical rules of implementation, such as: the application of the best *available* technology (BAT), the application of the best available technology not *entailing* excessive cost (BATNEEC), *best* environmental practices (BEP) and best practicable *environmental* option (BEPEO). They are primarily aimed at expressing and realizing principles such as prevention, precaution or "polluter pays" and seek, where environmental damage cannot be avoided as far as possible, to limit and reduce the intensity of adverse consequences and avoid side-effects. They have already been widely recognized through international instruments, European Community rules and action programmes and numerous national legal texts.

BAT is the technology that proves to be the most effective in preventing, reducing and rendering harmless pollutant emissions. The UN/ECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes, adopted on March 17, 1992, defines it as the latest known stage in the development of processes, equipment or methods which enable practical measures to be taken, adapted to a given situation, to limit discharges, emissions and waste.

The adoption of BAT involves a comparative assessment of processes, equipment and methods of action against a number of criteria in order to arrive at the designation of the best parameters compatible with environmental protection.

The BATNEEC rule adds to the technical dimensions of BAT an explicit cost-benefit analysis and conclusion, i.e. the economic efficiency aspect.

The requirement to avoid "excessive costs" refers to the need to ensure that, in the specific case, the costs are not disproportionate in relation to the expected environmental results. [6, p.121]

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DETERMINANTS OF SUSTAINABILITY COMMUNICATION AND EFFECTS ON STOCK RETURNS

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Abstract
This research examines the factors influencing sustainability communication within Turkish companies listed on the BIST 30 index and its impact on stock returns from 2006 to 2022. We first highlight the surge in sustainability discourse in company annual reports following the global pandemic. Then, we analyze the determinants and impact of mentions of sustainability and corporate social responsibility (CSR) in annual reports. Finally, we analyze the market response and investigate the effect of sustainability-related keywords and combined ESG scores on yearly stock returns. Our findings reveal that companies with higher ESG ratings and larger market capitalizations frequently address sustainability in their annual reports. In contrast, firms with lower profitability and higher analyst coverage mention sustainability less often. Our results imply that companies with better ESG performance utilize more sustainability communication to present their performance to investors. At the same time, companies with low analyst coverage may be resorting to more active sustainability communication to improve their information environment. On the other hand, companies with low profitability may be trying to greenwash their poorer financial performance. Regarding market reaction, the number of sustainability-related keywords is not directly related to subsequent stock returns but strengthens the effect of ESG performance. Notably, ESG scores alone are negatively associated with the following year's stock returns, and this negative effect is more pronounced in firms that mention their sustainability practices more frequently in annual reports. This suggests that increased transparency in sustainability reporting may decrease the perceived risk among companies with good ESG performance, ultimately affecting investor behavior and stock performance. Our study enriches our understanding of how enhanced sustainability communication impacts financial outcomes and offers valuable insights for investors regarding the valuation of CSR activities.

Keywords: Sustainability Communication; Information Environment; ESG

INTRODUCTION

Sustainability has become a central focus for companies worldwide. It is now a critical part of corporate strategies as businesses respond to increasing demands from investors, regulators, and stakeholders. Sustainability communication, which refers to how companies disclose their environmental, social, and governance (ESG) practices, plays a key role in building transparency and trust. Through this communication, firms can demonstrate their commitment to sustainability and improve their reputation. Despite its growing importance, there is still much to learn about the drivers of sustainability communication and its financial effects, particularly in emerging markets like Turkey.

The global pandemic highlighted the need for companies to engage more with sustainability reporting. Turkish companies, especially those listed on the BIST 30 index, have increasingly included sustainability narratives in their annual reports. However, companies may use this communication in different ways. Firms with strong ESG performance may highlight their achievements to attract investors (Clark et al., 2015). On the other hand, less profitable firms or those with fewer analysts may use sustainability disclosures to manage their reputation and improve their visibility (Mahoney et al., 2013). This study aims to examine these strategies and their financial outcomes.

This research investigates two main aspects of sustainability communication. First, it analyzes the factors that determine how often firms include sustainability-related keywords in their annual reports. Second, it examines the financial impact of these disclosures, particularly their influence on stock returns. Previous research suggests that sustainability reporting can signal transparency and reduce risk, which may attract investors (Ioannou & Serafeim, 2017). However, it can also be used as a tool for "greenwashing," where companies exaggerate their commitment to sustainability to mask weaker financial performance (Luo et al., 2015).

The findings of this study provide important insights. Companies with higher ESG scores and larger market capitalizations report on sustainability more frequently. These firms use their resources and visibility to meet stakeholder expectations. In contrast, firms with lower profitability or less analyst coverage often use sustainability communication to improve their reputation. From a financial perspective, the frequency of sustainability keywords does not directly affect stock returns. However, ESG scores are negatively linked to future returns, and this effect is stronger in firms that emphasize sustainability in their reports. This suggests that more detailed reporting lowers the perceived risk of high-ESG firms, reducing the risk premium demanded by investors (Giese et al., 2019).

This study contributes to the understanding of sustainability communication in emerging markets. It highlights the strategic role of ESG disclosures and their financial effects. For companies, it shows the importance of aligning sustainability communication with market conditions and investor expectations. For investors, it emphasizes the need to critically assess sustainability disclosures to understand their intent and impact. By focusing on the Turkish market, this research provides valuable insights into how sustainability communication influences financial performance and investor behavior.

LITERATURE REVIEW

This study explores the intricate relationships between sustainability communication, ESG performance, and financial outcomes, with a particular focus on stock returns. By examining how firm characteristics such as size, profitability, and analyst coverage shape the intensity and strategic use of sustainability disclosures, this research extends existing literature on the determinants of corporate sustainability communication.

Larger firms, endowed with greater resources and higher public visibility, are shown to engage more actively in sustainability communication, aligning with findings that link firm size to comprehensive ESG disclosures due to stakeholder expectations and regulatory demands (Galani et al., 2012; Balasubramanian et al., 2021). Conversely, firms with lower profitability or fewer analysts covering their stocks often employ sustainability reporting as a tool for reputation management, reflecting a nuanced relationship between financial performance and disclosure practices (Ortas et al., 2015; Wahyuningrum et al., 2022).

Moreover, the study highlights the moderating role of analyst coverage, which influences corporate transparency and accountability. Firms with high analyst scrutiny tend to produce more detailed sustainability reports, whereas lower coverage may diminish the emphasis on environmental disclosures (Jing et al., 2023). This aligns with broader governance dynamics, where factors such as board composition and leverage are found to shape the scope and depth of sustainability communication (Andrikopoulos & Kriklani, 2013; Wang, 2017).

In summary, this research underscores the interplay between firm-level characteristics, sustainability communication strategies, and financial market outcomes, offering a deeper understanding of how companies navigate stakeholder expectations and regulatory landscapes through their ESG reporting practices. These findings contribute to the broader discourse on corporate sustainability by revealing how contextual and strategic factors influence disclosure behaviors and financial implications.

DATA AND METHODOLOGY

This study examines how Turkish companies communicate their sustainability activities in their annual reports and whether sustainability communication impacts stock returns. We manually collect annual reports of companies listed in the BIST30 index for the period from 2006 to 2022. We focus on these companies as they represent a significant portion of Turkey's stock market capitalization and are likely to engage in sustainability practices that may impact their corporate performance and market valuation. We count sustainability and related mentions in companies' annual reports to quantify the extent of sustainability communication and measure its effects on financial performance. The following subsections describe our methodology in detail.

a. Sustainability Communication

We extract data on sustainability communication from companies' annual reports. Specifically, we count the frequency of sustainability-related keywords in these reports. We use Turkish equivalents of "sustainability,"

"ESG," "stakeholder," and "corporate social responsibility" as keywords. Since Turkish is an agglutinative language, we focus on word stems and account for variations by including affixes. This method ensures a comprehensive capture of related terms. Figure 1 shows the average number of mentions of sustainability and associated keywords over time. Notably, sustainability communication has significantly increased over time, particularly in the post-COVID-19 era. We see the role of the pandemic as a catalyst to prompt a surge in communicating sustainability performance in annual reports.

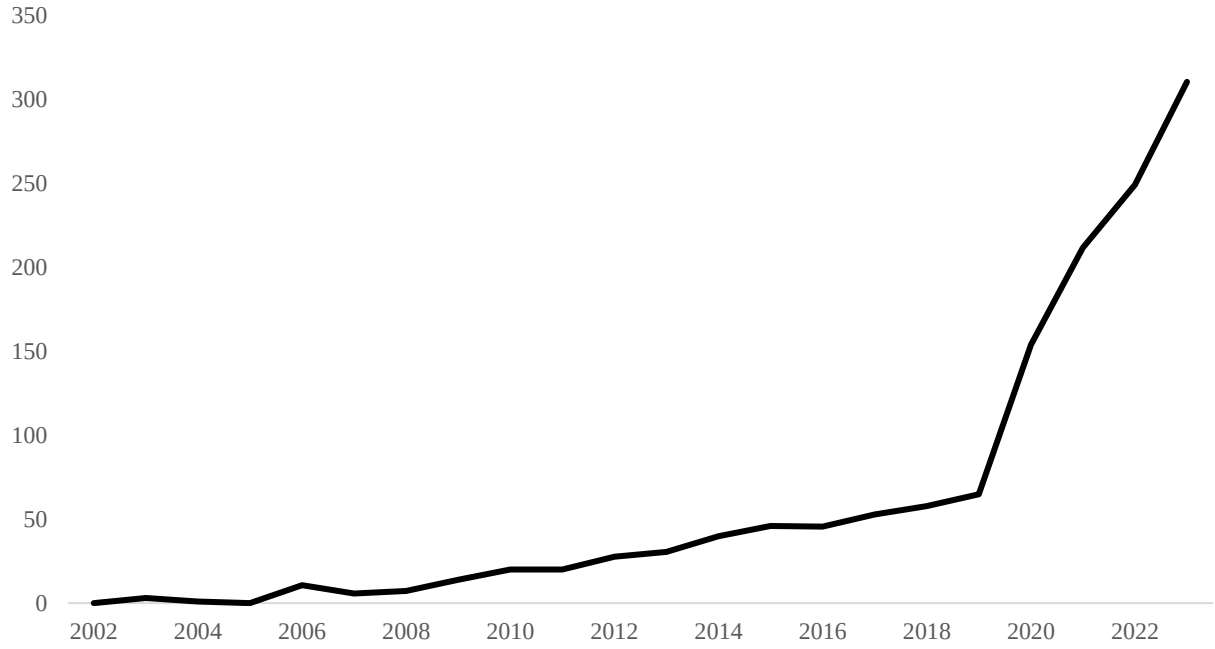

Figure 1: Average number of mentions over time

b. Empirical Models

We employ a regression framework to investigate the determinants of sustainability communication and its impact on stock returns. Given our panel data structure, we utilize both random and fixed-effects models based on the results of the Hausman tests.

To explore which firm characteristics influence the extent of sustainability communication, we conduct a random effects regression with robust standard errors. The dependent variable in this model is the frequency of sustainability-related keywords in annual reports. We use its first difference since sustainability communication is not a stationary variable. Independent variables include firm characteristics that can affect companies' sustainability communication, such as ESG performance, profitability, firm size, and market dynamics. We use Refinitiv's combined ESG scores to measure a firm's ESG performance. We obtain all relevant stock data from Datastream. The regression model we use to examine determinants of sustainability communication is as follows:

$$sust_{i,t} = \alpha + \beta_1 esg_{i,t} + \beta_2 roa_{i,t} + \beta_3 lnmcap_{i,t} + \beta_4 leverage_{i,t} + \beta_5 k_{d\,i,t} + \beta_6 neg_surp_{i,t} + \beta_7 no_analyst_{i,t} + \varepsilon_{i,t} \quad (1)$$

where $sust_{i,t}$ indicates the count of sustainability-related keywords in firm i's annual report for year t, esg is the ESG score, roa is return on assets, $lnmcap$ represents the natural logarithm of market value, $leverage$ is debt-to-assets ratio, k_d represents cost of debt, neg_surp is a dummy variable that equals to 1 if company reported a negative earnings surprise, and $no_analyst$ shows the number of analysts that reports an EPS forecast on company i. To address potential heteroskedasticity, we compute robust standard errors.

To examine the effect of sustainability communication on subsequent stock returns, we apply a fixed effects regression model based on the result of the Hausman test. The dependent variable in this model is the stock return

for the following year. We control variables that can affect stock returns, such as firm size, book-to-market ratio, trading volume, bid-ask spread, and earnings surprises. The regression model we use to examine the effect of sustainability communication on subsequent stock returns is as follows:

$$r_{i,t} = \alpha + \beta_1 sust_{i,t-1} + \beta_2 esg_{i,t-1} + \beta_3 lnmcap_{i,t-1} + \beta_4 lnbeme_{i,t-1} + \beta_5 lnvolume_{i,t-1} + \beta_6 spread_{i,t-1} + \beta_7 surp_{i,t-1} + \varepsilon_{i,t} \quad (2)$$

where r represents yearly stock returns, $sust_{i,t}$ indicates the count of sustainability-related keywords in firm i's annual report for year t, esg is the ESG score, $lnmcap$ represents the natural logarithm of market value, $lnbeme$ represents the natural logarithm of book-to-market ratio, $lnvolume$ represents the natural logarithm of trading volume, $spread$ is the yearly average of daily relative spreads between bid and ask prices, and surp is the relative earning surprise. We compute robust standard errors for this model as well to address potential heteroskedasticity issues.

We also test whether the level of sustainability communication modifies the impact of ESG scores on stock returns. To do this, we create an interaction term between sustainability communication and ESG scores and add it to Equation 2.

EMPIRICAL FINDINGS

We begin our analysis by examining the determinants of increased sustainability communication. Table 1 reports the estimation results of Equation 1. We see that several firm characteristics significantly influence the degree of sustainability communication. First, firms with higher ESG scores tend to use sustainability-related keywords more frequently in their reports. Strong ESG performance enhances a company's willingness to communicate these efforts to stakeholders. By frequently using sustainability-related keywords, these firms can highlight their ESG achievements and proactively address growing investor demand for transparency on ESG issues. In addition, we see that larger companies place greater emphasis on sustainability communication. This finding suggests that larger companies are more likely to emphasize sustainability communication due to their increased visibility and resource availability. As large firms often attract greater investor attention, they may proactively communicate their sustainability efforts to reinforce a positive public image and mitigate reputational risks. Additionally, larger companies typically have more resources to invest in comprehensive sustainability initiatives and reporting practices. This resource availability can enable them to produce detailed and frequent disclosures. Furthermore, the results show that less profitable firms and those with lower analyst coverage mention sustainability more often in their reports. This behavior may indicate a strategic approach of firms to enhance their visibility and credibility in the market. For instance, frequent mentions of sustainability by firms with lower profitability can be considered as an attempt to mitigate negative perceptions and attract investor interest despite financial challenges. Similarly, companies with lower analyst coverage might use sustainability communication to improve their information environment and appeal to stakeholders. Our findings suggest that sustainability communication can be used as a tool for reputation management and investor engagement.

