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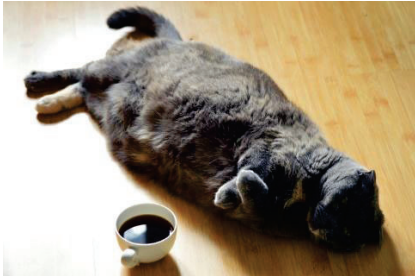
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**Research Article**

**Descriptive Document Analysis of Postgraduate Theses on Innovation  
Management**

**Saniye Haydaroglu<sup>a</sup>**

**Abstract**

**Introduction:** This study maps the landscape of postgraduate theses on innovation management in Turkey to identify who studies the topic, where and how it is approached, and which gaps persist. By offering a consolidated baseline on institutions, disciplines, language, and degree levels, it aims to inform future research agendas and curricular and policy decisions.

**Method:** A descriptive document analysis was conducted on 53 theses (41 master's; 12 doctoral) retrieved from the National Thesis Center of Higher Education Council up to December 31, 2024. Inclusion required the phrase "Innovation Management" in the title. Each thesis was coded for year, university type, institute, department, subject focus, degree level, advisor title, author gender, language, and page count. Findings were summarized using frequency distributions and simple cross-tabulations and presented via tables/figures to highlight temporal and institutional patterns.

**Results or Findings:** The volume of theses rose sharply, peaking in 2018–2019. Most were produced at state universities (84.9%) and Social Sciences Institutes (73.6%). Business Administration (39.6%) and Education Sciences (30.2%) dominated the disciplinary spread. Master's theses constituted 77.4%. Regarding language, 94.3% were in Turkish and no doctoral theses were in English, signaling limited international visibility at the highest degree level.

**Discussion or Conclusion:** The field exhibits a strong national focus and limited doctoral-level theoretical development. Future research should expand English-language outputs, employ advanced bibliometric techniques and mixed-methods, and encourage interdisciplinary and international collaborations.

*Keywords:* innovation, innovation management, descriptive document analysis,

*JEL Codes:* I23; L20; M10; O32

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**Araştırma Makalesi**

**Yenilik Yönetimi Üzerine Yapılmış Lisansüstü Tezlerin Betimsel Doküman  
Analizi**

**Saniye Haydaroğlu<sup>a</sup>**

**Öz**

**Giriş:** Bu çalışma, Türkiye’de inovasyon yönetimi alanında yazılmış yüksek lisans tezlerini sistematik olarak haritalandırarak, konunun kimler tarafından, hangi kurumsal ve disiplinler bağlamlarda ve hangi yöntemsel yaklaşımlarla ele alındığını ortaya koymakta; alanda süregelen boşlukları belirlemektedir. Elde edilen bulgular, kurum türü, disiplin, dil ve derece düzeyleri bakımından alanın mevcut görünümüne ilişkin bütüncül bir tablo sunmakta ve gelecekteki araştırmalar için karşılaştırmaya elverişli bir referans çerçevesi sağlamayı amaçlamaktadır.

**Yöntem:** 31 Aralık 2024’e kadar YÖK Ulusal Tez Merkezi’nden erişilen 53 tez (41 yüksek lisans, 12 doktora) üzerinde betimsel doküman analizi uygulanmıştır. Dahil edilme ölçütü, tez başlığında “Yenilik Yönetimi” ifadesinin yer almasıdır. Tezler; yıl, üniversite türü, enstitü, anabilim dalı, konu odağı, derece düzeyi, danışman unvanı, yazar cinsiyeti, dil ve sayfa sayısı değişkenleri bakımından kodlanmış; bulgular frekans–yüzde dağılımları ve basit çapraz tablolarla özetlenmiş, tablolar/şekillerle görselleştirilmiştir.

**Sonuçlar ya da Bulgular:** Tez sayısında belirgin bir artış gözlenmiş, zirve 2018–2019 yıllarında gerçekleşmiştir. Çalışmalar ağırlıklı devlet üniversitelerinde (%84,9) ve Sosyal Bilimler Enstitülerinde (%73,6) yoğunlaşmıştır. Disipliner dağılımda İşletme (%39,6) ve Eğitim Bilimleri (%30,2) öne çıkmıştır. Tezlerin %77,4’ü yüksek lisans düzeyindedir; %94,3’ü Türkçe yazılmış olup İngilizce doktora tezi bulunmamaktadır.

**Tartışma ya da Yapılan Çıkarımlar:** Alan, güçlü bir ulusal odak ve sınırlı doktora-düzeyi kuramsal derinlik sergilemektedir. Gelecek çalışmalarda İngilizce çalışmaların artırılması, gelişmiş bibliyometrik ve karma yöntem tasarımlarının kullanılması ve disiplinlerarası/uluslararası işbirliklerinin teşvik edilmesi önerilmektedir. Bu bulgular, ileride yapılacak araştırmalar için karşılaştırmaya elverişli bir referans çerçevesi sunmaktadır.

*Anahtar Kelimeler:* yenilik, yenilik yönetimi, betimsel içerik analizi

*JEL Kodlar:* I23; L20; M10; O32

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## Introduction

Innovation management is a process that enables organizations to continually generate new ideas, implement them, and improve them to achieve their goals (Drucker, 1985; Tidd & Bessant, 2020). Organizations need to enhance their competitive edge, ensure ongoing development, and preserve market share (Schumpeter, 1934; OECD, 2018). This approach aims to strengthen companies' ability to adapt to changing conditions by promoting sustainability. Additionally, in today's increasingly globalized competitive environment, innovation plays a strategic role in differentiating products and services in the market and responding more swiftly to consumer needs (Porter, 1990; Çoban & Gümüş, 2022). Currently, innovation management is continually evolving and advancing, driven by digital transformation and global competition (Nambisan et al., 2017; Dereli, 2015).

Innovation management plays a vital role in a company's sustainable success. It helps increase competitive strength, adapt more quickly to market changes, and improve efficiency in internal processes, while also fostering organizational culture (Nonaka & Takeuchi, 1995; Ünlü & Aydoğan, 2015). In a world where technological advancements are accelerating, innovation management enables businesses to keep pace with this transformation. In this context, companies can achieve sustainable growth and remain competitive in both the short and long term through effective innovation management strategies (Kalay & Lynn, 2015; Aydın & Bekmezci, 2020).

In addition to the growing body of literature on innovation management, the importance of this concept in the context of global transformations is increasing daily. The rise of digital technologies, Industry 4.0, and the rapid spread of artificial intelligence are fundamentally changing how organizations design and implement their innovation strategies. For example, integrating big data and machine learning into production processes has created new opportunities for companies to stand out in highly competitive markets. Furthermore, the link between digital transformation and green innovation has been confirmed in numerous studies. Digital processes promote sustainable innovative practices and enhance environmental performance (Huang & Lau, 2024). Similarly, the sustainability agenda has expanded innovation management beyond the private sector, guiding public institutions, civil society organizations, and universities to adopt practices aligned with green growth and social responsibility principles (Jiang, 2024).

From a Turkish perspective, the increasing number of universities and the expanding postgraduate education system have provided fertile ground for research in this field. For example, a study focusing on high-tech companies in Turkey revealed that the impact of firms' innovation strategies on business performance is significant (Köylüoğlu & Doğan, 2021). However, while innovation management is widely studied across various disciplines in developed economies, Turkey's contributions to this field are limited mainly to the national context, and few studies have gained international recognition. This situation highlights the importance of revealing national trends and documenting how innovation management has evolved in different socio-economic environments.

Descriptive document analysis is a method that aims to systematically examine written materials produced on a specific subject and present findings that describe the current situation (Bowen, 2009; Yıldırım & Şimşek, 2021). This method serves as an essential tool for revealing trends, strengths, and weaknesses by enabling researchers to classify and analyse the documents under examination according to specific criteria. Therefore, it is a suitable method for evaluating academic studies on innovation management from a more holistic perspective.

This study aims to analyze postgraduate theses on innovation management through a descriptive document analysis method. Its goal is to identify overall trends in the field, highlight existing contributions, pinpoint gaps, make recommendations, and support future research. Within this scope, a total of 53 master's and doctoral theses available until December 31, 2024, which include the phrase 'Innovation Management' in their titles and are listed in the Higher Education Council National Thesis Centre database, were reviewed. The theses were evaluated based on different parameters, the data was quantified and presented with graphs, and the findings were summarized using descriptive statistics.

## **Conceptual Framework**

### **Innovation Management**

Innovation is the process of change and transformation aimed at improving the current situation or creating new value (OECD/Eurostat, 2018; Crossan & Apaydin, 2010). It includes not only scientific and technological advancements but also enhancements in business processes, marketing strategies, and organizational structures (Tidd & Bessant, 2020). As a result, innovation is considered a vital factor for businesses to gain a competitive edge, boost customer satisfaction, and achieve sustainability (Dodgson, et al., 2014; Güven & Demirtaş, 2023).

Innovation can take many forms and occur in different areas. Product innovation involves creating new products or improving existing ones. Process innovation focuses on reorganizing internal procedures to increase efficiency or reduce costs. Market innovation relates to changes in how products and services are delivered to customers. Organizational innovation includes improvements in work methods, organizational structure, and culture (OECD, 2005; Oğuztürk, 2003; Gunday et al., 2011). These types of innovation are essential for businesses to adapt to changing conditions and remain competitive over the long term.

Innovation management is a strategic approach that enables organizations to effectively utilize their internal and external resources to generate new ideas, turn those ideas into action, and improve existing processes (Eren et al., 2015; Tidd & Bessant, 2020). Research on the core principles, processes, and tools of innovation management helps businesses remain competitive and grow.

Several factors influence the success of innovation management. Leadership support, organizational culture, employee participation, motivation, resource allocation, flexibility, risk-taking capacity, and investment in technology are key determinants of success (Bay, et al., 2018; Öner & Işcan, 2021). Additionally, external environmental factors such as economic, political, and technological conditions also directly affect innovation management.

Leadership and organizational culture are essential in innovation management. Leaders promote change by motivating employees to think creatively, while an innovative organizational culture supports idea sharing and risk-taking (Nonaka & Takeuchi, 1995; Öner & Işcan, 2021). Therefore, the right mix of leadership and culture directly impacts the success of innovation management.

Innovation management is closely connected to a company's competitive strategies. Developing innovative products and services helps businesses stand out in the market. In this context, recognizing and implementing innovative strategies enables companies to achieve a sustainable competitive advantage (Kasap, 2020; Porter, 1990). In a globalized world, businesses must compete both locally and internationally. Therefore, innovation management

is crucial for navigating different cultures and international collaborations (İleri & Horasan, 2014; Dereli, 2015).

Innovation management is closely linked to human resources strategies. Effective HR policies are essential for fostering an innovative culture (Pelenk, 2020). Likewise, marketing strategies are also driven by innovation management because differentiation in marketing activities and customer focus are enhanced through innovation (Ünlü & Aydoğan, 2015).

Innovation management and risk management must be addressed together. Since innovations inherently involve uncertainties, risks should be identified, analyzed, and managed proactively (Emhan, 2010). Additionally, during times of crisis, innovation management becomes a crucial factor for businesses to survive and preserve their competitive advantage (Özden, et al., 2017).

Knowledge management is also a key part of innovation management. The gathering, storing, analyzing, and sharing of knowledge are crucial for the success of innovation processes (Kutaniş & Mesci, 2013). Additionally, collaboration among actors from different disciplines speeds up and broadens the innovation process (Oğan, 2022).

The relationship between strategic management and innovation is also emphasised in the literature. Innovation processes must be integrated into planning and implementation processes to achieve strategic goals (Aydın & Bekmezci, 2020). An organisational culture that supports innovation, where employees can share their ideas and an environment is created that is open to change, is critical for innovative success (Yıldırım & Karabey, 2016).

Finally, innovation management is also crucial for sustainability. Supporting the efficient use of natural resources and environmental awareness with innovative solutions helps organizations reduce their ecological footprint and develop more sustainable operational practices. (Yıldız Ç. & Sezen, 2015). Innovation management practices in public institutions also significantly contribute to improving service quality and resource efficiency (Gökçe, 2015).

### **Descriptive Document Analysis**

The growing accessibility of scientific information, mainly due to the rise of digital databases, allows researchers to systematically analyze various written documents and detect trends in specific fields. In this context, descriptive document analysis is a qualitative research method that supports the planned and structured examination of documents related to a particular topic (Bowen, 2009). Document analysis involves gathering data from written sources such as books, articles, reports, theses, and official documents and assessing this data based on its content (Yıldırım & Şimşek, 2021).

Descriptive document analysis allows researchers to reinterpret previously gathered data and identify trends and gaps. This approach provides a snapshot of the current state of the relevant field, especially through the systematic review of postgraduate theses, academic articles, or reports on a specific topic (Bowen, 2009; O'Leary, 2017). In this context, document analysis is also beneficial in terms of time and cost, as the researcher uses existing data without the need for new data collection.

The descriptive document analysis method, while similar to content analysis, concentrates more on defining the current situation and presenting findings with descriptive statistics such as frequency and percentage (Krippendorff, 2018). This makes the method

especially useful in research aimed at assessing research productivity in a field, the distribution of topics, trends in studies, or the contributions of institutions.

Recent studies in various fields indicate that descriptive document analysis is widely used. For example, in educational sciences, this method is frequently preferred in examining published theses and articles in terms of subject, method, and trends (Bowen, 2009; Yıldırım & Şimşek, 2021; O'Leary, 2017). Similarly, in the social sciences, this method is employed to identify the strengths and weaknesses of the field, discern trends in the existing literature, and illuminate future research directions.

Among recent examples of using descriptive document analysis in Turkey, we see Yıldırım and Kızmaz (2024), who examined 156 studies on “cognitive structures” in the context of science education, and studies that evaluated 82 articles emerging after Covid-19 in the field of educational technologies through content analysis in terms of methodological and subject trends (Yıldız, 2022). Furthermore, studies on scale development in early childhood education have yielded significant findings regarding diversity in subject, sample, and publication type, as observed in research conducted between 2018 and 2023 (Sezer & Yaşar, 2024).

In this study, the descriptive document analysis method was employed to examine postgraduate theses titled ‘innovation management’. The theses were categorized based on predefined categories, and the results were presented using frequencies and percentages. This approach revealed the current state in the field and established a guiding framework for future research.

## **Method**

The literature review reveals that numerous studies have been conducted on innovation management across various disciplines (Goyal & Pitt, 2007; Wagner, 2008; Bucherer et al., 2012; Taşkın, 2014; Bozkurt, 2015; Dereli, 2015; Kalay & Lynn, 2015; Nambisan et al., 2017; Demirel & Savaş, 2017; Akyüz & Örucü, 2018; Doğancılı, 2018; Yirci & Aydoğar, 2020; Öner & İşcan, 2021; Kaya & Peker, 2021; Öner & İşcan, 2022). However, the limited number of studies examining postgraduate theses on innovation management using descriptive document analysis methods was the starting point for this research. In this study, postgraduate theses on innovation management were systematically examined to reveal current trends, gaps, and orientations, thereby contributing to the literature in the field.

This study employed the descriptive document analysis method to examine the current state of postgraduate theses on innovation management. Document analysis is a qualitative research approach that systematically reviews written sources and assesses the data collected using descriptive statistics (Bowen, 2009; Yıldırım & Şimşek, 2021).

The research data was collected from the National Thesis Centre database of Higher Education Council, including a total of 53 postgraduate theses (41 master's and 12 doctoral) with the phrase ‘Innovation Management’ in their titles, accessible until December 31, 2024. The theses were analyzed based on parameters such as years of preparation, universities and types (state or foundation), institutes, departments, subjects, thesis types, advisor titles, author genders, languages of writing, and page counts. To enhance methodological rigor, a preliminary coding trial was conducted on a subset of five theses to refine category definitions and ensure clarity. An academic expert in the field then reviewed the coding scheme to strengthen content validity. Although the coding process was carried out by a single researcher, the use of a detailed coding guide and expert review contributed to the reliability of the coding procedure.

Following the finalization of the coding scheme, the data were entered into Microsoft Excel, where frequency and percentage distributions were calculated. The results were visualized through tables and figures to make temporal, institutional, and disciplinary patterns more evident. Presenting the findings descriptively enabled a comprehensive portrayal of the field while maintaining transparency in the analytical steps (Karasar, 2020).

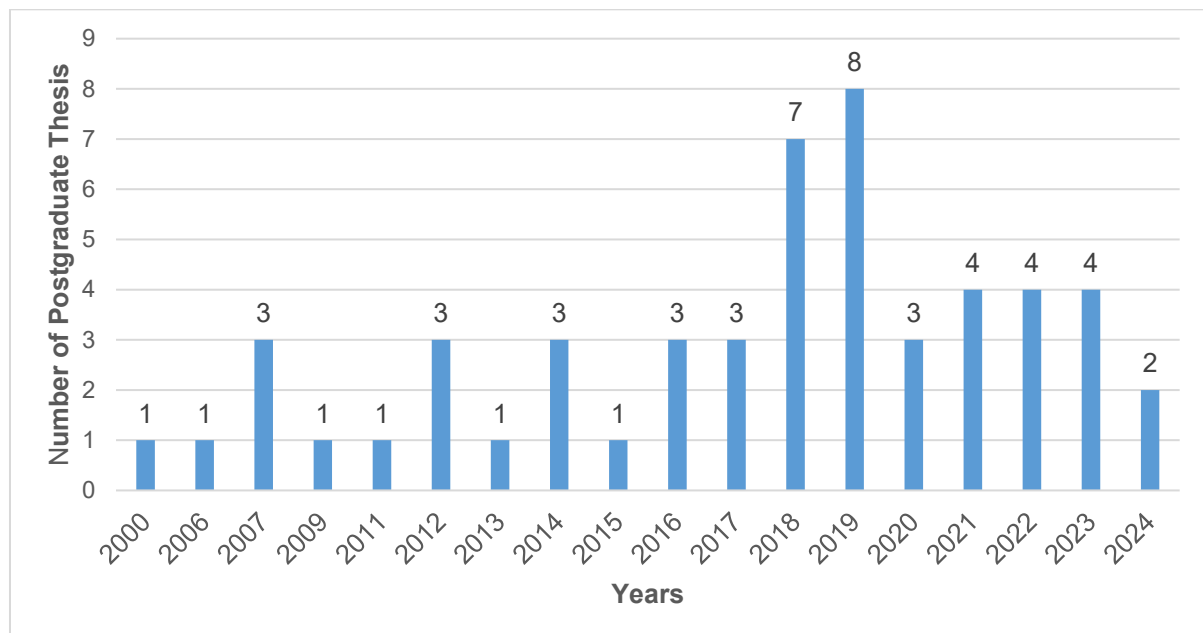
Despite its strengths, this study has several limitations. First, only theses with the exact phrase “innovation management” in their titles were included, which may have excluded relevant studies that addressed the innovation management conceptually but used different terminology. Second, the analysis relied solely on descriptive statistics and did not employ advanced bibliometric techniques (e.g., citation analysis, co-word networks, and collaboration mapping), which could have provided more profound insights into the structure and evolution of the field. Third, the study was limited to theses produced in Turkey; therefore, the results cannot be generalized to global trends in innovation management research. Nevertheless, by systematically mapping existing postgraduate theses, this study provides a foundational overview of national research tendencies and offers a reference point for future studies employing more comprehensive analytical approaches.