Table 1: Determinants of sustainability communication in annual reports

	$sust_t$
esg_t	1.640**
	(0.70)
roa_t	-227.3**
	(93.00)
$lnmcap_t$	14.56***
	(4.55)
$leverage_t$	30.80
	(37.19)
k_{d_t}	-96.82
	(67.68)
neg_surp_t	-15.26
	(12.69)
$no_analyst_t$	-1.892*
	(1.14)
Constant	-183.3**
	(72.08)
Obs.	187
R^2	0.0860

Notes: This table reports the company characteristics related to sustainability and ESG communication of Turkish companies. $sust_t$ shows the first difference in the times the words "sustainability," "ESG," "stakeholder," and "corporate social responsibility" are mentioned in company annual reports. esg represents companies' combined ESG score. $lnmcap$, $leverage$ and k_d represent the natural logarithm of market value at year-end, debt-to-assets ratio, and cost of debt, respectively. neg_surp is a dummy variable that equals 1 if a company reported a negative earnings surprise and 0 otherwise. $no_analyst$ refers to the number of analysts that publish an EPS estimate for a given company. The sample period is from 2006 to 2022. Random effects regression is estimated, and robust standard errors are reported in parentheses. R^2 is the overall R^2. Asterisks represent statistical significance. *** p<0.01, ** p<0.05, * p<0.1.

We also examine whether the frequency of sustainability and ESG keywords in annual reports can affect the next-year stock returns. The results are reported in Table 2. We see that the intensity of sustainability communication alone does not directly impact next year's stock returns. However, ESG scores have a significant negative impact. A 10-point increase in ESG scores corresponds to a 7% decrease in stock returns the following year. This result aligns with the view that companies with lower ESG scores pose higher risks and are thus expected to yield higher returns.

Furthermore, although the intensity of sustainability communication does not directly impact stock returns, it significantly affects the relationship between ESG scores and stock returns. The interaction term between sustainability communication intensity and ESG scores is negative and statistically significant at the 0.01 level. The negative interaction term shows that for firms with high ESG scores, a greater emphasis on sustainability in annual reports amplifies the negative effect of ESG on stock returns. This finding likely reflects a strengthened relationship between ESG performance, perceived firm risk, and stock returns. High ESG scores generally indicate lower risk, which may cause lower expected returns due to the risk-return trade-off. When high-ESG firms engage heavily in sustainability communication, it improves the dissemination of ESG-related information and likely enhances investors' understanding of the firm's ESG commitments. This improved information dissemination enforces the relationship between ESG scores and stock returns.

Table 2: Sustainability communication and yearly stock returns

	r_t	r_t
$sust_{t-1}$	-0.00018	-0.00004
	(0.00040)	(0.00028)
esg_{t-1}	-0.00702**	-0.00508*
	(0.00270)	(0.00247)
$lnmcap_{t-1}$	0.935***	0.927***
	(0.145)	(0.142)
$lnbeme_{t-1}$	0.747***	0.760***
	(0.129)	(0.128)
$lnvolume_{t-1}$	-0.226**	-0.213**
	(0.081)	(0.078)
$spread_{t-1}$	177.1***	177.4***
	(20.1)	(20.4)
$surp_{t-1}$	0.262***	0.268***
	(0.074)	(0.076)
$sust_{t-1} \times esg_{t-1}$		-0.00006***
		(0.00002)
Constant	-12.99***	-12.99***
	(1.65)	(1.63)
Obs.	186	186
R^2	0.738	0.744

Notes: This table reports the estimation results for the lagged effect of sustainability communication on yearly stock returns. $sust_t$ shows the first difference in the times the words "sustainability," "ESG," "stakeholder," and "corporate social responsibility" are mentioned in company annual reports. esg represents companies' combined ESG score. $lnmcap$, $lnbeme$, and $lnvolume$ represent the natural logarithms of market value at year-end, book-to-market ratios, and trading volume. $spread$ represents the yearly average of the daily relative spread between bid and ask prices. $surp$ represents the earnings surprises proportional to earning forecasts. $sust_{t-1} \times esg_{t-1}$ represents the interaction term between sustainability communication and ESG scores. The sample period is from 2006 to 2022. Fixed effects regression is estimated, and robust standard errors are reported in parentheses. R^2 is the within R^2. Asterisks represent statistical significance. *** p<0.01, ** p<0.05, * p<0.1.

DISCUSSION AND CONCLUSION

Sustainability communication has emerged as a vital tool for companies in managing their reputation and engaging effectively with external stakeholders. This growing emphasis highlights the importance of understanding both the drivers and consequences of sustainability disclosures, as demonstrated in this study. The increasing integration of sustainability practices into corporate communication reflects firms' attempts to enhance transparency, improve financial outcomes, and meet evolving stakeholder expectations.

This research investigates the determinants and financial implications of sustainability communication among Turkish companies listed on the BIST 30 index between 2006 and 2022. The findings highlight the dual role of sustainability reporting in signaling ESG performance and influencing market behavior.

Our results indicate that firms with higher ESG scores and larger market capitalizations are more likely to emphasize sustainability in their annual reports. This behavior reflects their ability to leverage their resources and visibility to meet investor expectations and showcase their ESG achievements. Conversely, firms with lower profitability or limited analyst coverage appear to strategically use sustainability communication as a means to mitigate reputational risks and enhance their market presence. Regarding financial outcomes, while the intensity of sustainability-related communication does not directly affect next-year stock returns, ESG scores are negatively associated with subsequent stock returns. This negative relationship is more pronounced for firms with high ESG scores that frequently emphasize sustainability in their reports, suggesting that increased transparency reduces perceived firm risk, subsequently lowering the risk premium demanded by investors.

Overall, these findings underscore the strategic importance of sustainability communication in managing investor perceptions and balancing transparency with reputation management. They also highlight the need for investors to critically assess sustainability disclosures to distinguish between genuine ESG commitments and strategic

positioning. This study enhances the understanding of the determinants and financial implications of sustainability communication in emerging markets and lays the groundwork for further research.

However, the scope of this research is limited by its focus on Turkish companies within the BIST 30 index, which may constrain the generalizability of the findings. Future studies could expand this work by incorporating multinational samples to explore whether the observed dynamics between sustainability communication, ESG performance, and financial outcomes are consistent across diverse economic, cultural, and organizational contexts.

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ADALET BAKANLIĞI VE MERKEZ BANKASI VERILERI IŞIĞINDA TÜRKIYE'DE İFLAS RISKI ALTINDAKI SEKTÖRLERIN TESPITI VE KONKORDATO İLANLARI ILE UYUM ANALIZI

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Özet

Bu çalışma, Türkiye'de iflas riski taşıyan sektörlerin belirlenmesine yönelik kapsamlı bir analiz sunmaktadır. Adalet Bakanlığı'nın konkordato ilan eden sektörlere ilişkin verileri ve Merkez Bankası'nın sektör bazlı mali verileri ışığında, çeşitli iflas tahmin modelleri ile sektörlerin mali kırılganlıkları değerlendirilmektedir. Altman Z, Springate S, Ohlson O, Taffler T, Fulmer F ve Zwinyevski X skorları kullanılarak elde edilen iflas riski sonuçları Çok Kriterli Karar Verme (CKKV) yöntemlerinden TOPSIS yöntemi ile analiz edilmiş ve risk açısından öncelikli sektörler belirlenmiştir. Çalışma bulguları incelendiğinde, konkordato ilan eden sektörlerin büyük ölçüde yüksek iflas riski taşıyan sektörler ile örtüştüğü görülmekte birlikte; erken uyarı sistemlerinin sürdürülebilirlik kavramının bu derece önem taşıdığı bir dönemde, finansal sürdürülebilirlik açısından önemini ortaya koymaktadır.

GIRIŞ

Son yıllarda, Türkiye'de tüm sektörlerde artan konkordato ilanları, sektörel iflas riski hesaplamalarının daha detaylı olarak analiz edilmesini finansal sürdürülebilirlik açısından zorunlu kılmaktadır. Konkordato, iflas durumuna gelmeden önce işletmelere borçlarını yeniden yapılandırma imkânı sunarak, faaliyetlerini sürdürebilmeleri için bir fırsat tanır. Gerek bu süreç öncesi gerek bu süreçte işletmelerin finansal sağlığının test edilmesi, gerekse de bu süreçten çıkılamaması durumundaki iflas süreçleri finansal bilgi kullanıcıları için büyük önem taşımaktadır. Bu noktada İflas ve konkordato süreçleri, ekonomik koşullardaki dalgalanmaların işletmeler üzerindeki etkilerinin değerlendirilmesi ve finansal sürdürülebilirliğin sağlanması açısından önem arz etmektedir. Bu bağlamda, sektörel bazda konkordato ve iflas risk analizleri, işletmelerin finansal sağlık göstergelerinin ölçülmesi ve ekonomik sistemdeki sürdürülebilirliğin sağlanmasına katkı sağlamaktadır.

Bu amaçla çalışmada, Adalet Bakanlığı'ndan elde edilen konkordato verileri ile Merkez Bankası'nın yayınladığı sektör ortalamaları temel alınarak, sektörel iflas risklerinin detaylı bir incelemesi ve iflasa en yakın sektörlerin tespiti yönünde bulgular sunulmaktadır.

ARAŞTIRMA METODOLOJISI

Araştırmanın metodoloji incelendiğinde, araştırma kapsamında ilk olarak, sektörel bazlı iflas riski hesaplama modelleri kullanılarak farklı sektörlerin iflas olasılıkları detaylı biçimde analiz edilmiştir. Çalışmanın ikinci aşamasında ise, bu modeller ile hesaplanan iflas riski sonuçları, çok kriterli karar verme (ÇKKV) yöntemlerinden literatürde sıklıkla kullanılan TOPSIS yöntemi ile değerlendirilerek iflasa en yakın sektörlerin belirlenmesi hedeflenmiştir. Konkordato süreçlerinin yoğun gözlemlendiği sektörler ile iflas bazlı modellerin çoklu kullanımına yönelik bu analizde, Adalet Bakanlığı'nın konkordato ilan eden sektörler üzerine sağladığı istatistiksel veriler ve Merkez Bankası'nın sektör bazında yayınladığı finansal verilerden yararlanılmıştır. Araştırma kapsamında kullanılan verilere, ilgili kurumların internet sitelerinden ulaşılmıştır.

Araştırmada iflas riski değerlendirmesi için, akademik literatürde yaygın kabul gören Altman Z Skor, Springate S Skor, Ohlson O Skor, Taffler T Skor, Fulmer F Skor ve Zwinyevski X Skor modelleri tercih edilmiştir. Bu iflas skorları, çeşitli finansal oranlara dayalı olarak sektörlerin iflas risklerini derecelendirmekte olup; çalışma kapsamında elde edilen sonuçlar TOPSIS yöntemi ile ele alınarak sektörel bazda iflas riski sıralaması yapılmıştır. Araştırma, kapsam olarak 2024 yılı konkordato başvuru süreçlerine odaklanmakta olup, iflas riski hesaplamaları 2023 yılı finansal tabloları esas alınarak gerçekleştirilmiştir.

ARAŞTIRMANIN BULGULARI

Araştırma kapsamında elde edilen bulgular incelendiğinde, konkordato ilan eden sektörlerin büyük ölçüde yüksek iflas riski taşıyan sektörler ile uyumlu olduğunu ortaya koymuştur. Aşağıda Tablo 1 olarak gösterilen sonuçlar TCMB verileri kapsamında hesaplanan iflas riski modellerine ilişkin sonuçları göstermektedir. Tablo 2'de ise; ilgili hesaplama sonuçlarının hangi referans değerler kapsamında yorumlandığına ilişkin bilgiler sunmaktadır.

Tablo 1. TCMB Verileri Kapsamında Sektörel İflas Riski Hesaplamaları Sonuçları Nicel Verileri

Sektörler	Altman Z Score	Springate S Score	Zmijewski X Score	Ohlson O Score	Fulmer H Score	Taffler T Score
Tarım, Ormancılık ve Balıkçılık	1,567	0,862	-5,039	-2,032	0,606	1,658
Madencilik ve Taş Ocakcılığı	1,380	0,854	-3,627	-1,917	0,919	6,205
İmalat	2,013	1,248	-5,895	-3,545	2,006	3,948
İnşaat	0,658	0,390	-1,372	0,079	1,119	-0,415
Ticaret	2,817	1,442	-10,170	-5,266	2,086	0,753
Ulaştırma ve Depolama	1,419	0,973	-4,020	-1,352	0,609	2,010
Konaklama ve Yiyecek Hizmetleri	1,217	0,764	-3,829	-1,212	0,168	1,350
Bilgi ve İletişim	1,750	1,178	-4,960	-2,854	0,983	7,383
Mesleki, Bilgi ve Teknik Faal.	0,741	0,253	-2,007	-0,534	0,697	3,116
Eğitim	0,514	-0,102	-2,895	0,573	0,464	-3,362
İnsan Sağlığı ve Sosyal Hizmetler	1,694	0,953	-5,477	-2,498	0,517	3,733
Kültür, Sanat, Eğlence ve Spor	1,026	0,606	-3,318	-0,283	-0,414	1,103

Tablo 2. TCMB Verileri Kapsamında Sektörel İflas Riski Hesaplama Sonuçları Nitel Verileri

	Altman Z Score	Springate S Score	Zmijewski X Score	Ohlson O Score	Fulmer H Score	Taffler T Score
Tarım, Ormancılık ve Balıkçılık	Gri Bölge	İflas Riski	Güvenli Bölge	Güvenli Bölge	Güvenli Bölge	Güvenli Bölge
Madencilik ve Taş Ocakcılığı	Gri Bölge	İflas Riski	Güvenli Bölge	Güvenli Bölge	Güvenli Bölge	Güvenli Bölge
İmalat	Gri Bölge	Güvenli Bölge	Güvenli Bölge	Güvenli Bölge	Güvenli Bölge	Güvenli Bölge
İnşaat	İflas Riski	İflas Riski	Güvenli Bölge	İflas Riski	Güvenli Bölge	İflas Riski
Ticaret	Güvenli Bölge	Güvenli Bölge	Güvenli Bölge	Güvenli Bölge	Güvenli Bölge	Güvenli Bölge
Ulaştırma ve Depolama	Gri Bölge	Güvenli Bölge	Güvenli Bölge	Güvenli Bölge	Güvenli Bölge	Güvenli Bölge
Konaklama ve Yiyecek Hizmetleri	İflas Riski	İflas Riski	Güvenli Bölge	Güvenli Bölge	Güvenli Bölge	Güvenli Bölge
Bilgi ve İletişim	Gri Bölge	Güvenli Bölge	Güvenli Bölge	Güvenli Bölge	Güvenli Bölge	Güvenli Bölge
Mesleki, Bilgi ve Teknik Faal.	İflas Riski	İflas Riski	Güvenli Bölge	Güvenli Bölge	Güvenli Bölge	Güvenli Bölge
Eğitim	İflas Riski	İflas Riski	Güvenli Bölge	İflas Riski	Güvenli Bölge	İflas Riski
İnsan Sağlığı ve Sosyal Hizmetler	Gri Bölge	Güvenli Bölge	Güvenli Bölge	Güvenli Bölge	Güvenli Bölge	Güvenli Bölge
Kültür, Sanat, Eğlence ve Spor	İflas Riski	İflas Riski	Güvenli Bölge	Güvenli Bölge	İflas Bölgesi	Güvenli Bölge

Araştırmanın sektörel iflas riski hesaplamalarının ardından gerçekleştirilen TOPSIS yöntemi analizinde kullanılan kriter değişkenlere Tablo 3'te yer verilirken; analiz sonucunda hesaplanan risk sıralaması Tablo 4 yer almaktadır.