### Findings

This section highlights the trends identified from the data collected during the research. The theses analyzed within the study have been categorized based on various variables, and the distributions are visualized through graphs. The findings go beyond mere numbers, including percentages and explanatory comments. Therefore, the development of postgraduate theses on innovation management over the years, their variations by institutions and fields, and overall trends are presented in a more straightforward way.

**Figure 1**

*Thesis Distribution by Year of Completion*



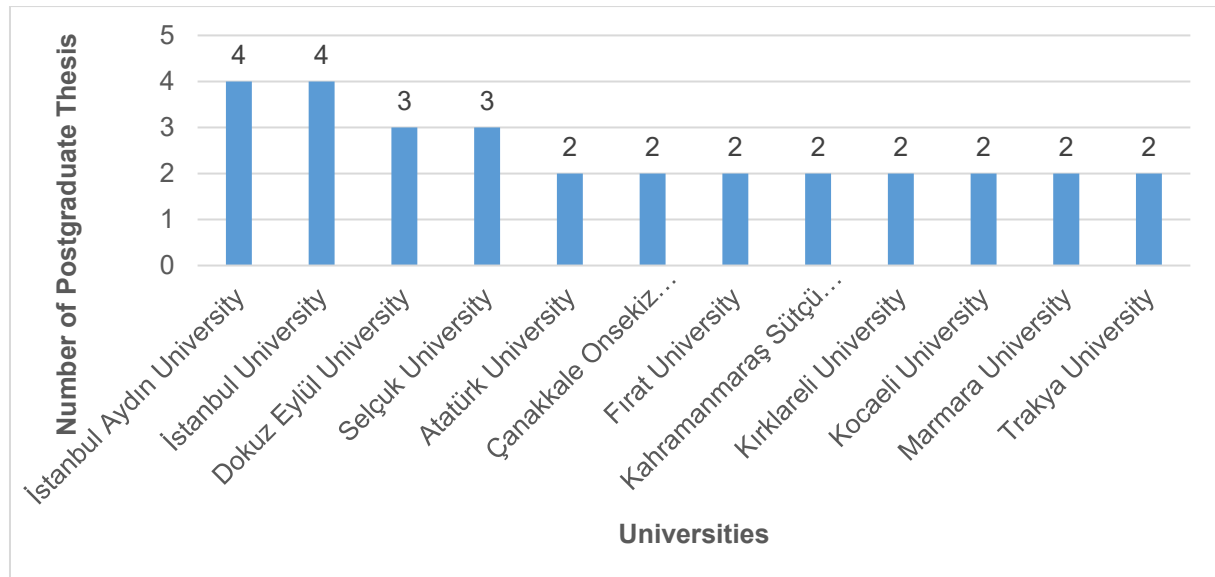
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Innovation management studies, which started with a single thesis in 2000, experienced a notable increase, especially in 2018 (13.2 %) and 2019 (15.1 %). The total number of theses

peaked in 2019 with eight theses. The decline in 2020 (5.7%) is due to disruptions in education and training caused by the COVID-19 pandemic. An increase was seen again in 2021 (7.5%) and the following years, showing ongoing academic interest.

**Figure 2**

*Distribution of Theses Based on The Universities Where They Were Published*

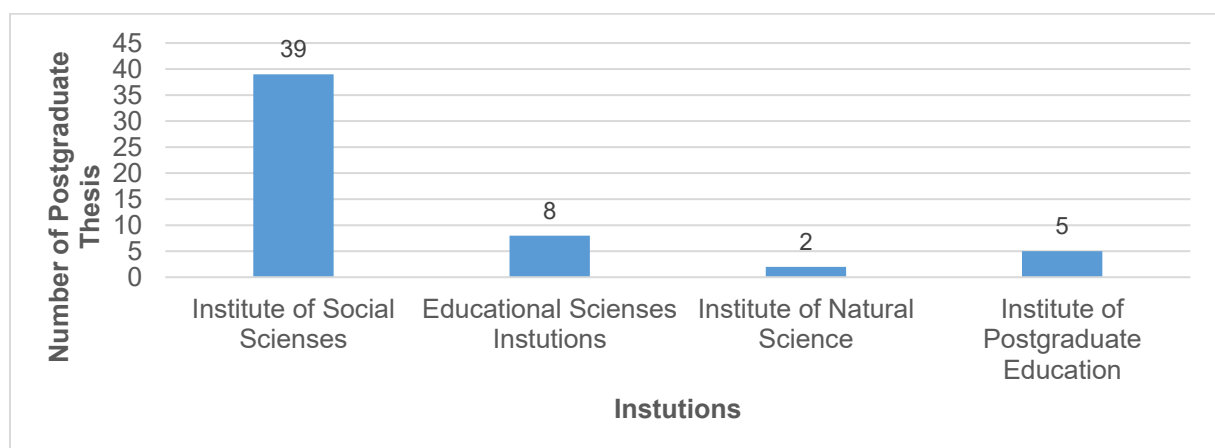


Note. This figure created by the author using Microsoft Excel

The highest number of theses were completed at Istanbul Aydın University and Istanbul University, each accounting for 7.5%. Dokuz Eylül University and Selçuk University follow with 5.7%. This distribution can be linked to the larger research capabilities and student populations at universities in major cities.

**Figure 3**

*Distribution of Theses by The Institutions Where They Were Published*



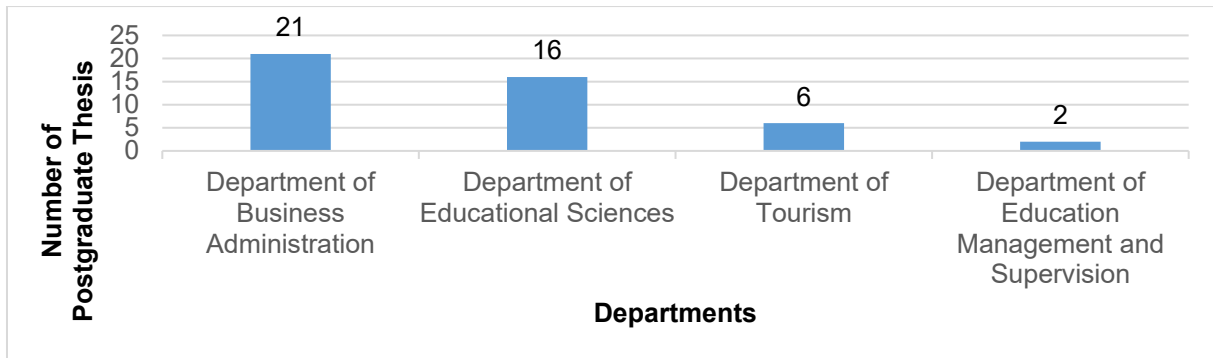
Note. This figure created by the author using Microsoft Excel

73.6% of the theses were prepared at the Institute of Social Sciences, 15.1% at the Institute of Educational Sciences, 5.7% at the Institute of Natural Sciences, and 5.7% at the Institute of Postgraduate Education. The results indicate that innovation management theses are

mainly concentrated in the social sciences. The Institute of Social Sciences is followed by the Institute of Educational Sciences, the Institute of Natural Sciences, and the Institute of Postgraduate Education.

**Figure 4**

*Distribution of Theses by Department*

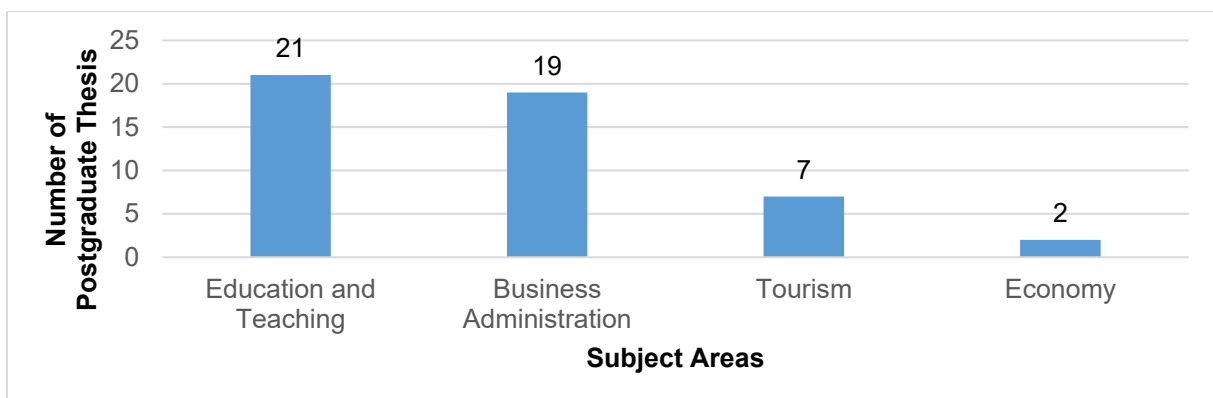


Note. This figure created by the author using Microsoft Excel

The distribution of these writings on innovation management across the main fields of study indicates that innovation management falls within four primary disciplines. Business Administration accounts for the most significant portion, with 39.6% of theses, followed by Education Sciences at 30.2%, Tourism at 13.2%, and Education Management and Supervision at 7.5%. The dominance of Business Administration in innovation management research aligns with existing literature. This is then followed by Educational Sciences, which emphasizes the application of innovation management in schools and among educators.

**Figure 5**

*Distribution of Theses Across Subject Areas*

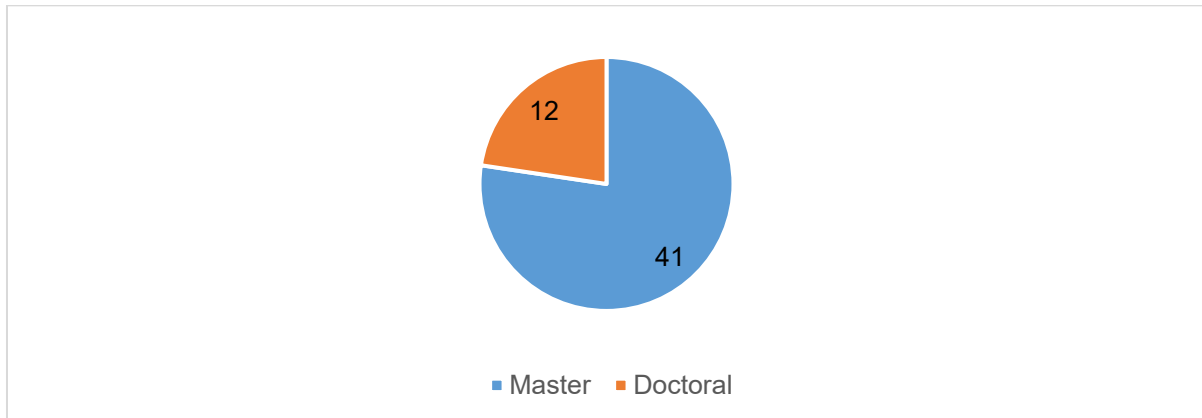


Note. This figure created by the author using Microsoft Excel

The most common topics covered in theses were Education and Teaching (39.6%) and Business Administration (35.8%). Tourism accounted for 13.2%, and Economics for 3.8%. This distribution shows that innovation management is mainly studied from the perspectives of education and business administration. When this graph is viewed alongside the previous one, it indicates that some studies in the Business Administration department also include the subject of education and teaching.

**Figure 6**

*Distribution of Theses by Publication Type*

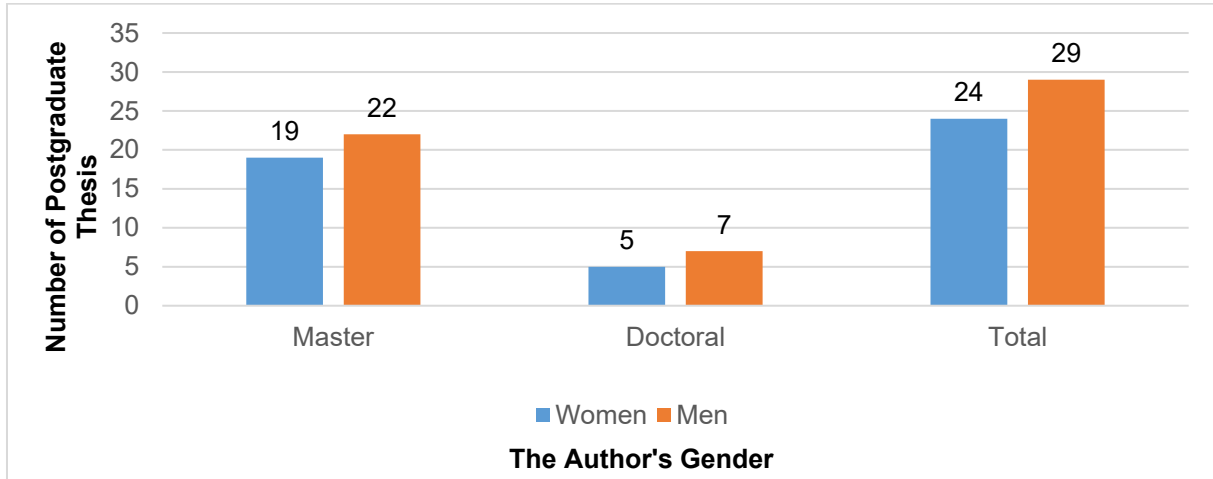


Note. This figure created by the author using Microsoft Excel

77.4% of these are master's theses, while 22.6% are doctoral theses. The high percentage of master's theses shows that doctoral studies are still quite limited. One reason could be that students often do not continue to doctoral studies after finishing their master's. Additionally, the fact that entry requirements for doctoral programs are more rigorous than those for master's degrees, along with the longer duration of the programs, explains this gap.

**Figure 7**

*Distribution of Theses by Authors' Gender.*

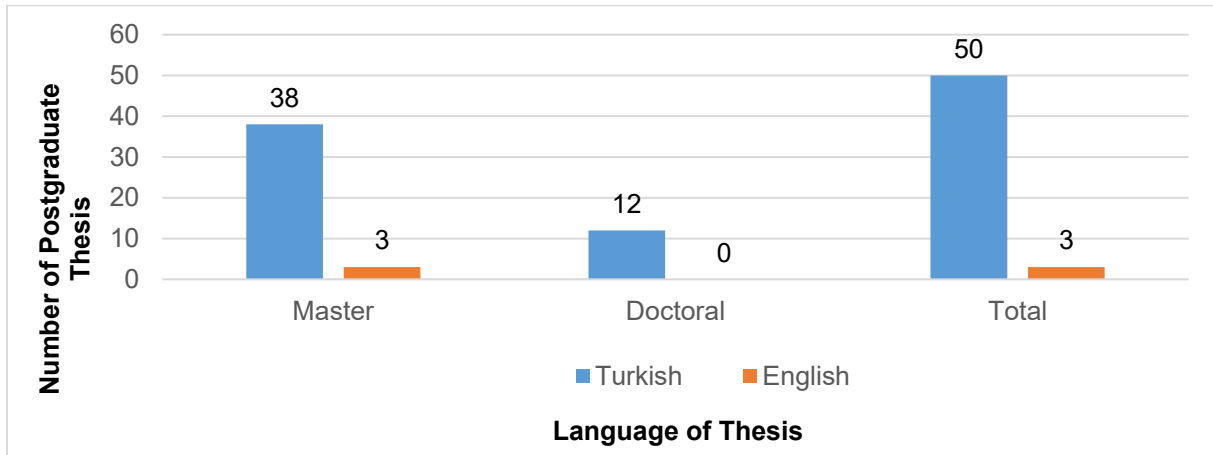


Note. This figure created by the author using Microsoft Excel

54.7% of researchers are male, while 45.3% are female. This distribution shows that men are slightly more represented, but overall there is a balanced gender distribution in terms of thesis types.

**Figure 8**

*Distribution of Theses by Publication Language*

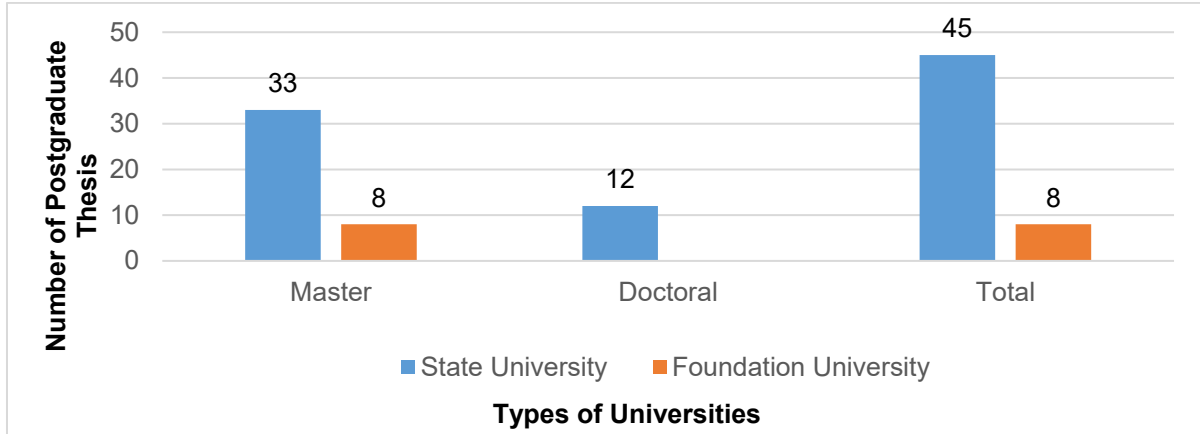


Note. This figure created by the author using Microsoft Excel

94.3% of theses were prepared in Turkish, and 5.7% in English. The dominance of Turkish indicates that most studies remained at the national level, with limited international visibility. There are no doctoral-level theses written in English. The predominance of Turkish is clear at both thesis levels.