Sıralamada ilk sırada yer alan sektör iflas riskinden diğer sektörlere göre daha uzakta olmakta olup; sıralamanın sonunda yer alan sektörler için iflas riskinin yüksek olduğu söylenebilmektedir.

Tablo 3.TOPSIS Analizi Kapsamında Kullanılan Performans Kriter Değişkenleri ve Amaçlar

KRİTERLER	AMAÇ
Altman Z Skor	J^{max}
Springate S Skor	J^{max}
Zmiyewski X Skor	J^{min}
Olhson O Skor	J^{min}
Fulmer H Skor	J^{max}
Taffler T Skor	J^{max}

Tablo 4.TOPSIS Yöntemi Sonucunda Sektörel İflas Riski Sıralaması

Sektör	Ci +	Sıralama
Tarım, Ormancılık ve Balıkçılık	0,4711	6
Madencilik ve Taş Ocakcılığı	0,5754	4
İmalat	0,7222	1
İnşaat	0,3014	10
Ticaret	0,7202	2
Ulaştırma ve Depolama	0,4474	7
Konaklama ve Yiyecek Hizmetleri	0,3721	9
Bilgi ve İletişim	0,6750	3
Mesleki Bilgi ve Teknik Faal	0,3762	8
Eğitim	0,1696	12
İnsan Sağlığı ve Sos Hiz	0,5513	5
Kültür Sanat Eğlence ve Spor	0,2895	11

TOPSIS Analiz sonuçları incelendiğinde; Konkordato süreçlerine 30.09.2024 tarihi itibariyle başvuru yapan sektörler ile TOPSIS Yöntemi uygulaması sonucu iflas riski taşıyan sektörlere ilişkin sektörel dağılım Tablo 5'te gösterilmiş olup; araştırmanın bulguları kapsamında, konkordato süreçlerinde ağırlıklı yer alan sektörler ile iflas riski taşıyan sektörlerin birbirine benzer sonuçlar gösterdiği söylenebilmektedir.

Tablo 5. Konkordato Süreçlerindeki Sektörler ile İflas Riski Açısından Riski Yüksek Sektörlerin Karşılaştırması

Konkordato İlan Eden Sektörler	İflas Riski Yüksek Sektörler
İnşaat	Eğitim
Tekstil	Eğlence
Akaryakıt	İnşaat
Giyim	Konaklama ve Yiyecek
Gıda	Ulaştırma
Mobilya	Tarım ve Ormancılık
Metal Üretim	Sağlık
Otelcilik	Madencilik
Tarım	Bilgi İletişim
Enerji	Ticaret ve İmalat

SONUÇLAR

Çalışmanın sonuçları, konkordato ilan eden sektörlerin, iflas riski açısından yüksek seviyede bulunan sektörlerle örtüşen bir yapıda olduğunu göstermektedir. Altman Z, Springate S, Ohlson O, Taffler T, Fulmer F ve Zwinyevski X skor gibi iflas tahmin modelleri kullanılarak yapılan analizler, Türkiye'deki sektörlerin mali kırılganlıklarını detaylı bir şekilde değerlendirmeye olanak sağlamıştır. Altı farklı iflas tahmin modelinin TOPSIS yöntemi ile analiz edilmesi, iflas riski taşıyan sektörlerin önceliklendirilmesini sağlamış ve konkordato verileri ile paralellik arz eden sektörlerin belirlenmesinde güçlü bir model sunmuştur. Araştırmanın bulguları kapsamında; konkordato ilan eden sektörler ile iflas riski en yüksek sektörler arasında belirgin bir uyum olduğu gözlemlenmiştir.

Çalışmanın sonuçları, Türkiye'de sektörel bazda iflas risklerinin değerlendirilmesinde erken uyarı mekanizmalarının etkin kullanımının önemini vurgulamaktadır. İflas riski yüksek sektörlerin tespiti, işletmelerin finansal yönetim süreçlerinde daha bilinçli karar almalarını sağlayarak ekonomik istikrarın korunmasına katkı sunmaktadır.

Bu çalışmanın bulguları ışığında, gelecekte yapılacak araştırmalar için model çeşitliliğinin artırılması, dönemsel etkilerin ve makroekonomik değişkenlerin modellere dahil edilmesi, uluslararası sektörel karşılaştırmaların yapılması vb. daha kapsamlı bir bakış açısı sunarak iflas riski yüksek sektörlerin daha etkili ve ayrıntılı bir şekilde analiz edilmesine katkı sağlayacaktır.

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SYNERGIZING CIRCULAR ECONOMY AND H2H MARKETING: A SUSTAINABLE APPROACH TO HUMAN-CENTRIC BUSINESS

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Abstract

A revolutionary method for developing human-centered and environmentally friendly company practices combines Human-to-Human (H2H) marketing with Circular Economy (CE) concepts. This study delves into the theoretical frameworks, possibilities, and threats posed by this synergy, drawing attention to how companies can improve their brand reputation, consumer engagement, and product design while cutting costs and increasing efficiency. Companies may enhance resource efficiency and personalize client experiences by utilizing modern technologies like the Internet of Things (IoT) and artificial intelligence (AI). If you want your marketing efforts to be successful, you need to know how people buy things and how initiatives to raise awareness and education affect their consumption habits. This article goes even further by looking at the legal and financial structures that encourage CE and H2H marketing, finding the best regulations and incentives to encourage long-term prosperity. Additionally, we discuss how to create all-encompassing measures to measure these projects' monetary, social, and ecological effects. This research offers practical answers and significant insights for firms that want to use CE and H2H marketing together. Ultimately, it helps create a more sustainable and people-focused corporate landscape.

Keywords: Circular Economy, Human to Human Marketing, H2H Marketing, Marketing 6.0, Sustainability, Consumer Engagement

INTRODUCTION

The Circular Economy is an environmentally friendly idea aimed to revolutionize the traditional 'take, make, dispose' economic model that isn't sustainable. Rather than striving to take-make-dispose, it looks forward to an effectively regenerative system where resources can be reused, refurbished, and recycled. This idea originates from industrial ecology movements in the 1970s that aimed at minimizing industrial waste and enhancing resource utilization efficiency. Since its inception, CE has evolved through various stages over the years due to broadening its scope beyond just environmental considerations into other social and economic aspects— this shows a more holistic approach towards sustainability (Çalıkoğlu & Sadowski, 2024; Feldmann, 2023; Herrador & Van, 2024; Ho et al., 2024; Raudales-Garcia et al., 2024). Moreover, the emergence of H2H marketing as an evolution over B2B and B2C places substantial weight on personal relationships in business exchange. Its primary aim is to nurture authentic connections; thus, trust becomes the pivot between companies and their customers through transactions in good faith. Philip Kotler is considered one of the pioneers in modern marketing, especially H2H marketing, and has had a significant impact on driving the shift towards more authentic and customer-centric marketing strategies. Kotler's revolutionary work highlighted the importance of understanding customers as economic entities and individuals with specific needs, preferences, and emotions— the H2H paradigm (Kotler et al., 2024f, 2024e, 2024g; Kotler, Pfoertsch, & Sponholz, 2021f, 2021d). This places a high value on genuine connections through openness and relationship-building in marketing.

Even as the awareness and adoption of the Circular Economy and H2H marketing continue to rise, there is a massive hurdle in making these two core points effectively steered into each other. Most businesses operate in

silos; they manage their sustainability initiatives separately from marketing strategies (Kotler et al., 2020; Kotler, Pfoertsch, & Sponholz, 2021e; Lopez & Legardeur, 2024; Palombi et al., 2024; Tuboalabo et al., 2024). This is leading to inefficiency since the outcomes are disjointed — all because of not coordinating between departments. Companies lack a unified framework for both CE and H2H marketing even though they embrace sustainable practices: this creates a situation where efforts on sustainability are not seamlessly integrated into customer engagement strategies (Abdulai et al., 2024; Entrena-Barbero et al., 2024; Koporcic & Törnroos, 2019; Kotler et al., 2024a; Kotler, Pfoertsch, Sponholz, & Haas, 2023c; Tinonetsana & Musariwa, 2024). The disconnect makes sense even less with consumers— who make up most stakeholders for organizations' activities— meaning that impact is greatly diminished as well. For instance, a corporation could pursue environmentally friendly sourcing or renewable energy, but if these efforts are not effectively communicated to customers, the potential for developing strong, trust-based relationships is diminished (Ibrahim, 2024; Kaewunruen et al., 2024; Kotler et al., 2024c; Kotler, Pfoertsch, Sponholz, & Haas, 2023a; Posada & Pfoertsch, 2023). Additionally, the rapid advances in technology and the evolving expectations of consumers necessitate more adaptive and integrated approaches, which many businesses are not yet fully prepared for.

The existing literature on the circular economy primarily discusses its environmental and economic benefits, but there is limited discussion of its association with marketing (Arruda et al., 2021; Karim et al., 2024; Korhonen et al., 2018). Conversely, research on H2H marketing is primarily dedicated to developing relationships and improving customer experience; it typically ignores the way sustainability can help with these efforts (Kotler et al., 2021; Kotler et al., 2024c). Even though there have been individual studies on the value of CE and H2H marketing, there is still a lack of comprehensive research that intersects these fields. Several studies have documented the value of sustainability in enhancing brand reputation and customer commitment. However, few have investigated how CE principles can be employed in marketing to achieve these goals. Conversely, the literature on H2H marketing has emphasized the necessity of genuine and transparent communication, but it has failed to address the practicality of integrating CE and H2H marketing. This significant discrepancy highlights the necessity of research that explores the theoretical and practical aspects of CE and H2H marketing. Addressing this deficiency is pivotal for companies pursuing more holistic and sustainable methods.

This research is significant because it addresses a crucial need for companies to take environmentally responsible and customer-oriented practices. This research's novelty is interdisciplinary, combining elements of sustainability studies and marketing theory to create a comprehensive framework. The contributions of this research include a comprehensive approach to integrating CE and H2H marketing, along with several successful examples of practical applications, the latter of which are intended for businesses. One of the primary contributions of this research is creating a framework that businesses can use to combine their sustainability and marketing efforts. This framework will serve as a practical guide for incorporating CE principles into the marketing of H2H, making sure that sustainability is a consistent component of customer interaction. By taking this approach, businesses can enhance their brand reputation, cultivate more powerful customer relationships, and have greater long-term sustainability.

The results of this study have significant consequences for policymakers; this provides evidence-based approaches to support the creation of regulations and initiatives that promote sustainable and human-oriented business practices. By combining environmental and social goals with business objectives, this study intends to serve as a new model for sustainable commerce. Policymakers can utilize the information to create incentives and mechanisms that will promote the adoption of integrated approaches to CE and H2H marketing, which will, in turn, lead to a larger goal of sustainable development. The primary goal of this research is to create a comprehensive framework that combines the principles of circular economy with H2H marketing strategies, which will promote sustainable, human-oriented business models. By exploring these domains' intersection, the study attempts to identify effective strategies and methods that promote both sustainability and customer interaction.

LITERATURE REVIEW

Evolution of Circular Economy

The concept of the circular economy (CE) represents a paradigm shift from the traditional linear model of economic activity ("take, make, dispose") to a regenerative system designed to minimize waste and optimize the use of resources (Cheah et al., 2022; Weetman, 2017). The roots of CE can be traced back to the 1970s when

the idea of industrial ecology was developed. This early concept aimed to understand the complex interactions between industrial processes and the environment and emphasized the need for more sustainable production and consumption patterns (Möslinger et al., 2023; Romero-Perdomo et al., 2022). Over time, the principles of industrial ecology were refined and expanded to form the circular economy we know today.

At its core, CE is based on several key principles: avoiding waste and pollution, reusing products and materials, and regenerating natural systems. These principles are inspired by the way natural ecosystems function, where nothing is wasted, and everything has a purpose. This biomimetic approach guarantees that every output from one process can be used as an input for another, this creates a closed-loop system that has a significant impact reduction (Ibrahim, 2024; Voulgaridis et al., 2022). The CE idea has experienced significant popularity over the past two decades, this is particularly true of concerns regarding resource depletion and environmental degradation. Influential stories from organizations like the Ellen MacArthur Foundation have documented the economic, environmental, and social benefits of pursuing a circular economy. These accounts suggest that pursuing circular practices would lead to significant financial benefits, including the creation of new jobs, savings of costs, and the expansion of markets (Moorthy et al., 2024; Palombi et al., 2024; Supria Wiguna & Artikel, 2024). Additionally, they would address environmental issues that are of great concern, like climate change and biodiversity loss. In practice, the implementation of CE principles involves a variety of strategies, including the design of long-lasting products, the remanufacturing of products, the refurbishing of products, the recycling of products, and the promotion of a shared business model that involves service provision (Asante et al., 2022; Rocha et al., 2023; Vezzoli & Macrì, 2024). For example, companies are increasingly taking part in models that involve products as a service; instead of selling products, they offer them on a rental or subscription basis. This method not only extends the life cycle of products but also promotes the design of durable and simple products.

Additionally, technological advances like digitalization, the Internet of Things (IoT), and artificial intelligence (AI) are significantly impacting the transition to a circular economy. These technologies facilitate more effective tracking of materials, increase the efficiency of resource utilization, and facilitate the development of innovative business models (Charnley et al., 2019; Davidescu et al., 2020; Piao et al., 2023; Voulgaridis et al., 2022). For instance, IoT sensors can survey the condition of Canada's products at any given time; this will allow for proactive maintenance and decrease the probability of premature disposal. Despite the increasing popularity, the transition to a completely circular economy is not without problems. It necessitates a fundamental reconsideration of how products are designed, produced, and consumed, as well as significant alterations to the business models, regulations, and behavior of consumers. Additionally, greater collaboration between industries and sectors is needed to create the infrastructure and systems necessary to promote circular practices.

Emergence and Principles of H2H Marketing

Human, to Human (H2H) marketing is an approach in the marketing industry that prioritizes establishing connections between people rather than focusing solely on business-oriented strategies. This method was developed in response to the limitations of Business to Business (B2B) and Business to Consumer (B2C) marketing models, which often neglect the aspect of commercial interactions (Kotler, Pfoertsch, Sponholz, & Haas, 2023b; Posada & Pfoertsch, 2023). H2H marketing recognizes that every business transaction involves individuals with emotions, desires, and preferences aiming to cultivate meaningful relationships with them. The transition towards H2H marketing can be largely credited to the groundbreaking work of Philip Kotler recognized as a figure in marketing practices (Kotler et al., 2024d; Kotler, Pfoertsch, Sponholz, & Marketing, 2023; Kotler, Pfoertsch, Sponholz, et al., 2021). Kotler's contributions to marketing theory have played a role in emphasizing customer approaches and the importance of building relationships within the field. His focus on understanding customer needs, providing value, and fostering lasting connections has paved the way for the H2H marketing philosophy.