**Figure 9**

*Distribution of Theses by University Type*

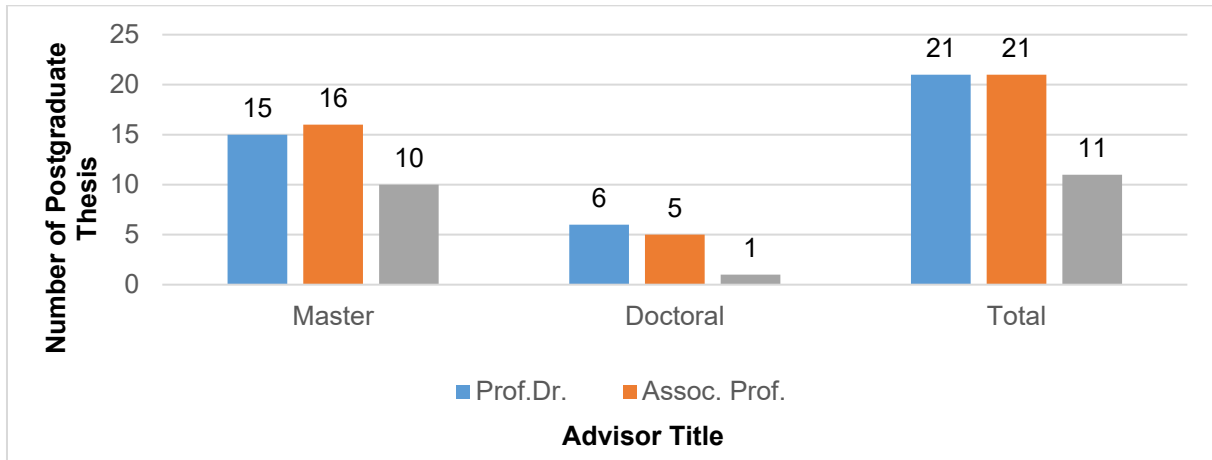


Note. This figure created by the author using Microsoft Excel

When examining the types of universities where theses are published, it is clear that state universities carry more weight than foundation universities. 84.9% of theses are produced at state universities, compared to 15.1% at foundation universities. This shows that state universities have a significant impact on academic output. The primary factor is that there are more state universities than foundation universities. The yearly growth in the number of universities within the scope of university planning for each province, along with the relatively smaller number of foundation universities despite their growth, shifts the balance in favor of state universities.

**Figure 10**

*Distribution of Theses by Advisor Title*

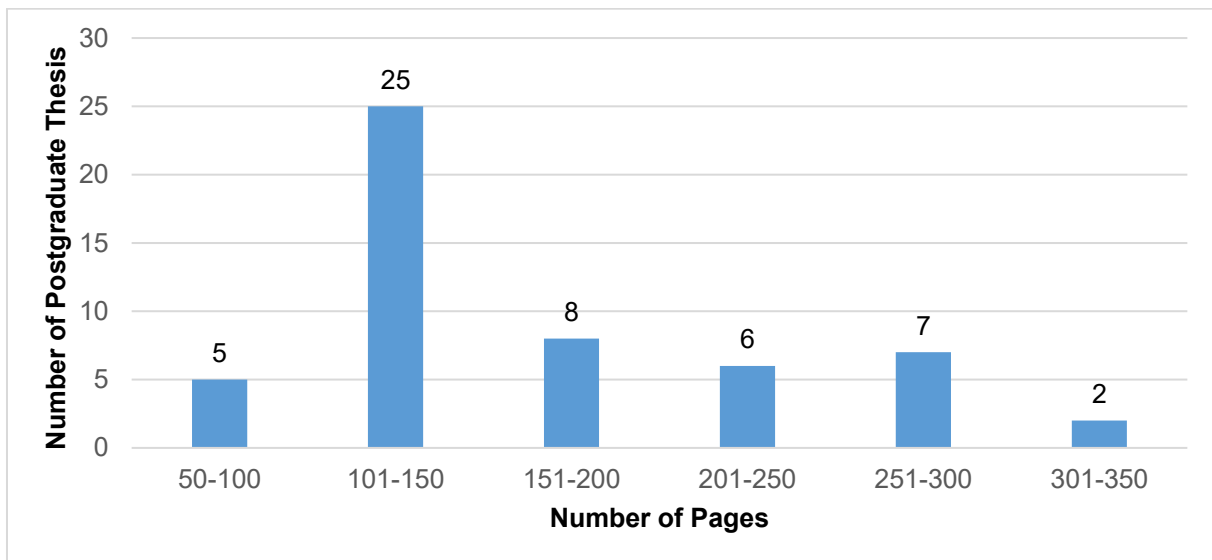


Note. This figure created by the author using Microsoft Excel

In master's theses, 39.0% of advisors hold the title of Associate Professor, 36.6% hold the title of Professor, and 24.4% hold the title of Assistant Professor. In doctoral theses, 50.0% of advisors hold the title of Professor, 41.7% hold the title of Associate Professor, and 8.3% hold the title of Assistant Professor. This finding indicates that experienced academics are more likely to be assigned to advanced research projects.

**Figure 11**

*Distribution of Theses Based on Page Count*



Note. This figure created by the author using Microsoft Excel

In the categorization of theses on innovation management by page count, the highest number of pages was found in theses between 101 and 150 pages. There were 25 theses in this page range.

## Discussion

The findings of this study show that the number of postgraduate theses on innovation management has grown over the years. Notably, the peak number of theses in 2018 and 2019 suggests that academic interest in innovation and innovation management in Turkey is consistently rising. Similarly, while Çoban and Gümüő (2022) emphasize that innovation activities in businesses have become more intense in recent years, the OECD (2018) also states that innovation has become a strategic element at both the national and corporate levels.

The prominence of Istanbul Aydın University and Istanbul University among institutions shows that universities in large cities have more research opportunities, and their larger student populations are reflected in output. Hotamışlı and Erem's (2014) bibliometric studies in accounting also demonstrate that universities in big cities have a more significant role in academic publications.

The fact that most theses are completed at state universities (84.9%) highlights the key role of public universities in academic output. This finding aligns with the results found by Gökçe (2015) in his research on innovation practices in the public sector. Additionally, Altbach and Salmi (2011) also emphasize that public universities are the primary actors in scientific production, especially in developing countries.

The concentration of theses in the fields of business administration (39.6%) and education sciences (30.2%) shows that innovation management is a key issue for both the private sector and educational institutions. In this context, the focus on innovation management in business aligns with the literature's view of innovation as a strategic necessity and a competitive advantage for companies (OECD/Eurostat, 2018; Crossan & Apaydin, 2010; Schumpeter, 1934). The prominence of innovation in educational sciences reflects studies emphasizing the importance of applying innovation and change management in schools and among teachers (Fullan, 2007; Hargreaves, 2003; Rogers, 2003; Karadağ & Özdemir, 2021). Oğan's (2022) research supports this focus by showing the link between teachers' innovation management skills and their organizational commitment. Likewise, Tidd and Bessant (2020) stress that innovation management should extend beyond technology and be integrated into organizational structures and educational processes.

Innovation management is theoretically defined as a multidimensional and cross-disciplinary field shaped by organizational learning, knowledge creation, strategic capabilities, and open innovation perspectives (Nonaka, 1994; Baregheh et al., 2009; Crossan & Apaydin, 2010; Aysan, 2025). These theoretical foundations explain why innovation management research and consequently, postgraduate theses are distributed across diverse disciplines, such as business administration, education, and the social sciences. The increasing focus on organizational structures, human capital, and institutional culture in innovation management also aligns with the observed emphasis in Turkish postgraduate theses. Therefore, the distribution of thesis topics and disciplines in the present findings aligns with theoretical expectations, supporting the view that innovation management develops within complex organizational and societal contexts, rather than being limited to technological innovation alone.

Considering the language used in the theses, the fact that 94.3 percent are written in Turkish indicates that most studies remain primarily at the national level. However, the literature emphasizes that the international aspect of innovation management is becoming increasingly significant (Dereli, 2015; Nambisan et al., 2017). This situation underlines the need to boost the proportion of English in future research. Crossan and Apaydin (2010) also highlight

a similar point, noting that innovation should be addressed within a multidimensional framework on a global scale.

Another noteworthy finding is the relatively low number of doctoral-level studies. In global academic practice, doctoral theses generally form the basis for theoretical developments in innovation management, while master's theses focus more on practical applications. The observed imbalance in Turkey suggests that the field is still in the process of development in terms of theoretical contributions. Indeed, recent research shows that doctoral programmes worldwide are becoming increasingly linked to industry, but are still underrepresented compared to other innovation research areas (Compagnucci & Spigarelli, 2025). Similarly, analyses of doctoral theses conducted in the Turkish context show a marked increase, particularly in the social sciences, since 2022. However, it is emphasised that these studies are primarily based on empirical and quantitative approaches, with limited comprehensive theoretical or interdisciplinary frameworks (Kirişçi, 2025). Encouraging more doctoral research that combines empirical findings with theoretical perspectives could strengthen the theoretical foundations of the field by increasing the alignment of Turkish studies with global academic trends.

### **Conclusion and Recommendations**

In conclusion, this study has identified the main trends in postgraduate theses on innovation management in Turkey and outlined the current state of the research area. The findings show that although academic interest in the field has increased, existing research remains largely national in scope, doctoral-level studies are limited, and international contributions are relatively weak. These results indicate that future research should be more comprehensive and diversified, not only in quantity but also in theoretical depth, methodological rigor, and international engagement. By providing a systematic overview of the current landscape, this study contributes to the national literature and offers a solid foundation for future research aimed at strengthening and expanding the scholarly work in innovation management.

For future research, it is recommended that the scope be expanded through keyword searches and thesis abstracts; more detailed studies should be carried out using citation analyses and bibliometric network techniques (Zupic & Čater, 2015; Moed, 2005).

Previous studies emphasize that producing scientific work in widely used international languages increases global visibility and supports the integration of national research into the international knowledge network (Nambisan et al., 2017; Altbach & Salmi, 2011). In this context, increasing the number of studies prepared in English will improve international visibility and help integrate Turkish research into the global literature.

It is also believed that the variety of studies across different disciplines (such as engineering, health, and public administration) will grow, aiding the development of the field (Tidd & Bessant, 2020).

International comparisons show that countries with well-established national innovation systems, like the United States, Germany, and Scandinavian nations, produce considerably more doctoral research in innovation management, supported by strong institutional capacity and coordinated research policies (Fagerberg & Srholec, 2008; Lundvall, 2007; Edquist, 2010). In contrast, the smaller number of doctoral theses in Turkey indicates that the field is still developing in terms of theoretical depth and institutional support. OECD (2019) also highlights that countries with higher doctoral research outputs generally have stronger funding

mechanisms, international mobility programs, and structured doctoral curricula. Therefore, enhancing doctoral education policies in Turkey such as increasing research funding, encouraging international collaborations, and improving the quality assurance of doctoral programs can help expand innovation management research.

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**Research Article**

**Diaspora Civil Society: The Nexus of Civil Society, Soft Power and Foreign Policy**

**Yusuf Abubakar Wara<sup>a</sup> & MD. Nazmul Islam<sup>b</sup>**

**Abstract**

**Introduction:** This article analyzes the connection between Civil Society, Soft Power and Foreign Policy in the rubrics of international politics. The link between the concepts hinges on the fact that while civil societies are being used as foreign policy tools, the latter is considered a significant beneficiary of the former. Moreover, as foreign policy becomes a component of soft power, the latter posits a persuasive approach to the former.

**Method:** This research adopts concept mapping methods to explain the mutual relationships among the three concepts. By extracting pertinent articles from the Web of Science database and creating a map, we examine and provide the foundation of our article that there are relationships among the three notions.

**Results or Findings:** The research found out that the trio concepts have symbiotic relations, which work in unison to promote a nation's interest. Within these relations we concludes that Civil Society is increasingly becoming relevant as a tool in foreign affairs.

**Discussion or Conclusion:** In the post-COVID-19 era, civil societies have emerged as influential actors not only in domestic governance but also in advancing foreign policy objectives through soft power. Their growing involvement demonstrates the interconnection between civil society, soft power, and foreign policy. By complementing state diplomacy with cultural, humanitarian, and developmental initiatives, civil societies reinforce national influence abroad. This synergy illustrates how these three dimensions collectively enhance a nation's global image and strategic interests in contemporary international relations.

*Keywords:* civil society, soft power, foreign policy, concept mapping, relations

*JEL Codes:* F50, F51, F53, F59

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**Araştırma Makalesi**

**Diaspora Sivil Toplumu: Sivil Toplum, Yumuşak Güç ve Dış Politikanın Bağlantı Noktası**

**Yusuf Abubakar Wara<sup>a</sup> & MD. Nazmul Islam<sup>b</sup>**

**Öz**

**Giriş:** Bu makale, uluslararası politikanın çerçevesi içinde sivil toplum, yumuşak güç ve dış politika arasındaki bağlantıyı analiz etmektedir. Bu kavramlar arasındaki ilişki, sivil toplumların dış politika aracı olarak kullanılmasına dayanırken, dış politikanın da sivil toplumdaki önemli ölçüde fayda sağlaması gerçeğine dayanmaktadır. Ayrıca, dış politikanın yumuşak gücün bir bileşeni haline gelmesiyle, yumuşak güç dış politikaya yönelik ikna edici bir yaklaşım ortaya koymaktadır.

**Yöntem:** Bu araştırma, üç kavram arasındaki karşılıklı ilişkileri açıklamak için kavram haritalama yöntemlerini benimsemektedir. Web of Science veri tabanından ilgili makaleleri çıkararak, üç kavram arasında ilişkiler olduğunu inceleyip makalemizin temelini oluşturmaktayız. Varsayımımızı desteklemek için, üç kavram arasındaki ilişkileri açıkça gösteren bir harita oluşturduk.

**Sonuçlar ya da Bulgular:** Araştırma, üçlü kavramların, bir ulusun çıkarlarını desteklemek için uyum içinde çalışan simbiyotik ilişkilere sahip olduğunu ortaya koydu. Bu ilişkiler içinde, Sivil Toplumun dış ilişkilerde giderek daha önemli bir araç haline geldiği sonucuna varılmaktadır.

**Tartışma ya da Yapılan Çıkarımlar:** COVID-19 sonrası dönemde, sivil toplumlar yalnızca iç yönetimde değil, aynı zamanda yumuşak güç yoluyla dış politika hedeflerinin ilerletilmesinde de etkili aktörler olarak ortaya çıkmıştır. Sivil toplumun artan katılımı, sivil toplum, yumuşak güç ve dış politika arasındaki karşılıklı bağlantıyı göstermektedir. Kültürel, insani ve kalkınma girişimleriyle devlet diplomasisini tamamlayan sivil toplumlar, ülkenin dış etkisini güçlendirmektedir. Bu etkileşim, bu üç boyutun birlikte bir ulusun küresel imajını ve stratejik çıkarlarını nasıl geliştirdiğini açıkça ortaya koymaktadır.

*Anahtar Kelimeler:* sivil toplum, yumuşak güç, dış politika, kavram haritalama, ilişkiler

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## Introduction

The trio (civil society, soft power, and foreign policy) are undoubtedly intertwined, interwoven, and interconnected in the rubrics of international politics. They have a symbiotic relationship, as each tends to benefit from the offspring of the other. Civil society, which is generally classified as a 'third sector' behind state and public enterprises (Gidron, 2010) has been serving as a medium for presenting the voice of the voiceless, addressing climate change issues, tackling refugee crises, and other international issues under the auspice of global civil society, which this article ventures to termed *Diaspora Civil Society*. The aim is to examine how civil societies are used as a soft power tool to promote foreign policy in the global village.

In the contemporary global village that has a robust and dynamic network of non-state and non-commercial organizations working rigorously to supplement the government efforts in economic, social, political, diplomatic, and education, thereby serving as the informal agents of education and modernization (Öztürk, 2024), civil society is a shining example of virtue that is acting as a solid foundation for leveraging soft power and foreign policy. Civil societies have a crucial role in contemporary international politics since states have relatively less power compared to the increasing influence of non-state actors. This has resulted in a diverse international system where non-state players have taken on more significant roles in areas formerly the exclusive domain of states (Ogunnubi & Tella, 2017).

Civil societies are now important domestic and international political players, acting as diplomatic representatives of their home countries abroad and as philanthropic or developmental organizations. This is feasible due to the increasing globalization of civil societies, which enables them to combine descriptive and normative elements, as well as politics and ethics, history and rhetoric, in nearly equal proportions to promote a favorable global community (Kumar, 2008). In rendering series of services in the international arena civil societies intentionally or unintentionally promotes the foreign policies of their home countries, a function which this article intends to evaluate.

As this article defines, Global civil societies or diaspora civil societies are non-state actors serving humanitarians outside their home states in different parts of the world. They so serve either directly or indirectly to forward the foreign policies of their countries. The growing worldwide relevance of civil society generates cross-over effect. This impact shape public opinion by enabling legislators in one nation to influence those of another. This dynamic is called the International Relations of Civil Society (Inoguchi, 2012). The concept of the relevancy of civil societies in international affairs gives room to the idea of projecting state actors' foreign policies or diplomatic aims via these non-state actors in the contemporary global village.

Civil societies are considered non-coercive entities that states utilize as soft power tools to exert influence over other actors in the international arena and manipulate their actions according to the state's desires. This non-military strategy aims to enhance the state's significance globally through appeal and attraction, such as development aid by civil societies in development areas (Tiwarly & Roy, 2022). Using civil society to further foreign policy through a global appeal by nations provided the foundation of the connection between the trio. This study examines the connection between civil society, soft power, and foreign policy, which has received limited attention in contemporary literature. Moreover, the research sought to highlight the crucial importance of civil society in attaining diplomatic goals to capture the attention of national governments.

## Literature Review

The content review utilized the Clarivate Web of Science Database, widely recognized as a reliable source for scientific research. The terms "Civil Society," "Global Civil Society," "Soft Power," and "Foreign Policy" were employed as keywords to search for the relevant articles for the review.

### Civil Society

Otherwise known as the "third force or sector," it is a nongovernmental and non-commercial organization offering humanitarian functions in different sections that include but are not limited to advocacy, relief assistance, first aid, and developmental roles in and outside its home state. Even though there are numerous interpretations associated with civil society, its anthropology can be traced to Cicero's notion of *societas civilis* and Aristotle's concept of *koinonia politika*, which are the earliest terminologies that made civil societies to become synonymous with political institutions and organizations (Ogawa, 2009). The connection between civil society and political institutions stems from the fact that civil society is inherently inclined towards civility. This is the primary reason why the concept could only have gained much popularity and became a widely disputed topic, particularly after the collapse of communist or totalitarian nations in the 1980s (Ossewaarde, 2006). After first becoming somewhat popular in literature, the idea of civil society began to provide ongoing difficulties in terms of description. Many efforts have been directed toward giving the concept a clear definition. Still, most of these initiatives have had either little or no success in precisely identifying the core of civil society.