Fundamentally, H2H marketing is based on core principles such as authenticity, transparency, empathy, and engagement. Authenticity entails staying true to one`s brand values and ensuring that all marketing efforts are genuine and reliable. Transparency involves honest communication practices that offer customers precise information. Empathy is the process of comprehending and addressing the emotional and practical concerns of customers, creating a sense of association and trust. Engagement is concerned with developing reciprocal and participatory customer relationships and encouraging discussion and feedback (Kotler et al., 2024g, 2024e, 2024d, 2024f). One of the primary causes of the emergence of H2H marketing is the increasing influence of digital and

social media. These platforms have revolutionized how businesses interact with their customers, allowing for more direct, personal, and immediate communication. Social media, specifically, has become a powerful method for forming and maintaining relationships, as it allows businesses to interact with their customers on a more personal level, respond to their questions and concerns in a timely manner, and promote a sense of community and belonging.

Additionally, the increasing popularity of content marketing has led to a shift towards H2H marketing. By producing and sharing pertinent, valuable, and consistent content, companies can attract and retain a defined audience that is primarily composed of customers. Ultimately, this results in profitable actions from customers. Content marketing promotes expertise, creates trust, and bonds with customers emotionally. It also functions as a narrative platform, allowing brands to share their stories, values, and missions with the potential to affect customers directly. The principles of H2H marketing are not limited to digital interactions but apply to all aspects of customer interaction. For example, personalized marketing, which employs messages and offers tailored to the individual customer's preferences and behaviors, is integral to the practice of H2H marketing. By utilizing data and intel, businesses can create more effective and pertinent interactions, enhancing the customer experience and promoting loyalty (Bubphapant & Brandão, 2024; Lou et al., 2019; Lou & Xie, 2021). The transition towards H2H marketing is also indicative of a larger alteration in the behavior of consumers and their expectations. Today, consumers are more informed, powerful, and concerned with society. They want companies to be not only producers of goods and services but also responsible and ethical entities that positively impact society. This shift has led to businesses adopting customer-oriented and value-based approaches, aiming to form trust and loyalty through direct and relevant interaction.

Existing Research on CE and Marketing Integration

Studies on CE and marketing mainly considered these fields separate, with little exploration of their potential collaboration. However, recent research shows that integrating CE principles in marketing can enhance eco-friendliness and customer interaction. Research on Circular Economy has mainly focused on its environmental and financial advantages, exploring how closed-loop systems, resource efficiency, and sustainable practices can lessen waste, decrease expenses, and generate fresh business possibilitie. Research has under scored several CE tactics like product design for durability, remanufacturing, recycling, and the creation of service-oriented business models (Karmakar et al., 2022; Okorie et al., 2018; Patwa et al., 2021). These tactics not only support sustainability but also provide economic benefits by cutting resource reliance and boosting operational productivity.

Previous studies have investigated the significance of sustainability in enhancing brand image and customer loyalty within marketing. Customers are placing more importance on sustainability and ethical behaviors, and companies who can clearly convey their dedication to these values may secure a competitive advantage (Karim et al., 2024; Ronalter et al., 2022). However, most research has concentrated on promoting sustainability rather than incorporating sustainable practices into the main marketing strategy. significant gap in existing research is absence of thorough studies that connect CE and marketing, investigating how CE principles can be incorporated into marketing strategies to accomplish complete sustainability and customer involvement. While few studies have focused on green marketing and eco-labeling's contribution to promoting sustainable products, they typically do not fully integrate CE principles at the strategic level (Danvers et al., 2023; Karim et al., 2025; Ul-Durar et al., 2023). The idea of sustainable branding, in which companies align their brand values with environmental and social responsibility, is one area where research has made significant progress. In addition to promoting sustainable products, sustainable branding entails integrating sustainability into the fundamental principles and practices of the company. According to studies, sustainable branding can improve market differentiation, brand loyalty, and trust (Alhawari et al., 2021; Waaje et al., 2025). However, incorporating CE principles into sustainable branding is still a topic with much room for investigation.

Customer participation in sustainability initiatives and co-creation are pertinent research topics. Research has indicated that customer engagement and loyalty can be increased by incorporating them in developing sustainable goods and services. To improve sustainability, businesses can collect customer insights and ideas using crowdsourcing and collaborative platforms (Chen & Liu, 2020; Heiskanen et al., 2005; Karmakar et al., 2023). This strategy is in line with the fundamentals of H2H marketing, which places a strong emphasis on relationship-building and authentic engagement. Even with these developments, the corpus of existing research

frequently falls short of a comprehensive strategy combining CE and H2H marketing. Further multidisciplinary research investigating how these domains can complement one another is desperately needed. One avenue for research could be to investigate how companies can leverage circular economy principles to design more sustainable and exciting customer experiences, or how H2H marketing tactics can encourage and strengthen the implementation of circular habits.

Theoretical Framework Supporting CE and H2H Marketing Synergies

Various theoretical frameworks highlighting the synergies between sustainability and customer engagement can be used to understand how Circular Economy (CE) principles and Human-to-Human (H2H) marketing strategies can be integrated. These models offer an organized method for analyzing the successful integration of CE and H2H marketing to produce more customer-focused and long-lasting business models.

The Resource-Based View (RBV) of the firm, which highlights the strategic significance of internal resources and capabilities in gaining competitive advantage, is one pertinent theoretical framework. Developing distinctive resources and capabilities that are valuable, rare, inimitable, and non-substitutable can give businesses a competitive edge, according to the RBV. By utilizing this framework to amalgamate CE and H2H marketing, enterprises can harness their sustainability endeavors as a distinctive attribute that sets them apart from competitors. A business which is top-notch at sustainable product designs and circular methods can utilize their kits for forging robust real bonds with folks buying this bolsters the allegiance to brand and faith (Agrawal et al., 2024; Cooper et al., 2023a, 2023b; Galpin, 2023).

Stakeholder Theory, another pertinent framework suggests that firms ought to generate value for all stakeholder not only shareowners. It stresses taking into account the needs and interests of different stakeholders like customer employees, supplier and communities. Incorporating CE principles within business operations resonates with the aim of generating value for various stakeholders through encouraging environmental sustainability and social accountability (Gazi et al., 2024; Gazi et al., 2024; Glambosky et al., 2023; Karim et al., 2023; Mahajan et al., 2023). H2H marketing complements this methodology by concentrating on fostering authentic connections with customers along with other stakeholders making sure their concerns is dealt with.

Integrating CE and H2H marketing can also benefit from an understanding of the Triple Bottom Line (TBL) framework, which considers the three pillars of sustainability: economic, environmental, and social. The Triple Bottom Line (TBL) framework emphasizes that companies must strike a balance between social equity, environmental responsibility, and financial performance (Ahmad et al., 2024; Pedroso et al., 2021; Goh et al., 2020; Karim et al., 2024; Karim, Mamun, et al., 2024; Minić & Filipović, 2023). Businesses may lessen their impact on the environment and promote social well-being by implementing CE principles, and H2H marketing techniques can increase client loyalty and engagement. When combined, these strategies offer a comprehensive understanding of sustainability that is advantageous to society and business alike.

The Service-Dominant Logic (SDL) marketing theory is an alternative viewpoint that emphasizes value co-creation between businesses and customers, reorienting the focus from goods to services. According to SDL, relationships and interactions co-create value rather than being ingrained in products. This viewpoint is consistent with the core values of the circular economy (CE), which highlight the significance of creating goods and services that are recyclable, reusable, and refurbished (Dantas et al., 2021; Fehrer et al., 2024; Fehrer & Vargo, 2023). Businesses can increase customer involvement and commitment to sustainability by involving customers in co-creating sustainable solutions through adopting a service-oriented approach.

Lastly, insights into the variables influencing consumer behavior and decision-making are offered by the Theory of Planned Behavior (TPB). According to TPB, attitudes, subjective norms, and perceived behavioral control influence behavior. Businesses can impact consumer behavior by encouraging positive attitudes toward sustainability, using social norms to support sustainable practices, and increasing consumers' perceived control over their choices by implementing this theory to the integration of CE and H2H marketing (Han & Stoel, 2017; Paul et al., 2016; Taufique & Vaithianathan, 2018).

Figure 1: Theoretical Framework of CE and H2H (Authors' Illustration)

METHODOLOGY

This study, acknowledging the nascent stage of H2H marketing and the scarcity of empirical data regarding its implementation in CE contexts, utilizes established theoretical models alongside a thorough literature review to develop an integrated conceptual framework (Roshid et al., 2024; Tanchangya et al., 2024). The primary methodology entails an analysis of foundational theories and models in sustainability and relationship marketing, including the Resource-Based View (RBV), Stakeholder Theory, and Service-Dominant Logic (SDL). Each framework offers insights into the potential advantages of integrating Circular Economy (CE) and Human-to-Human (H2H) principles. The evaluation of these models pertains to H2H's focus on genuine consumer relationships and CE's emphasis on resource optimization, highlighting areas where these frameworks can collaboratively enhance sustainability and engagement. An in-depth exploration of theoretical constructs, including trust-building, consumer empathy, and environmental responsibility in H2H marketing, is conducted, examining how CE principles can enhance these constructs through practices such as waste reduction and product circularity. This process entails aligning customer experience strategies with human-to-human marketing objectives to develop a conceptual framework that demonstrates the capacity for integrated, sustainable practices to establish a durable competitive edge (Kotler et al. 2021c, 2021b; Lei & Pfoertsch, 2023; Posada & Pfoertsch, 2023). This study employs a conceptual methodology to address theoretical gaps and provides a foundational framework for future empirical research to test and build upon. The resulting model serves as a framework for businesses seeking to integrate CE and H2H marketing strategies, while also establishing a foundation for policymakers to promote sustainable, relationship-focused business practices.

STRATEGIC COMBINATION OF CIRCULAR ECONOMY AND H2H MARKETING

Circular Economy Principles

The Circular Economy (CE) offers a transformative approach to designing, producing, and consuming goods. At its core, the CE aims to create a regenerative system that prioritizes sustainability by eliminating waste and pollution, circulating products and materials at their highest value, and regenerating natural systems. By embracing these principles, businesses can drive innovation, enhance efficiency, and contribute to a more sustainable future.

Eliminate Waste and Pollution

In traditional linear economies, waste is an inevitable byproduct of production and consumption. The circular economy challenges this norm by designing out waste and pollution from the outset, rethinking every stage of a product's lifecycle to ensure that waste and pollution are minimized or eliminated. Designing for sustainability involves creating durable, repairable, and ultimately recyclable goods, focusing on modular designs, and using materials that can be easily separated and repurposed. For instance, using biodegradable materials or incorporating easily disassembled components can make recycling more efficient (Asante et al., 2022; Patwa et al., 2021). Innovative production processes also play a crucial role, with techniques like 3D printing reducing material waste by producing items layer by layer, using only the necessary amount of raw materials.

Additionally, adopting cleaner production technologies and utilizing renewable energy sources can help reduce the environmental footprint of manufacturing activities. Efficient resource management involves implementing strategies to optimize the use of materials and energy throughout operations (Fehrer & Vargo, 2023; Lopez &

Legardeur, 2024). Practices such as closed-loop manufacturing, where waste materials are reintroduced into the production cycle, and lean manufacturing, which focuses on minimizing waste and maximizing productivity, reducing environmental impact, and achieving significant cost savings. Zero-waste business models further support this principle, with concepts like product-as-a-service allowing consumers to lease or rent products instead of owning them, ensuring that products are returned and reused instead of discarded (Feldmann, 2023; Ibrahim, 2024; Okorie et al., 2018). This approach reduces waste and extends product lifecycle, with take-back schemes and refurbishing returned products for resale, further promoting the zero-waste model. By eliminating waste and pollution, businesses contribute to environmental sustainability, realizing cost savings and operational efficiencies, underscoring the importance of proactive design and innovative thinking in creating a sustainable economy.

Circulate Products and Materials

Circulating products and materials at their highest value is a fundamental principle of the circular economy. It emphasizes the importance of keeping resources in use for as long as possible, extracting maximum value from them, and recovering and regenerating materials at the end of their service life. By maintaining the value of products, materials, and resources, businesses can drive economic growth while minimizing environmental impact (Çalıkoğlu & Sadowski, 2024; Rocha et al., 2023). Extending the life of products through reuse and redistribution is a key strategy, where functional products can be refurbished and resold, reducing waste and making products more accessible to a broader range of consumers. Establishing take-back programs or partnering with third-party organizations can facilitate the collection and redistribution of used goods. Ensuring that products are repairable is essential for maintaining their value, and companies can design products with modular components that can be easily replaced or repaired, thus extending their usable life. Offering repair services and providing customers with access to spare parts can encourage product longevity, fostering a culture of durability. Promoting repair over replacement helps companies build stronger relationships with customers while reducing environmental impact (Dantas et al., 2021; Ho et al., 2024; Kaewunruen et al., 2024). Remanufacturing involves rebuilding products to their original specifications using a combination of reused, repaired, and new parts, restoring products to like-new condition, and conserving resources. Creating remanufacturing programs to reclaim and refurbish used products adds value and reduces waste, offering high-quality, cost-effective alternatives to new products. Recycling remains a vital component of the circular economy, with a focus on recycling materials at their highest value. This involves not only collecting and processing recyclable materials but also ensuring their use in producing high-quality new products (Alhawari et al., 2021; Palombi et al., 2024; Ul-Durar et al., 2023). Advanced recycling technologies, such as chemical recycling, can break down complex materials into their basic components, enabling the creation of new, high-value products. Establishing robust recycling infrastructures and incentivizing consumer participation are crucial for effective recycling programs. By circulating products and materials at their highest value, businesses can reduce the demand for virgin resources, lower environmental impacts, and create new economic opportunities, highlighting the importance of closing the loop on product lifecycles and maximizing resource efficiency.

Regenerate Nature

Regenerating natural systems is a cornerstone of the circular economy, going beyond reducing harm to actively restoring and enhancing ecosystems. By embracing regenerative practices, businesses can contribute to the health and resilience of natural systems, ensuring resources are available for future generations. Sustainable sourcing involves obtaining raw materials in ways that respect and preserve ecosystems, including responsible forestry, sustainable agriculture, and ethical mining. Businesses can work with suppliers to ensure materials are sourced sustainably and transparently, supported by certification programs such as Fair Trade and Forest Stewardship Council (FSC). By prioritizing ethical sourcing, companies can support the long-term viability of natural resources. Agriculture plays a significant role in the circular economy through practices that restore soil health, enhance biodiversity, and sequester carbon (Herrador & Van, 2024; Minić & Filipović, 2023; Tuboalabo et al., 2024). Techniques like regenerative farming, agroforestry, and permaculture improve soil fertility, increase crop resilience, and support ecosystem services. Businesses in the agricultural supply chain can promote and invest in regenerative practices to ensure long-term sustainability, reducing their environmental footprint and contributing to global food security. Protecting and enhancing biodiversity is critical for the resilience of natural systems. Businesses can support biodiversity through habitat restoration, conservation initiatives, and sustainable land management practices. Incorporating biodiversity goals into corporate sustainability strategies and partnering with conservation organizations can amplify these efforts (Scheiner, 2024; United Nations, 2024). Fostering biodiversity ensures the stability and productivity of ecosystems essential for operations and the broader environment. The

circular bioeconomy focuses on using biological resources and processes to create sustainable products and services, utilizing biomass for bioenergy, bioplastics, and bio-based materials. By harnessing the power of nature, businesses can develop innovative solutions that are both sustainable and economically viable. Investing in research and development of bio-based technologies and products can drive the transition to a circular bioeconomy, reducing reliance on fossil fuels and supporting natural resource regeneration. Beyond sustainable practices, businesses can proactively restore degraded ecosystems, including reforestation, wetland restoration, and rehabilitation of polluted environments (Ali & Shirazi, 2023; Ng & Wong, 2024; Winans et al., 2017). Companies can invest in restoration projects and collaborate with environmental organizations to restore natural habitats and improve ecosystem services. Committing to ecosystem restoration allows businesses to play a crucial role in mitigating climate change, preserving biodiversity, and ensuring the planet's long-term health.

Figure 2: Circular Economy Principles (Authors' Illustration)

H2H Marketing Principles

Human-to-human (H2H) marketing is a transformative approach that emphasizes genuine connections, empathy, and value creation in business relationships. Unlike traditional marketing strategies that often focus on transactions, H2H marketing centers on human interactions and creating meaningful experiences. The core principles of H2H marketing include design thinking, service-dominant logic, and digitalization. By integrating these principles, businesses can foster deeper relationships, enhance customer satisfaction, and drive sustainable growth.

Design Thinking

Understanding people's requirements, behaviors, and experiences is critical to design thinking, an innovation strategy that puts people first. Directing sympathetic conversations toward consumers to develop products that genuinely meet their needs and fulfill their dreams is at the heart of human-to-human marketing. Step one is to put yourself in the consumer's shoes and learn as much as possible about their wants, needs, and struggles through qualitative research techniques like in-depth interviews, participant observation, and ethnographic research. A company can learn much about its consumers' wants and requirements by trying to live through them. Businesses synthesize insights from the empathy phase to formulate unambiguous problem statements once customers have empathized with them (Kotler et al., 2024b; Kotler, Pfoertsch, & Sponholz, 2021a; Kotler, Pfoertsch, Sponholz, et al., 2021). These statements provide a foundation for building unique solutions that connect with customers on a personal level. Developing original and efficient solutions to the stated challenges requires ideation, which entails coming up with various creative suggestions, promoting brainstorming sessions, and cultivating an environment of open creativity. To boost solution originality, it is a good idea to include various teams in the ideation process (Kotler et al., 2024f; Kotler et al., 2021b; Kotler et al., 2023b; Lei & Pfoertsch, 2023). Prototypes, which can range from basic sketches to interactive models, enable businesses to test their ideas cost-effectively and timely, and their complexity is directly proportional to the solution's potential. We can leverage the input we get from testing these prototypes with actual people to make our solutions even better. After a solution has been validated and tested, the next step is to launch it and keep an eye on how well it is doing. Based on customer feedback, you can make adjustments to make certain it is still meeting their needs. Businesses can create products, services, and experiences that are in line with customer values and expectations by using design thinking in H2H marketing (Kotler, Pfoertsch, Sponholz, & Haas, 2023c; Kotler, Pfoertsch, Sponholz, & Marketing, 2023). This approach promotes innovation and increases customer loyalty because it shows that the company is genuinely committed to understanding and solving customer problems.

Service-Dominant Logic

By shifting the focus from products to services, service-dominant logic (SDL) reimagines the very nature of economic transactions. Collaborative interactions between organizations and customers are crucial to value co-creation in SDL's H2H marketing strategy. Meaningful connections with clients and their active engagement in service creation and delivery are critical components of this. The emphasis moves from just providing products to empowering customers to accomplish their objectives; customers are viewed as resource integrators who mix resources offered by businesses with their personal expertise, knowledge, and experiences to generate value (Kotler et al., 2024e; Kotler et al., 2021f, 2021c). When companies supply the resources, data, and encouragement needed for this process, they are showing their support. SDL prioritizes establishing and nurturing long-term relationships with clients. We want to develop partnerships that last, based on trust and collaboration, and we co-create value with our customers. To form strong connections with clients, it is essential to engage in relationship-building activities, including personalized communication, loyalty programs, and community engagement. Businesses should think about the bigger picture and work with suppliers, partners, and customers to develop integrated solutions because value co-creation happens in complex service systems and ecosystems involving many stakeholders. Synergies can be leveraged and the total value proposition can be enhanced when firms adopt a holistic view (Kotler et al., 2024g; Kotler et al., 2021b; Kotler et al., 2023b). In addition, SDL encourages a growth mentality in which companies routinely evaluate and enhance their service offerings in response to changing demands and consumer feedback. Services are kept up-to-date and successfully produce value for customers through this iterative method. Businesses can fit with the H2H marketing ethos of prioritizing human connections and developing mutual value by embracing service-dominant reasoning (Kotler et al., 2024a, 2024d). This reorients their approach to value generation towards collaborative interactions and long-term relationships.

Digitalization

The term "digitalization" refers to the widespread adoption of digital technology within an organization, which has a profound impact on customer service and the value that businesses provide. The rise of digital marketing has revolutionized human-to-human marketing by allowing for more relevant, personalized, and real-time interactions with customers. With the use of digital technology, companies can now gather and analyze massive volumes of consumer data, which in turn allows for more tailored interactions. Businesses may better meet the demands of their customers by gaining insight into their habits, likes, and dislikes using data analytics (Kotler et al., 2024b; Kotler et al., 2021e, 2021a). Thanks to this personalization, customer satisfaction is enhanced by providing timely, appropriate solutions that resonate with specific circumstances. Thanks to digitalization, websites, mobile apps, social media, and in-store experiences can all be seamlessly interacted with. Customers are guaranteed consistent, high-quality experiences across all channels of engagement with enterprises through an omnichannel strategy, which creates a seamless and convenient customer journey (Kotler et al., 2024f; Kotler et al., 2021; Posada & Pfoertsch, 2023). Another important part is real-time communication, which helps companies quickly answer consumer questions, comments, and problems. The trust and happiness of customers are enhanced by the perception of immediacy and attentiveness fostered by this. Social media platforms, chatbots, and live chat allow for instantaneous connections and continual consumer involvement. Furthermore, automation technology improves operational efficiency by streamlining repetitive procedures and duties, which in turn frees up resources for activities that generate value. In human-to-human marketing, automation improves customer service by automating mundane tasks and providing instant answers to frequently asked questions. This frees up human agents to handle more intricate and individual interactions with customers (Kotler et al., 2021f; Kotler et al., 2023c; Kotler et al., 2023). By shedding light on consumer habits, industry tendencies, and performance indicators, digitalization also enables companies to make data-driven decisions. By analyzing data, organizations may find ways to improve, enhance marketing tactics, and create focused campaigns. This way, they can be sure that their activities are based on reliable and relevant information. A further perk is that digital technologies let companies make more engaging and immersive experiences for their customers, which means they can connect with them on a deeper level (Kotler et al., 2024e; Kotler et al., 2021c). For instance, VR and AR create one-of-a-kind, unforgettable experiences that deepen consumer loyalty to the company. Businesses may create experiences that are both practical and meaningful by using digital tools. Using digital tools, companies may improve their head-to-head marketing campaigns, connecting with customers in meaningful ways through more efficient, engaging, and individualized interactions.

Figure 3: H2H Marketing Principles (Authors' Illustration)

SYNERGIZING CIRCULAR ECONOMY AND H2H MARKETING

An all-encompassing strategy for environmentally responsible company operations that speak to people's souls is possible when H2H (Human-to-Human) Marketing and the concepts of the Circular Economy are combined. To promote the principles of the Circular Economy—which includes reducing waste, keeping products and materials in use, and regenerating natural systems—H2H marketing, as highlighted by Philip Kotler, focuses on building authentic relationships with customers based on trust, empathy, and transparency. Through honest storytelling and open communication, companies may educate and inspire consumers about sustainable practices through head-to-head marketing. Companies like The Body Shop have found success by taking this tack since it helps establish credibility and devotion among customers, who are then more likely to buy into the company's sustainability claims. Businesses like Unilever and Apple are good examples of how H2H marketing promotes collaboration throughout the value chain, which improves the customer experience through services like product repair and refurbishment and guarantees responsibility and transparency in company procedures. Supporting H2H marketing and Circular Economy practices, the idea of marginal gains can boost personalization, customer feedback loops, and employee engagement through tiny, incremental improvements. Supply chain management, operational efficiency, and product design can all benefit greatly from these small enhancements that boost sustainability. Successful implementation of these concepts is illustrated by real-world examples from firms such as Apple, Patagonia, IKEA, and Unilever. These examples highlight the strong relationship between H2H marketing and the Circular Economy, which leads to remarkable social and environmental benefits.

In addition, the collaborative spirit of the Circular Economy is a wonderful fit with the human-centered marketing approach of H2H. In supply chains, where businesses engage with one another, their suppliers, consumers, and even rivals to design systems for the perpetual repurposing and reuse of resources and goods, this kind of cooperation is essential for closing the loop. H2H marketing plays a crucial role in developing the Circular Economy by encouraging a culture of openness and responsibility, which in turn helps keep all stakeholders informed and involved in the company's sustainability initiatives. With marginal gains applied here, even little improvements in consumer engagement or operational efficiency can add up to big bucks. For instance, products can be designed to be easier to disassemble, which can lead to less waste and more recycling opportunities. Just like that, small changes in logistics can have a big impact on reducing waste and increasing efficiency. Businesses that follow these guidelines will have an edge in a market where sustainability is becoming more critical, as they will be able to lessen their negative effects on the environment while simultaneously improving their image and the loyalty of their customers. People and the earth will reap the benefits of an economy that is more sustainable and resilient if more companies follow this integrated strategy.

CHALLENGES AND OPPORTUNITY

For companies that want to be sustainable and focus on people, the conjunction of the Circular Economy (CE) with Human-to-Human (H2H) marketing offers both possibilities and problems. The positive aspect is that sustainable business practices are promoted by combining CE principles with H2H marketing. These practices center on human values and ethics and prioritize customer engagement, loyalty, and trust. Sustainable goods and services generate new income streams, while this integration motivates firms to innovate in product design, waste reduction, and resource efficiency, all of which boost brand recognition. It also gives you an advantage in the market since it fits with what customers want, which is more environmentally conscious and socially conscious

brands. But there are just as many obstacles. Many organizations may find it challenging to transition to a CE model due to the significant initial investments needed for sustainable technologies, infrastructure, and training. Others involved may be resistant to change because they are wedded to linear economic theories and don't see the value in CE in the long run. Another obstacle to openness and responsibility is the difficulty of quantifying and conveying the social and environmental effects of CE programs. To conquer these challenges, companies must take a long-term view that incorporates strong stakeholder involvement, constant innovation, and unwavering dedication to sustainability objectives. Companies may build a robust and future-ready human-centric business model by tackling these difficulties and using the synergy between CE and H2H marketing.

FUTURE DIRECTIONS

In order to advance sustainability and people-centric business practices, future research and developments should center on combining Circular Economy (CE) with Human-to-Human (H2H) marketing. Utilizing cutting-edge technology like the Internet of Things (IoT) and artificial intelligence (AI) can revolutionize resource management in CE and personalize consumer experiences in H2H marketing all at the same time. Marketers can benefit from a better understanding of customer behavior and the social and psychological elements of sustainable consumption when developing campaigns. It is also critical to study how sustainability-focused consumer attitudes have changed as a result of education and awareness initiatives. The best regulations and incentives to encourage sustainable company practices can be found by studying the legislative and economic frameworks that encourage the use of CE and H2H marketing. Another option to consider is looking at public-private partnerships and how they may encourage investment and innovation in environmentally friendly infrastructure and technology. Lastly, to prove to stakeholders that CE and H2H marketing campaigns are beneficial to society, the environment, and the bottom line, it is crucial to provide thorough measurements and assessment tools. Future research can help improve the synergy between CE and H2H marketing by tackling these areas. This will lead to a more sustainable and people-centric corporate landscape.

CONCLUSION

Businesses seeking to embrace sustainable and people-centric practices have a compelling route ahead of them in the combination of Circular Economy (CE) and Human-to-Human (H2H) marketing. Improving consumer involvement and brand reputation are two side effects of this integration's many potential benefits, which include new product designs, less waste, and more efficient use of resources. Understanding consumer behavior and encouraging education on sustainability may drive effective marketing tactics while leveraging new technologies like AI and the Internet of Things can optimize resource consumption and tailor customer experiences. However, some obstacles need to be overcome, such as the complexity of impact measurement, stakeholder opposition, and large initial investments. Companies can triumph over these obstacles by embracing a strategy that involves involving stakeholders, constantly innovating, and establishing legislative and economic frameworks that are supportive. An effective, long-term company model that prioritizes people and their needs can be achieved by combining CE and H2H marketing strategies.

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INDUSTRY 6.0 AS AN EMERGING RESEARCH FIELD: A SYSTEMATIC AND BIBLIOMETRIC ANALYSIS

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Abstract

Industry 6.0, a nascent paradigm in industrial development, amalgamates human-centric automation, hyper-connectivity, and cognitive manufacturing, propelled by developments in artificial intelligence, quantum computing, and edge computing. It performs a thorough bibliometric analysis of Industry 6.0 research, utilizing just the Scopus database to delineate the field's developmental timeline and present-day study dynamics. Using a systematic literature review (SLR) and a bibliometric assessment, researchers investigate the principal topics, technical advancements, and significant contributions influencing Industry 6.0. The authors use PRISMA standards and the Scientific Mapping Protocol to reveal thematic transitions towards sustainable and ethical production, examining how Industry 6.0 advances previous industrial paradigms to tackle contemporary industrial and environmental issues. Findings from the study provide critical insights into the parameters and conceptual underpinnings of Industry 6.0, underscoring opportunities for future multidisciplinary inquiry and policy ramifications that would facilitate the advancement of sustainable, reliable methods of production. It provides a systematic framework for scholars and practitioners, outlining prospective research avenues and actual implementations that connect innovation with environmental sustainability in Industry 6.0.

Keywords: Industry 6.0, emerging research trends, systematic review, bibliometric review

INTRODUCTION

Industry 6.0 is the new horizon of further research in which pillars of Industry 4.0 and Industry 5.0 are manipulated. Industry 4.0 was remarkable because it changed the manufacturing process by introducing new technologies such as IoT, cyber-physical systems, and big data that helped raise automation and digitization of industrial processes to another level. This way, Industry 5.0 began to address issues of humanity, in which particular attention is paid to the human-machine cooperative interaction and society as a whole, its resilience, and sustainable development. By sustaining these, Industry 6.0 drives towards higher levels of systemic sustainability and human-integrated and adaptive industrial engagement of machines. Utilizing emerging technologies such as AI, quantum computing, and robotics, Industry 6.0 aims to offer hyper-personalization in the production process and instantaneous changes as well as waste-free production mechanisms and systems (Chourasia et al., 2022; Damaševičius & Misra, 2024). Strategies such as this are anticipated to manage global issues such as environmental concerns and how resources are managed by establishing intelligent, active, and agile industrial ecosystems. Some authors, such as (Almusaed et al., 2023; Duggal et al., 2022), and others, discuss the identification of Industry 6.0 as a new way of revolutionizing production and supply chains for the future by using advanced technologies based on data that are sustainable.