In the Tocquevillian tradition, the notion is commonly seen as a reliable means to achieve democracy and effective governance. Civil society is perceived as a network of advocacy groups that operate independently from other sectors to safeguard against government tyranny. It is also seen as a voluntary association where citizens develop their ability to make practical demands on the government (Atibil, 2012). This coincides with the argument of Manners (2002) on the ability to use civilian instrument rather than military, and Galtung's (1973) view of the remunerative power as tools for foreign policy. Both have identified the essence of civilian power in international relation which we interpret as being the basis of normative power under the auspices of civil society. Critiques of realist theory find fault in the state-centrism and the use of military might in international politics for being historically incomplete. For instance, Rosenberg (1994) argues that realism detaches nations from the social and economic frameworks that influence their actions, therefore neglecting the historical social organizations that give rise to international relations. He proposes an alternative theory that contextualizes international politics within the extensive concept of civil society, contending that global dominance is perpetuated through economic and social institutions rather than solely through military or strategic rivalry.

Today civil society has become a vital instrument in global politics playing a significant role on a broad range of issues and have significantly impacted environmental policy, international development plans, debt alleviation for developing nations, and human rights legislation (Pallas & Uhlin, 2014). This argument is in line with the view of (Keck & Sikkink, 1998), who assert that Transnational Advocacy Networks (TANs) composed of CSOs have become central actors in the contemporary international politics. Through dissemination of credible information politics, they are able to reshape governance and norms at national and international level. A noteworthy aspect of civil society global advocacy role is alignment with discursive and interactive international functions (Rashid & Simpson, 2019.) who argues that

the activism role of civil society in international public policy debate has uplifted it from mere humanitarian agency to a more robust diplomatic tool.

On a different note, civil society is frequently linked to democracy and is often referred to as a breeding ground for democracy (Ramasamy, 2024). This suggests that the emergence of modern democracy can be attributed to the efforts of many social groups within civil society. This is often accurate, given the substantial support that civil society provides to democracy and the recognized influence it exerts on political structures (Van Dijk, 2017). Currently, civil societies are experiencing unprecedented growth in their influence as they establish strong connections with the governing bodies or systems of power. This link that civil society established with the corridor of power made it a vibrant element for achieving diplomatic goals internationally.

The influence of civil society in the diplomatic processes of states gave birth to its new nomenclature, which is universally termed global civil society or, better still, civil society in international relations. David Chandler supports the idea that civil society becomes vital in global affairs because of the constructivist framework, which suggests that power is limited and state interests are changed by international normative structures formed by the interactions of state and non-state actors, including global civil society (Chandler, 2004). With civil society playing a major part, the idea questions the use of armed action in handling world affairs and supports adherence to normative frameworks to forward foreign policy.

Several developed countries' civil societies are being used to protect their home countries' foreign policy objectives, mainly in the developing world, pinpointing the magnificence of civil society in international relations. For instance, Canadian civil societies have emerged as a voluntary means of strengthening Canadian influences, often known as soft power, and advancing the implementation of Canadian foreign policy globally (April, 2009).

### **Soft Power**

The concept of soft power is highly regarded by regions, organizations, and countries that appreciate peaceful and diplomatic procedures for reaching goals or enticing influence in the international environment. The concept is neither military nor economic might but normative attitudes via cultural values, sports, music, films, and media. Joseph Nye is credited with coining the term "soft power" and defining it as the capacity to achieve desired results by attraction rather than force or financial incentives (Kulkova, 2021: 106). Throughout history, various forms of power have been employed to acquire influence and manipulate other parties into behaving in ways they would not have otherwise. Kingdoms and empires have historically exerted various forms of power, including hard, soft, and bright. However, it was during the end of the Cold War period that Joseph Nye, in his influential book "Bound to Lead: The Changing Nature of American Power" published in 1990, introduced the concept of "soft power" for the first time, giving it a conceptual significance (Yavuzaslan & Cetin, 2016).

Power is no longer limited to military strength alone. Concepts such as economic, political, human, and technological power have received significant attention in literature. Regardless of the category or perspective from which power is considered, its purpose and objective for use remain constant. As Morgenthau (1949), a prominent figure in the realist school, astutely noted, power entails having authority over the thoughts and behaviors of others. Regardless of the type of power employed, the fundamental objective is to achieve the intended outcome of influencing and directing the thoughts and behaviors of others by the intentions of those in positions of authority. Many nations are choosing to adopt universal principles and use soft power instead of hard power to reach their intended outcomes in the modern world today

due to the inefficiencies and great cost of conventional power sources and the bad effects usually connected with them. This change also resulted from the ambiguity and complexity of conflicts like the Russian-Ukraine War.

Regarding the origins and means of power, hard power relies on coercive diplomacy, economic sanctions, military intervention, and the establishment of military alliances. On the other hand, soft power draws upon cultural, moral, and political values cultivated through training activities and various forms of artistic expression such as sports, theater, and leadership. Therefore, since civil societies have no troops and are not-for-profit motives, they cannot supplement the state's complex power maneuvers; they can only perfectly fit in promoting diplomatic procedures under the auspices of soft power. Soft power entails culture, sports, and numerous humanitarian activities that civil societies are established to perform and promote. In order to strengthen the connection between civil society, soft power, and public diplomacy or foreign policy, Çiçek provides a precise analysis that suggests politics should be conducted by society, so transforming diplomacy into a civilian endeavor. For this reason, in the contemporary global society, civil actors and the public have become essential participants in diplomacy (Çiçek, 2022).

Civil society plays a crucial role in developing and implementing soft power, as Nye (2005) correctly suggested. Soft power encompasses a country's historical, geographical, and cultural diversity, as well as its economic strength, social structure, democratic progress, prevalence and influence of civil society organizations, scientific and technological infrastructure, and values such as art and sports that contribute to intellectual and social life.

The inquiry pertains to the correlation between civil society and soft power and the relationship between soft power and foreign policy. In order to address this topic, we must examine one of Nye's interpretations of soft power that established the connection between the three elements. He believes that governments with the power to enforce their preferences, cultural values, and institutional structures through their domestic and foreign policies can cultivate an appealing image, with soft power being the key determinant (Nye, 2005). In order to be appealing, governments may only do this by implementing institutional frameworks that involve both governmental and nongovernmental entities, including civil society.

## **Foreign Policy**

A country's foreign policy is its diplomatic design and foreign architectural methodology applied in the global environment to achieve the desired foreign policy goals. Foreign policy is the whole strategy and method used by a sovereign state interacting with other governments worldwide. Under government direction and backing, several diplomatic procedures and institutions carry out this policy. Like civil society, these kinds of groups could be either governmental or nonprofit. Foreign policy, as defined by Watson (1982) and reported by Wasike et al. (2015), refers to the specific goals and objectives that a country seeks to achieve in its interactions with other nations and international governmental organizations (Wasike, Kimokoti & Wekesa, 2015).

In its broadest sense, foreign policy refers to a state's strategic approach to cultivating relationships with other countries to advance its national interests and goals on the global stage. The field of foreign policy analysis aims to comprehend the dynamics of state-to-state and state-to-non-state actor interactions within the global system (Canyurt, 2025). This diplomatic contact is facilitated by collaborating with nongovernmental organizations (NGOs) and interactive technologies like the Internet. These platforms contribute to the formation of a global civil society and give rise to pressure groups, such as Amnesty International or Greenpeace,

which play a significant role in shaping the foreign policies of governments (Bélanger, 1999). In the modern world, non-state actors, such as civil societies, are becoming more popular in global affairs due to the massive rise of soft power attitudes and the chronic failures of challenging, complex power behaviors, which are costly, complicated, and contain complete uncertainty whenever applied.

By helping to create a complete knowledge of foreign policy that transcends realism, power, and security, non-state actors significantly help nations' foreign policy to be advanced. This covers diplomatic frameworks including humanitarian help, worldwide integration, and international collaboration with civil societies.

The essential tenets of foreign policy are power, realism, security, and diplomacy. Power, defined as the strength and ability to control the actions of others and force them to behave in ways they would not have otherwise, plays a crucial role in implementing foreign policy. States that prioritize using power to achieve domestic and foreign goals often strategically position themselves in a superior asymmetric status in their relationships with other states during international relations (Wilson & Kwon, 2018). Just as the realists opine, states inherently utilize power to maneuver into and defend their comfortable positions in the global arena. Realists give state use of power enormous weight in order to accomplish both domestic and foreign objectives. Unlike realism, diplomacy has become quite important in foreign policy since it depends on soft power instead than more aggressive strategies.

When power is exerted using more forceful means such as threats, coercion, rewards, or incentives, it rarely produces significant desired outcomes and leads to multiple dire consequences. Wilson and Kwon (2018) further argue that when power is mainly employed, it becomes challenging to foster constructive international relations; however, when the influence and authority in foreign policy and conflicts are perceived with a more lenient perspective, as opposed to an essentially pragmatic view of international relations and a focus on military strength, a completely new range of opportunities arises, allowing for the flourishing of a vibrant global civil society. One must realize that foreign policy is shaped not only by internal and external elements. Domestic affairs of a country directly affect its foreign policy. This is seen in many foreign policy assessments by intellectuals and analysts from abroad. Still, a nation's internal power directly affects its power on the world scene.

The domestic strength of a country, which determines its power to influence others in the global arena, is determined by internal factors such as elections, public opinion, and economic interests such as trade and investment (Gimba & Ibrahim, 2018). So, even with a clear distinction between internal and external factors that affect a country's foreign policy, the two depend on each other and have a mutual relationship. Pimparkar (2023) divided the determinants of foreign policy into two significant categories: internal/domestic and external foreign. For him, domestic determinants of foreign policy encompass historical factors, such as national identity, culture, political structure, leadership, economic size and nature, and domestic public opinion. On the other hand, external determinants include the international power structure, military strength, alliances and coalitions, geopolitical location, and global public opinion (Pimparkar, 2023).