Nonetheless, some challenges will have to be addressed in the course of adopting Industry 6.0 for it to take root across the various industries, among them involving new infrastructure, ethical issues, and human resource skills. This shift also tends to align with modern trends of industrial revolutions focusing on reliability and sustainability, more of which have been informed by global threats like COVID-19 that have spurred the need for auditing of supply chains and production methods. In the long run, Industry 6.0 will revolutionize industries through

developing intelligent, adaptable systems to satisfy various industrial requirements to foster a very flexible, sustainable, and personalized future for global industries (Doyle-Kent & Kopacek, 2023; Murugan & Prabadevi, 2023; Singh et al., 2023).

Although the current literature is focused on Industry 6.0 and its principles, the findings of the present study reveal research limitations that exist in the field. For example, the specific goals of systemic sustainability of geo-anthropology establish the call for the need to establish rigorous frameworks that link sustainability across sectors (Fernández-Miguel et al., 2024), as well as an analysis of the Indian manufacturing paradigm of Industry 5.0: quotidian challenges and protectionist anti-skills as key factors impacting Industry 6.0 readiness (Tavakkoli-Moghaddam et al., 2024). Furthermore, the application of AI in sustainable business practices also shows the gap in innovation enforcement without human supervision in emerging economies (Carpanzano & Knüttel, 2022; Nleya & Velempini, 2024). Last, the literature on Industry 6.0 technologies in the UAE Banking industry and their impact on the global economy and society, shows an issue of responsible implementation of developed technologies (R. Jain, 2024). All these works point out the fact that organizations have to design and employ dynamic plans that achieve the objectives of Industry 6.0, namely sustainability, technology, and ethics. Here are three possible research questions (RQs) for your study on Industry 6.0:

- RQ1: What are the current trends, themes, and topics that can help unveil the concept of Industry 6.0 as an emerging research area?
- RQ2: Who are the main authors in Industry 6.0 research, and what is their number of publications, citation frequency, and the source titles in which they have published their articles most frequently?
- RQ3: What are the relations between this new concept called Industry 6.0 with the previous industrial revolution (Industry 4.0, 5.0)? And what are trends in manufacturing and technologies that could be affected by Industry 6.0?

Industry 6.0 is the area of study that must be focused on as this is the next step in the attention of industrial revolutions which is not limited to advanced technologies such as AI, robotics, autonomous machines, etc. but also highlights sustainability, ethics, and innovation with human core. This is due to the fact that global industries deal with challenges that are extreme and never experienced before which include climate change, diminishing resources, and social injustice. This is where Industry 6.0 comes in as a solution through green manufacturing and responsible technology development. This research is essential for all the policymakers struggling to avert innovation damaging labor markets, compromising environmental protection, and inequality. The systematic and bibliometric review of Industry 6.0 will provide a further perspective that will enhance policymaking on the existing and emerging trends toward global competitiveness, resilience, and inclusiveness in a changing global economy.

METHODOLOGY

Using SLR and bibliometric analysis, this study aims to summarize the stated objectives (Ellili et al., 2023; Ghobakhloo et al., 2021; Martínez-Falcó et al., 2024) by identifying current trends and themes in Industry 6.0, analyzing the contributions of key authors in the field, and exploring the relationships between Industry 6.0, Industry 5.0, and emerging trends in manufacturing and technology. The mixed-methods strategy incorporates bibliometrics, a quantitative method for systematically analyzing, connecting, mapping, and visualizing publications and their contributions to a particular field of study (Lima Santos et al., 2020; Nobanee et al., 2021), and research synthesis, also known as a systematic review, to offer a complete and objective synopsis of all pertinent studies on a particular issue, with an emphasis on studies that report facts rather than theories or concepts (Aromataris & Pearson, 2014; Averis & Pearson, 2003; Egger et al., 2008; Higgins JPT et al., 2024; Khan et al., 2003; Tricco et al., 2011). The meticulousness and high quality of the documents examined were ensured by the methods of this investigation. To do this, we used Boolean operators in conjunction with other indications to hone our search. Through a systematic literature review (SLR) that evaluates previous research (Kent Baker et al., 2020; Rajput & Singh, 2020), this study establishes trends, practical consequences, and future potential related to technological conversion under Industry 6.0. For the review process to be robust and reliable, it follows PRISMA methods and standards (Tranfield et al., 2003). The following are some examples of the measures used to guarantee the validity and reliability of the SLR in this research:

- Ensured that the research team was aware of the fundamental presumptions and provided clear definitions of important terms.
- Created an early SLR framework to govern and organize SLR processes uniformly.
- Prior to deployment, all SLR phases were established along with their objectives.
- Put in place stringent data management procedures to detect and fix mistakes, avoid data loss, and keep track of information precisely.
- Research goals for Industry 6.0 were used to generate pertinent and appropriate review questions.
- Established and implemented dependable criteria for inclusion and exclusion.
- Choose extensive databases to gather a diverse array of pertinent publications.
- Thoroughly documented search procedures to guarantee reproducibility.
- Used a consistent data gathering form to ensure uniformity.
- Executed a twofold extraction of study characteristics with multiple content assessors.
- Supervised and instructed all content assessors extensively.
- Assisted in group reassessments to settle differences in evaluations.
- To improve the clarity and emphasis of the data, a text-eliminating protocol was implemented.

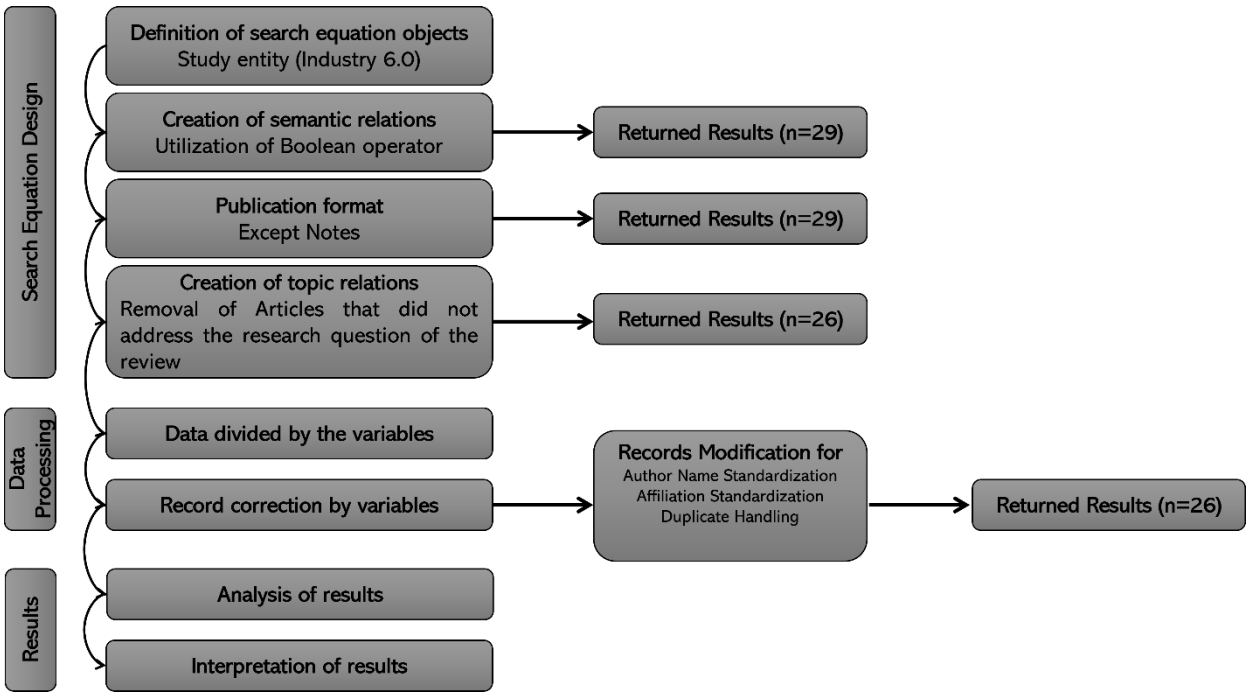

Figure 1: The process implemented for delimiting literature (PRISMA CHART)

Resource Identification Principles & Data Collection

In accordance with the Scientific Mapping Protocol for Bibliometrics and PRISMA guidelines for Systematic Literature Reviews, authors were required to initiate the process by defining qualifying criteria. Research on Industry 6.0 is in its nascent stages, resulting in a limited body of literature. Consequently, according to the PRISMA and Scientific Mapping Protocols, a comprehensive set of inclusion and exclusion criteria was employed.

Table 1 delineates the inclusion and exclusion criteria used for the current investigation. This table delineates that the acceptable resources for this study comprise journal articles published during our search queries, which were designed to encompass a wide array of pertinent Industry 6.0 publications while eliminating irrelevant items that may potentially skew our findings. Consequently, we retrieved possibly pertinent papers and only screened for non-retracted journal publications.

Table 1: Search Query

Description	*Conditions*	*Documents*
Search Quary	TITLE-ABS-KEY ("Industry 6.0")	29
Search Query after Refine	TITLE-ABS-KEY ("Industry 6.0") AND (LIMIT-TO (DOCTYPE, "ch") OR LIMIT-TO (DOCTYPE, "ar") OR LIMIT-TO (DOCTYPE, "cp") OR LIMIT-TO (DOCTYPE, "re") OR LIMIT-TO (DOCTYPE, "cr") OR LIMIT-TO (DOCTYPE, "bk")) AND (LIMIT-TO (PUBSTAGE,"final"))	29
Access	Included both open access and non-open access	
Search Date	August 06, 2024	
Years	All years (2012-2024 August)	
Subject Area	Excluded only note	
Publication Stage	Final	
Language	English	

Search and Collecting Relevant Articles

Our research is to examine papers from a diverse array of sources to provide a thorough overview of the industry 6.0 research environment, employing a systematic search strategy to locate the first collection of articles. To be effective, our study needed an organized, vetted, high-quality bibliometric data source. Consequently, we utilized the Scopus (Elsevier) database, a prominent repository of research publications (Harzing & Alakangas, 2016; Liao et al., 2017), recognized as a dependable resource for prior bibliometric studies (Kipper et al., 2020) and systematic literature reviews (Martínez-Falcó et al., 2024). The inquiry encompassed just the search phrase "Industry 6.0". In August 2024, we conducted a preliminary search query to evaluate the trustworthiness of our results and refine the terms. The final modifications were completed in September 2024. In the final search regarding the inclusion and exclusion criteria, we obtained 29 publications. All topic areas are included, while “note” is excluded as a document type; all English and final staged publishing papers are considered for the paper. The search approach imposed no limits regarding the year, topic area, or geography for both the systematic and bibliometric literature reviews. Following the screening and alignment with the objective-based authentication for this work, we excluded three articles from both the scientific mapping and systematic literature review (SLR). Consequently, 26 articles were selected for content analysis processes.

Data Extraction and Collection

In this SLR, we analyzed the content of eligible articles using qualitative and quantitative evaluations to collect two kinds of data. Among the first categories were details on the article, including its title, keywords, abstract, and year of publication. This data was organized and analyzed using programs such as EndNote, Microsoft Excel, and VOSviewer. To address the study's research objectives, the second type centered on important features of Industry 6.0, including its definition, scope, technical trends, conceptual drivers, and longer-term implications. Two separate teams of two assessors each collected data according to a predetermined review methodology in an effort to eliminate or significantly reduce bias. To keep track of information gathered throughout the assessment, a database was built using Microsoft Excel. The procedure involved a comprehensive text-cleaning procedure to deal with discrepancies in terminologies and reconsidering articles to settle objections.

There were two stages to the data-gathering process:

- **Phase 1**: Implemented a standard methodology in SLR investigations by quantitatively answering the first two research questions (RQ1 and RQ2) using EndNote for reference management and VOSviewer for text mining and bibliometric network visualization.

- **Phase 2**: Concentrate on the outstanding research inquiries, doing a content-centric analysis of each piece, utilizing both qualitative and quantitative methods. A standardized template inside the MS Excel database was utilized for uniform extraction of data.

INDUSTRY 6.0 REVIEW OF EXTENDED LITERATURE

Industry 6.0—Concept, Ideology, and Proposals

Industry 6.0 signifies the forthcoming evolutionary stage of the industrialization process, advancing the frontiers of digitalization, sustainability, and human-centered innovation. It is defined by the integration of modern technologies, including quantum computing, artificial intelligence (AI), and biotechnology, with conventional concepts of computerization and industrial efficiency. In contrast to its predecessors, Industry 6.0 seeks to include human intelligence and imaginative thinking in extensively automated systems, fostering a synergistic collaboration between humans and robots. The new direction emphasizes antifragile manufacturing structures that not only endure shocks but also prosper in uncertainty while prioritizing ecological responsibility, customization, and global cooperation.

The 6.0 Industry Concept

Industry 6.0 fundamentally envisions a highly networked, decentralized industrial landscape that harmoniously merges human creativity with autonomous technologies. This transition transcends conventional automation by integrating human-machine symbiosis, wherein robots adjust to human requirements via computational intelligence and real-time learning skills. Quantum computing is essential for facilitating swift data processing, hence improving forecasting, supply chain optimization, and intricate decision-making procedures (Ahmad et al., 2024; Archana & Kingsly Stephen, 2024; Heilala & Singh, 2023).

Industry 6.0 expands upon the human-technology partnership of Industry 5.0, emphasizing personalized solutions, resilience, and sustainability across several industries. This encompasses the integration of circular economic concepts, wherein industrial methods emphasize energy savings, resource reuse, and the elimination of waste (Chourasia et al., 2022; Damaševičius & Misra, 2024; Karim et al., 2025; Waaje et al., 2025). The objective of Industry 6.0 is to establish industries that are not only potent but also environmentally sustainable, emphasizing minimum ecological effect.

Ideology Behind Industry 6.0

In a world where everything is becoming more complicated and unpredictable, the necessity for hyper-connectivity and resilience is driving the idea of Industry 6.0. As the demand for customized goods and services continues to rise, businesses are beginning to focus more on consumer feedback and moving away from classic supply-push methods. The use of cutting-edge technology like 3D printing, artificial intelligence, and robots to tailor product design and production to specific consumer tastes is at the heart of this revolution (Goel, 2024; Jain & Bhagat, 2024; Minz, 2024; Singh et al., 2024; Srivastava et al., 2024).

In addition, the idea of sustainability is still central to the industry 6.0 framework. The shift further towards sustainable manufacturing practices is becoming an essential part of the industrial ecosystem as companies are under increasing pressure to lessen their impact on the environment and lessen their carbon footprint (Archana & Kingsly Stephen, 2024; Duggal et al., 2022; Fernández-Miguel et al., 2024; Singh et al., 2023). To guarantee that technical advancements are in line with worldwide sustainability objectives, Industry 6.0 prioritizes decarbonization, waste reduction, and the integration of energy from alternative sources.

Proposals for Implementing Industry 6.0

In order to fully realize the potential of Industry 6.0, it is necessary to put into action a number of strategic suggestions. To begin, the use of artificial intelligence and quantum computing in the industrial sector will enhance real-time selection, allocation of resources, and analytical prediction. Additionally, neural networks and machine learning will automate complicated processes while allowing for human oversight, which will foster innovation. The development of distribution networks that are both ecologically conscious and adaptable, and that make use of blockchain technology to provide transparency, real-time monitoring, and green energy, will make it possible for antifragile processes to emerge from and improve during times of crisis. Putting employees at the center of functioning through the use of cognitive support tools, augmented reality (AR), and personalized biotechnology is

an essential component of human-centered engineering, which aims to improve both efficiency and contentment. Industry 6.0 must also embrace a framework for a circular economy, which promotes the 4Rs (reduce, reuse, recycle, and replan) in order to minimize waste and restrict the detrimental effect that it has on the environment (Karim et al., 2024; Roshid et al., 2024). For the purpose of establishing standardized standards for data exchange, the field of cybersecurity, and innovative manufacturing operations, cross-border cooperation is required. This will ensure that Industry 6.0 can work across borders. In conclusion, the adoption of resilience and innovation via constant adaptation will make it possible for industries to flourish in the face of volatility, therefore expanding the frontiers of the service and production industries.

Industry 6.0 Technologies

Successive iterations of Industry 4.0 and 5.0 laid the groundwork for what is envisioned as the sixth industrial revolution, which will place an even greater emphasis on human-robot collaboration, sustainability, and resilience. Quantum computing, AI, cloud computing, the Internet of Things (IoT), and cyber-physical systems are all part of this cutting-edge technology that aims to build durable, adaptable, and antifragile smart manufacturing environments across networks. Sustainable development, enhanced quality of life, and global competitiveness are some of the larger social goals that Industry 6.0 aims to optimize alongside industrial process optimization. The fundamental technologies that are propelling Industry 6.0 and the ways in which they can revolutionize many sectors are discussed in these sections.

Artificial Intelligence and Machine Learning

As the core technologies of Industry 6.0, artificial intelligence (AI) and machine learning (ML) are driving automation, optimization, and decision-making processes across a wide range of sectors simultaneously. To provide predictive analytics, self-learning, and real-time decision-making in dynamic contexts, artificial intelligence systems in Industry 6.0 go beyond the capabilities of simple automation. Artificial intelligence-powered systems are able to recognize trends, anticipate breakdowns in equipment, and optimize production schedules with minimum participation from humans. This is especially visible in industrial operations (Archana & Kingsly Stephen, 2024; Nnam et al., 2024). The processing and interpretation of the enormous volumes of data that are produced by connected machinery in Industry 6.0 is made possible by machine learning algorithms, which are a subset of artificial intelligence. In order to reduce downtime and improve overall productivity, these algorithms make it possible for machines to do predictive maintenance, which allows them to independently anticipate malfunctions and order replacements before a failure happens (Archana & Kingsly Stephen, 2024; Subbiah et al., 2024). The enhancement of human-robot collaboration is another area in which artificial intelligence is playing a crucial role. Adapting to changes in real-time and learning from human inputs, robots that are equipped with artificial intelligence are able to operate alongside people in complicated production environments (Carpanzano & Knüttel, 2022; Heilala & Singh, 2023). A highly effective, secure, and profitable working environment is produced as a result of the combination of human cognitive abilities with the processing capacity of artificial intelligence.

Quantum Computing

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Cyber-Physical Systems (CPS) and Internet of Things (IoT)

CPS are the backbone of Industry 6.0. They combine computing resources with physical processes to generate autonomous systems that are extremely responsive. In order to track, manage, and enhance manufacturing processes in real-time, CPS integrates hardware, sensors, and software. Industry 6.0 is all about CPS working in harmony with the IoT, which is a network of networked digital devices that are always sharing data in an effort to make operations more efficient and adaptable. Connected devices in Industry 6.0 aren't the only ones that can communicate and make choices on their own using data analytics and artificial intelligence; the Internet of Things goes much beyond that (Anusha et al., 2024; Das & Raj, 2024). For instance, in an intelligent manufacturing facility, IoT sensors may monitor machine efficiency, product standards, and environmental factors simultaneously, transmitting this data to a centralized database for evaluation. Artificial intelligence systems then analyze this data to arrive at well-informed conclusions, including modifying manufacturing settings to cut down on energy waste or increase efficiency (Liu et al., 2023; Tang et al., 2023; Umar & Rana, 2024). Manufacturing can be more adaptable and personalized with the help of CPS and the Internet of Things. By using real-time modifications in production in response to consumer demand, Industry 6.0 technologies enable customized lot-size-one manufacturing that efficiently satisfies specific client preferences.

Cloud Computing and Edge Computing

Cloud computing has been a cornerstone of Industry 4.0 for quite some time now since it offers organizations the ability to scale their storage, processing capacity, and business analytics capabilities. Industry 6.0, on the other hand, takes these capabilities to a higher level by including edge computing, which processes data closer to the source of generation rather than depending on centralized cloud servers (Barboni, 2023). In the context of Industry 6.0, edge computing is a solution to the latency problems that are associated with cloud computing. This solution makes it possible to make decisions in real-time in industrial environments where time-sensitive activities are essential. Companies are able to analyze data from the IOT and computerized power supply systems (CPS) systems locally by distributing processing resources at the network's edge (Caiza et al., 2020; Kubiak et al., 2022). This helps to improve reaction times and reduce bandwidth use. The applications that require quick input, such as robots, autonomous cars, or remote diagnostics, are particularly able to benefit from this. In the meanwhile, cloud computing continues to play an important part in the storage of data, the analysis of vast amounts of data, and the cooperation of individuals. Cloud computing platforms are utilized by Industry 6.0 in order to store and analyze huge datasets that are produced by networked devices (Qiu et al., 2020; Trinks & Felden, 2018). This ensures that insights are shared across global supply chains and enables collaborative improvements in manufacturing operations.

Additive Manufacturing and 3D Printing

By facilitating quick prototyping, bespoke manufacture, and material efficiency, additive manufacturing, also known as 3D printing—is poised to transform production processes in Industry 6.0. There is less waste and more exact control over material utilization with additive manufacturing than with traditional subtractive manufacturing, which involves removing material to form a product. By combining additive manufacturing with artificial intelligence and the Internet of things, smart, self-optimizing production systems may be created in Industry 6.0. To optimize material utilization, printing speed, and quality, for instance, 3D printers equipped with Internet of Things (IoT) sensors may give real-time feedback on the printing process. Additionally, AI systems can foresee printing process inefficiencies or faults, allowing for proactive problem-solving. Additive manufacturing's adaptability is in line with Industry 6.0's emphasis on the consumer (Dedeloudi et al., 2024; Karmakar et al., 2022, 2023; Wu et al., 2023; Yu, 2024). Companies may reduce inventory costs and lead times while still meeting consumer demands with the on-demand creation of customized parts.

Blockchain Technology

The capacity of blockchain technology to improve supply chain visibility and safety is causing it to gain popularity in Industry 6.0, despite its reputation for safeguarding Bitcoin transactions. Securely recording every transaction or occurrence in a supply chain, blockchain's decentralized, immutable ledger technology guarantees data is tamper-proof and easily traceable. Industry 6.0 makes use of blockchain technology to verify product quality at

every stage of the supply chain, monitors raw material compliance with environmental regulations, and traces the origin of raw materials (Chandan et al., 2023; Fenwick & Vermeulen, 2018; Rjoub et al., 2023). Enhancing trust between vendors, manufacturers, and customers, blockchain technology reduces the risk of deception, infringement, and interruptions in the supply chainby offering real-time insight into every phase of the manufacturing process.

Human-Robot Collaboration and Antifragility

The emphasis on antifragility and human-robot collaboration is a hallmark of Industry 6.0. Robots in Industry 6.0 are seen as more than simply machines; they are partners in the human-robot relationship that boosts human performance. Thanks to artificial intelligence, robots can pick up new skills from humans, adjust to different jobs, and even help with complicated problems. By working together, we can build manufacturing facilities that are more adaptable and dynamic, allowing people to concentrate on strategic and creative work while robots take care of the boring or risky stuff. Mechanisms that exhibit antifragility actually strengthen when confronted with challenges or disturbances. This idea is central to Industry 6.0, which aims to build resilient and self-improvement industrial systems (Dobra & Dhir, 2020; Robla-Gomez et al., 2017). As an example, a digital-physical system might use AI to gain insights from unforeseen equipment failures, modifying procedures to avoid future occurrences of the same kind of problems.

Human-Centricity in Future Industry 6.0

Industry 6.0 highlights human-centricity above technological-oriented approaches. As industries move from Industry 4.0 and 5.0 to Industry 6.0, humans become active partners with intelligent machines. We must balance technological innovation with social principles, abilities, and well-being, as this progression shows. In Industry 6.0, worker-centricity is based on three principles: improving human-machine interaction, prioritizing human well-being, and guaranteeing industrial ecological inclusiveness and resilience.

Maximizing Cooperation Between Humans and Machines

The ability for robots and humans to work together in harmony is central to the human-centered Industry 6.0 vision. Prior industrial paradigms viewed people primarily in the role of operators or supervisors of mechanized processes. However, this dynamic is being rethought in Industry 6.0, which is encouraging true cooperation between human intelligence and technological prowess. Industry 6.0's artificial intelligence, machine learning, and robots aren't only mechanization tools; they're designed to enhance human creativity and decision-making processes. Working in tandem, AI-powered systems pick up on conversations between people, allowing them to help workers with sophisticated problem-solving and adjusting to their unique demands (Cherubini et al., 2016; Matheson et al., 2019). By making real-time recommendations, forecasting when equipment will go down, and modifying production plans, AI may greatly assist human employees in complex industrial environments. By delegating mundane jobs to robots, employees are free to think about more significant matters. To add to that, "cobots," or collaborating robots, are crucial to making this revolution possible. Collaborating with people, these robots are built to increase efficiency and safeguard workers. With their high-tech sensors and AI algorithms, cobots can learn from human inputs and respond accordingly, making industrial processes more flexible and adaptable (Amin et al., 2020; Othman & Yang, 2023).

Ensuring the Welfare of Individuals

The welfare of employees is being prioritized more and more as Industry 6.0 develops. Industry 6.0 seeks to build workplaces where technology enables workers, boosting employment happiness and safety, as opposed to the previous periods of the Industrial Revolution, when automation frequently resulted in job loss or estrangement. Workers are able to participate in more meaningful and creative work when they are relieved of physically exhausting or dangerous tasks. In addition, to guarantee the emotional and physical well-being of employees, Industry 6.0 incorporates health surveillance systems powered by artificial intelligence and ergonomic designs (Carpanzano & Knüttel, 2022; Leng et al., 2024). As an example, smart wearables have the potential to monitor the health of employees in real time, identify symptoms of stress or exhaustion, and provide tailored recommendations to enhance their overall wellness. Improving workers' happiness and well-being leads to higher production and a happier, healthier, and more invested staff, according to this human-centered approach. Along similar lines, human-centered Industry 6.0 advocates more flexible work arrangements to help people strike an improved equilibrium between work and life. With the help of digital twins and other modern communication

technologies, telecommuting is becoming more and more feasible (heilala & Singh, 2023; Malik et al., 2024; Subbiah et al., 2024). This allows workers to interact and contribute to manufacturing procedures from anywhere, which in turn reduces stress and improves job satisfaction.

Diversity, Equity, and Long-Term Care

To make sure that everyone in society benefits from technological breakthroughs, Industry 6.0 is built to be inclusive. When technology advanced in earlier industrialized simulations, it frequently led to inequality and the exclusion of some populations. Nevertheless, Industry 6.0 places an emphasis on inclusion by deliberately lowering obstacles to engagement and making technologies readily available to under-represented people. The creation of innovative manufacturing facilities alongside manufacturing systems demonstrates this inclusiveness by catering to the demands of a varied workforce (Jamwal et al., 2021; Karim et al., 2024; Vrchota et al., 2020). Workers from diverse backgrounds may make substantial contributions to the manufacturing process using adaptive technology like voice-controlled solutions or based on artificial intelligence translation tools. In addition, Industry 6.0 advocates for ongoing programs of skill development and reskilling, which provide employees with the tools they need to keep up with the ever-evolving technological landscape. The human-centered approach to Industry 6.0 emphasizes inclusion and renewable energy (Machado et al., 2020; Sharma et al., 2020; Tanchangya et al., 2024). We must carefully control the environmental and social repercussions of production procedures as industries grow more interwoven with society's requirements. By incorporating energy from renewable sources, circular economic ideas, and environmentally friendly technology into industrial operations, Industry 6.0 supports a transition to sustainable production. In order to make sure that industrial processes operate in line with worldwide ecological standards, artificial intelligence, and large-scale data analysis are used to track resource use, optimize the utilization of energy, and cut down on waste (Bai et al., 2020; Brozzi et al., 2020). In this setting, people's responsibilities go beyond only overseeing operational systems; they must also act as guardians of healthy industrial ecosystems. Decisions made by employees in Industry 6.0 have the dual benefit of increasing efficiency and decreasing negative effects on the planet. There has been a marked change from prior manufacturing revolutions' efficiency-driven aims to this more comprehensive strategy that takes into account the welfare of both humans and the earth.

BIBLIOMETRIC FINDING

The first analysis performed in this review article was when the studies, that were eligible or included in the review, were published, where they were published, and what kind of article the studies fit into. Although no time restriction was applied in the search, the publication dates of the articles are varied and are fairly recent (from 2019 to 2024), concrete evidence of growing interest in research of 6th industrial revolution and related technologies. Particularly, the publications about this interest saw a sharp increase from 2022 to 2024, which illustrates the fast uptake of this new area of focus. There is a high number of publications in the year 2024 shown in Figure 2. The second analysis sought to determine which types of articles were being and are still being generated and published on this theme. Of the 26 articles selected for inclusion in this systematic and bibliometric review, most of the book chapters which is nine followed by four conference papers and seven research articles. In this short period, four reviews and two books have been published Figure 3.

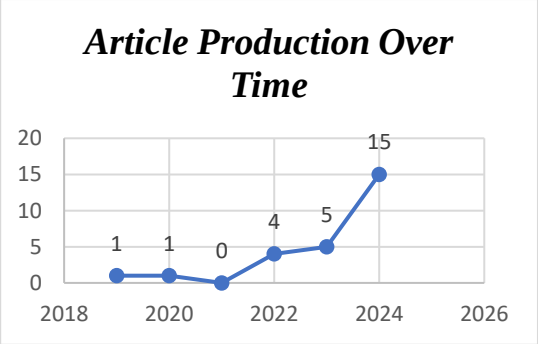

Figure 2: Article Production over time

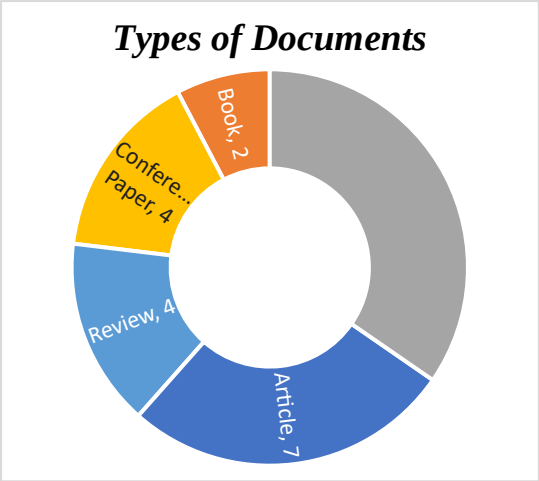

Figure 3: Document Types

The geographical diversity of publications was also assessed, with Figure 4 being utilized, and this was one of the features assessed. As to do so, wherever appropriate for all papers included in the review, the country of the first author or the author's institution was employed. Based on the dataset analysis, the top countries in the number of articles on Industry 6.0 were India and China, followed by Bulgaria, Canada, Finland, Ireland, Italy, South Africa, Sweden, United States. These contain particularly advanced industrial development and strong technological development, which accounts for the reason for their active participation in this evolving area of research.

Apart from the geographical distribution, the content analysis also involved keyword analysis to determine the key concepts used in the literature and their associations. VOSviewer software (version 1.6.20) was employed in the preparation of bibliometric maps based on the keyword coalescence data. VOSviewer is a popular software used for the visualization of bibliometric networks. This software can be applied in two ways: One, is for the construction of author or journal maps from co-citation data or two, is for the construction of keyword maps from the co-occurrence data. Keyword maps based on co-occurrence data. Using interactive functionalities such as zoom-in-out, panning in and out, and search options, VOSviewer enables one to study bibliometric maps in detail (Lima Santos et al., 2020). For this particular review article, the VOSviewer Map was constructed based on the co-occurrence of the key terms. It looked at the articles included and eligible for the study and generated a map that shows the keywords that have a higher frequency (Figure 5).

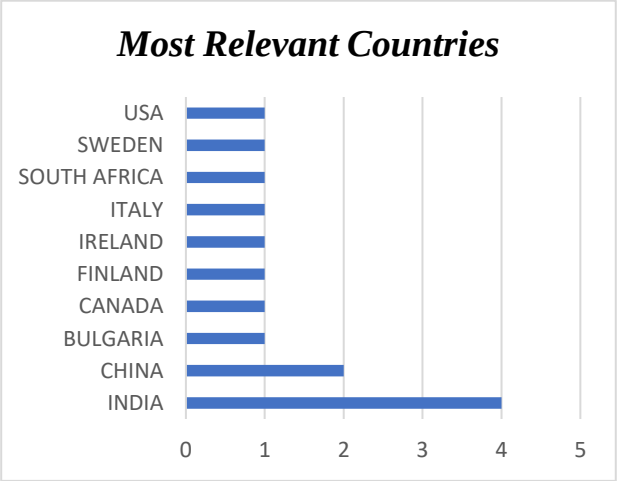

Figure 4: Most Relevant Countries

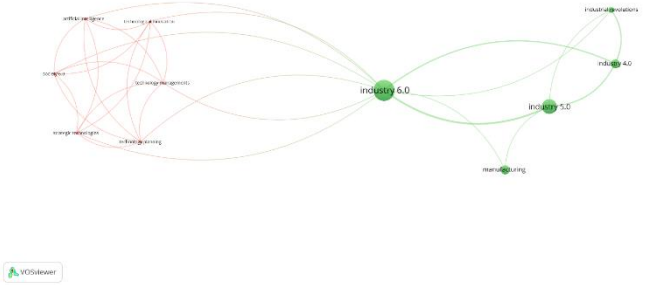

Figure 5: Keyword Analysis

In this study, the VOSviewer map was created and by placing the mouse on the map shown in Figure 5 one can know the occurrence of the key terms in Industry 6.0 literature. The most used terms were: “Industry 4.0”, “Industry 5.0”, “Artificial Intelligence”, “Technological Innovation”, “Technology Management” and “Society 6.0”, which represent the main focus of research regarding Industry 6.0. These terms are connected with various notions, including “manufacturing”, “strategic technologies,” and “technology planning”. The bibliometric map study also helped in identifying the key related topics of the different sectors of Industry 6.0: technological advancement in the industrial revolution 6.0, AI technology commerce, technology management, as well as the interdisciplinary concern of Industry 6.0, which seeks to combine different technologies with a focus on the people aspect. This research focuses on three main areas: Industry 6.0 as a continuation and development of Industry 4.0 and 5.0, AI, robotics, and human orientation as the basis of future industrial development: the principles of industrial resilience, ethical aspects, and impact on society.

Table 2: Most Contributed Author

No	Authors	Title	Source	Total Citations
1	(Duggal et al., 2022)	A sequential roadmap to Industry 6.0: Exploring future manufacturing trends	IET Communications (2022) 16(5) 521-531	60
2	(Almusaed et al., 2023)	Reviewing and Integrating AEC Practices into Industry 6.0: Strategies for Smart and Sustainable Future-Built Environments	Sustainability (2023) 15(18) 13464	23
3	(Chourasia et al., 2022)	Sustainability of Industry 6.0 in Global Perspective: Benefits and Challenges	MAPAN (2022) 37(2) 443-452	23
4	(Jeyaraman et al., 2022)	Industry 5.0 in Orthopaedics	Indian Journal of Orthopaedics (2022) 56(10) 1694-1702	18
5	(Peng et al., 2020)	Learning-Based IoT Data Aggregation for Disaster Scenarios	IEEE Access (2020) 8 128490-128497	16
6	(R. Singh et al., 2023)	Imagining the Sustainable Future With Industry 6.0: A Smarter Pathway for Modern Society and Manufacturing Industries	Machine Learning Algorithms Using Scikit and TensorFlow Environments (pp. 318-331). IGI Global.	9
7	(Jamil et al., 2022)	Resource Allocation Using Reconfigurable Intelligent Surface (RIS)-Assisted Wireless Networks in Industry 5.0 Scenario	Telecom (2022) 3(1) 163-173	8
8	(Wilson et al., 2019)	Usefulness of occupation and industry information in mortality data in South Africa from 2006 to 2015	BMC Public Health (2019) 19(1) 866	4
9	(Murugan & Prabadevi, 2023)	Impact of Industry 6.0 on MSME Entrepreneur's Performance and Entrepreneur's Emotional Intelligence in the Service Industry in India	Revista de Gestão Social e Ambiental (2023) 17(4) e03340	4
10	(Doyle-Kent & Kopacek, 2023)	Optimizing Human Potential Through Diversity and Inclusion for Industry/Production 4.0, 5.0 and 6.0	Towards Industry 5.0. ISPR 2022. Lecture Notes in Mechanical Engineering. Springer	2

SYSTEMATIC DISCUSSION

Industrial Paradigm Shifts Towards Industry 6.0

Industry 6.0 represents a substantial advancement over earlier industrial models by profoundly incorporating improved human-machine collaboration, resilience, as well as sustainability into its structure. This phase transcends the integrations observed in Industry 5.0, which harmonized human creativity with robotic efficiency to enhance personalized processes for manufacture, a crucial advancement towards customization and elasticity in manufacturing (Chourasia et al., 2022). Industry 6.0 surpasses Industry 4.0, which was primarily defined by the emergence of computerization and digitization through the use of IoT and AI technologies (Singh et al., 2023), by integrating enhanced cognitive capabilities into machinery. These capabilities facilitate self-sufficient operations and advanced decision-making procedures that enhance productivity and energy consumption. Industry 6.0 seeks to exceed the efficiency of Industry 4.0 while enhancing the collaborative, human-centric principles of Industry 5.0. It aims to develop platforms that are interlinked while also possessing self-regulatory capabilities and congruence with ecological goals, establishing a new benchmark for industrial operations (Singh et al., 2023). Industry 6.0 aims to create production systems that are efficient and resilient by incorporating sustainability principles, which will guarantee sustainable expansion and technological advancement in a rapidly evolving environment (Chourasia et al., 2022; Karim et al., 2023; Karim et al., 2024). This progression signifies a fundamental transformation towards systems that augment human talents with mechanical accuracy, promoting a setting where technology and ecological coexist in harmony. Innovations in quantum computing, nanotechnology, and artificial intelligence are poised to transform industrial practices by providing medications that are both efficient and sustainable, thereby redefining the connection between the manufacturing process and worldwide ecological issues.

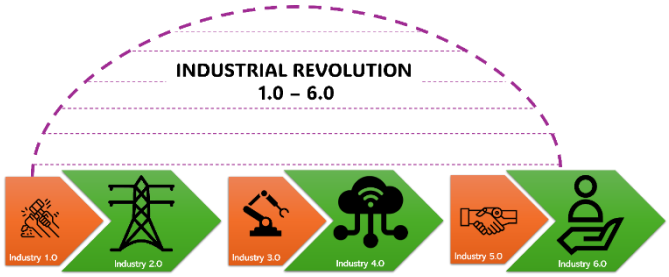

Figure 6: Industrial Revolution (Authors' Illustration)

Principal Technological Catalysts for Industry 6.0

The improvements that have been made in AI, quantum computing, and robotics have had a significant impact on the landscape of Industry 6.0. According to (Jamil et al., 2022), these technologies are at the vanguard of driving the next industrial revolution by allowing manufacturing processes that are more complex, automated, and personalized. Artificial intelligence, in particular, improves choices and efficiency in operation through automated forecasting and adaptive systems for learning, which are vital for making modifications to industrial processes in real time (heilala & Singh, 2023). According to (Doyle-Kent & Kopacek, 2023), quantum computing makes a contribution by doing complicated computations at rates that have never been seen before, which in turn maximizes the efficiency of production schedules and logistics. Robotics represents a significant advancement in human-machine collaboration, which ultimately results in production settings that are more intelligent and adaptable, allowing them to swiftly adjust to shifting market needs (Chourasia et al., 2022).

In conjunction with one another, these technologies make it possible to develop manufacturing processes that are both highly personalized and devoid of waste. For example, artificial intelligence makes it possible to do bespoke assembly runs based on timely information from customers, which considerably cuts down on waste and overproduction (Almusaed et al., 2023). The combination of robotics with quantum computing ensures accurate resource allocation and material utilization, hence reducing the amount of waste produced by industrial processes and improving sustainability (Ghobakhloo et al., 2021). Furthermore, these technological forces are positioned to solve global difficulties such as concerns regarding ecology and the supervision of resources. According to (Nnam

et al., 2024), the predictive powers of artificial intelligence make it possible to improve resource management by proactively identifying shortages and optimizing material consumption across sectors. This helps to enhance environmental sustainability. According to (Peng et al., 2020) research, quantum computing has the ability to predict complex environmental consequences at scale, therefore delivering the data that is required for making environmentally friendly choices in real-time.

Implementing Industry 6.0: Difficulties and Obstacles

There are a number of critical obstacles that must be overcome before Industry 6.0 can be implemented. These obstacles include the requirement for sophisticated infrastructure, ethical issues, and the creation of workforce strategies. According to (Fernández-Miguel et al., 2024), the development of infrastructure is of utmost importance since the incorporation of artificial intelligence, quantum computing, and robotics necessitates the introduction of advanced hardware and software, as well as effective cybersecurity measures, in order to safeguard industrial systems. In addition, ethical issues are of the utmost importance, particularly with regard to ensuring that technological breakthroughs do not worsen existing social disparities but rather help the creation and development of inclusive communities (Subbiah et al., 2024). There is a growing demand for skills that are in line with the new technical conditions of Industry 6.0, which raises the issue of workforce education and training as another significant hurdle. According to (Jeyaraman et al., 2022), the quick rate of technological development necessitates continuing education and adaptation on the part of people in the workforce. However, this can be difficult to accomplish in a variety of different geographical and industrial use situations. In order to effectively address these difficulties, proactive measures include the formulation of policies that encourage investments in infrastructures and instructional technology. According to (Carpanzano & Knüttel, 2022), policies should not only stimulate the use of sophisticated technologies but also establish ethical standards that regulate their usage. This will ensure that transitioning to Industry 6.0 results in a transformation that is both equitable and sustainable.

Potential Areas of Future Study in Industry 6.0

Data bibliometrics points to a need for more investigation into how Industry 6.0 will affect international supply chains and particular sectors like banking, where advances in artificial intelligence and quantum computing have the potential to completely alter business processes and the way customers engage with brands (Duggal et al., 2022). Furthermore, there is a great deal of room for multidisciplinary study into the ways in which Industry 6.0 technology can be integrated with areas such as sustainable development and human-machine interaction to produce more robust and flexible manufacturing processes (Murugan & Prabadevi, 2023). In order to better understand how these technologies might influence the direction of technological advancement and innovation in the future, further studies should look at their potential effects on sustainability and the promotion of human-centric designs. Research along these lines would shed light on how Industry 6.0 may cause a worldwide shift towards more moral and environmentally friendly manufacturing (Wilson et al., 2019).

POLICY IMPLEMENTATION AND RECOMMENDATIONS

The development of comprehensive frameworks that combine technology breakthroughs with regulatory norms should be the primary emphasis of policymakers in order to facilitate the transition to Industry 6.0 (Ellili et al., 2023). This will ensure that new technologies are utilized in a reasonable and ethical manner. Among the recommendations given by (Martínez-Falcó et al., 2024) is the establishment of rules and procedures that guarantee the protection of data privacy and security, as well as the ethical use of artificial intelligence and robotics in industrial environments. For the workforce to be ready to fulfil the requirements of Industry 6.0, training and educational initiatives are also quite important. Skills such as troubleshooting and ethical decision-making are essential in a technologically sophisticated workplace (Khan et al., 2003). Training programs should focus on both technical competencies, such as programming and system administration, as well as soft skills, such as ethical managerial decisions and resolving problems by addressing the underlying difficulties and possibilities regarding subsequent studies and policy development, these recommendations and insights provide a road map for maximizing the possibilities of technologies linked with Industry 6.0 technology.

FUTURE DIRECTIONS

Future research on Industry 6.0 should stress ethical AI frameworks that enable safe, human-centered applications, as well as attempts to improve sustainability through energy-efficient and green manufacturing models. Exploring interoperability standards for seamless cross-industry integration will become critical as Industry 6.0 technologies

spread, notably in healthcare, logistics, and manufacturing. Furthermore, the integration of emerging technologies such as quantum computing, 6G, and blockchain with Industry 6.0 has the potential to significantly improve efficiency and security; however, these developments necessitate cybersecurity research to protect against vulnerabilities in AI-driven, cyber-physical systems. As governments and educational institutions cope with Industry 6.0's impact on labor markets, research into regulatory frameworks and workforce training programs will be crucial in addressing labor transitions and skill requirements. At the same time, research on societal and economic ramifications, particularly in terms of job transformation, economic growth, and inequality, will help us understand the broader implications of this paradigm shift. Application-specific case studies in domains such as automotive, agriculture, and healthcare will also be useful in mapping real problems and benefits, ensuring that Industry 6.0 grows into a resilient, sustainable, and helpful system across several sectors.

CONCLUSION

To create a production environment that is more sustainable, efficient, and human-centered, the advent of Industry 6.0 represents a radical change in the growth of industry. This transition involves the integration of sophisticated technologies such as artificial intelligence, quantum computing, and edge computing. The embryonic area of Industry 6.0 was subjected to a comprehensive bibliometric analysis in this study. The examination revealed the progression from the human-centered focus of Industry 5.0 and the machine learning and electronic integration that were present in Industry 4.0 to the frameworks that are adaptable and morally orientated in Industry 6.0. In spite of the ability to innovate, the findings indicate that substantial hurdles such as the need for infrastructure ethical issues, and recruitment and retention continue to exist. As a result, complete frameworks and laws are required in order to guarantee an equitable transformation. The interdisciplinary methods that further combine technical breakthroughs with ecologically sound procedures and human-focused designs are something that should be explored in future studies. An industrial future that is resilient, inclusive, and inventive may be promoted through the implementation of Industry 6.0, which can make a substantial contribution to the resolution of worldwide industrial and green issues by tackling these areas.

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