Civil society is a critical component of public opinion in determining foreign policy. According to Yeriemieiev (2024), W. L. M. King states that public opinion is a crucial political power mechanism, domestic or global. It informs both the government and civil society about social issues. It can effectively influence decision-making through pressure and persuasion (Yeriemieiev, 2024, p. 33). The crucial aspect of persuasion about the characteristics of public

opinion is the essential elements that position civil society within the realm of public opinion in advocating for domestic and systemic policies by states. Civil civilizations exemplify collaboration, coordination, moral persuasion, flattery, and inducement. They constantly win the respect and backing of the people they help. By virtue of their excellent behavior while in a foreign nation, their home countries benefit and they are therefore essential in advancing foreign policy.

Because of their complex character influenced by various factors including domestic politics, economic interests, international frameworks, and geographic concerns, civil society organizations can engage in the wide field of foreign policy. Among the components of international structures are the civil societies and regional/international organizations that substantially influence a state's foreign policy formation.

### **Methodology**

This research adopts concept mapping to determine the connections and relationships between civil society, soft power, and foreign policy. Concept mapping, which is used to determine the relationship and linking of certain words or phrases (Pinandito, et al., 2021), is no more than qualitative analysis that indicates similarity value in the conceptual comparison presented on a map (Chang, et al., 2005). In other words, it is a network of concepts learned through comprehensive research that are used with specific linking phrases to portray logical relationships (Javonillo & Martin-Dunlop, 2019). In order to ascertain this relationship, we read relevant articles and website materials from relevant organizations and then present our argument in three significant stages.

Firstly, we elucidate the trio concepts (civil society, soft power, and foreign policy) through a literature review using relevant articles from the Clarivate Web of Science Database. This is to give us room for brainstorming on the meanings and features of the concepts as they are applied in international relations.

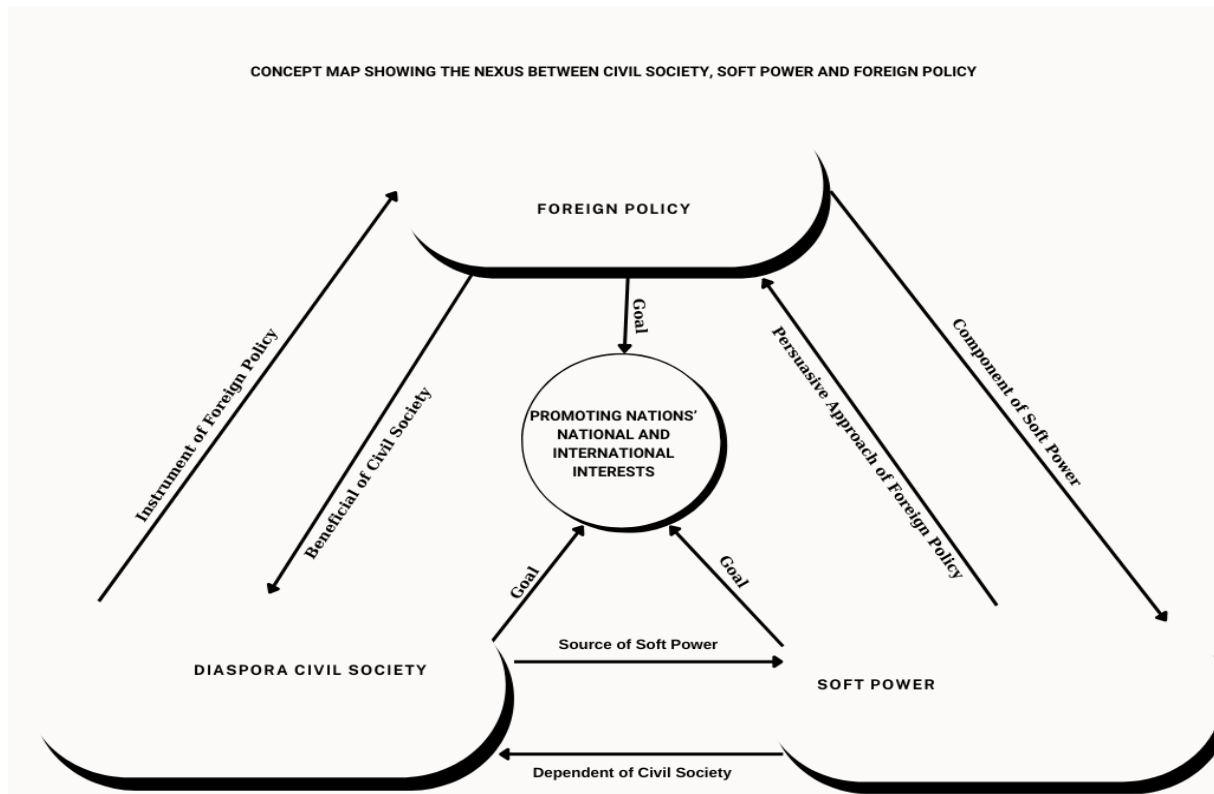
Secondly, through literature review, we pinpoint some specific significant ideas, functions, and actions that justify that civil societies are instruments of soft power and thereby connected to the foreign policy rubrics of a country.

Thirdly, we drew the concept map using some linking phrases to justify the logical relationships between the three variables in our discussion.

While this method offers a systematic visual depiction of the correlations among the adopted factors in our research, it falls short in capturing the nuanced, contextual details that alternative methodologies, like case studies might produce (Yin, 2018). To facilitate a profound, contextual comprehension of events, we shall integrate case studies with concept map to reduce oversimplified abstractions.

**Figure 1**

*Concept Map Showing the Nexus Between Civil Society, Soft Power and Foreign Policy*



Note. Created by the author using Canva software.

This concept map shows connections between civil society, soft power, and foreign policy. It highlights the symbiotic relationship and connections between the three interdependent variables.

### ***Discussion***

As discussed in our first stage, where we review the literature and, in the map, above, the three variables are directly similar in the focus question of projecting a nation's national and international interests. In other words, it is indicated that there are intricate relationships and connections among civil society, soft power, and foreign policy, considering the numerous real-world examples in several countries.

In the contemporary world, civil society is increasingly becoming relevant in most countries' foreign policy promoters through the magnificent roles they play under the auspices of soft power in which they indirectly promote their country's cultural values and foster diplomatic relations between their home country and the country they serve. Moreover, civil societies are also seen as a bridge that allows international networks between several actors in the international arena. Civil societies originating from advanced countries and serving in developing countries through advocacy and mobilization influence public opinion, thereby generating support for foreign policy initiatives. By drawing attention to violations of human rights, they can gather momentum and help to improve the diplomatic leverage of their native country. Civil society shapes public opinion by campaign lobbying and research, so it is intimately linked with soft power and foreign policy. For instance, Amnesty International mobilizes the government to curtail human rights violations worldwide. Some pro-environment

civil societies also campaign against environmental pollution to protect our climate (Mittag, 2012).

Countries adopt soft power strategies through civil societies, such as cultural diplomacy, educational assistance, and international assistance. Advanced countries fund cultural initiatives supporting their language, art, and customs through civil society. These strategies and participation in global concerns like humanitarian relief and climate change may help a country's image even more, thereby attracting it as a partner for foreign affairs.

A significant connection between civil societies, soft power, and foreign policy lies in the fact that in addition to cultural and political values, foreign policy becomes a vital component of soft power when prioritizing diplomacy and collaboration over military intervention. Moreover, soft power adopted to utilize cultural diplomacy, communication, and building partnerships is a giant foreign policy approach alongside hard power and multi-stakeholder engagement.

The interconnection of the trio can be further buttressed by the fact that advocacy efforts of civil societies in a particular country can promote the country's soft power by showcasing its commitment to democracy, cultural exchanges, and human rights protection. Civil societies can also be instrumental in shaping a country's foreign policy through lobbying, representing citizens' interests, and providing relevant feedback to help redesign foreign policies to meet and satisfy national and international interests. In most countries today, civil societies are considered an indispensable connotation of the soft power strategy because they help shape countries' democracy, justice system, national image, and public diplomacy (Sun & Li, 2011).

The striking nexus between civil society, soft power, and foreign policy lies in the notion that as civil society serves as an instrument of foreign policy, so does foreign policy posit as a beneficiary of civil society. Moreover, as foreign policy stands as a component of soft power, so does soft power become a persuasive approach to foreign policy. In the same vein, soft power sits as dependent on civil society, and so does civil society's position as a source of soft power.

Civil society is perceived as a tool of foreign policy in the sense that it appears to be one of the vital avenues of addressing global issues as well as an institution of promoting cultural diplomacy, thereby winning the hearts and minds of the citizens of the country it serves for its home country (Helmys & Irawan, 2024). For instance, several global civil societies function as agents of peace in pockets of global conflicts such as the Israel-Palestine conflicts or as agents of humanitarian gestures in conflicts that include but are not limited to the Russian-Ukraine war as well as crises in the Central African Republic, South Sudan and the Democratic Republic of Congo. A typical example of a civil society that functions as an initiator of peace is the Alliance for Middle East Peace (ALLMEP), which is an umbrella organization of more than 160 civil societies working in peacebuilding between Israelis and Palestinians (Lyndon, et al., 2024). In the same vein CSOs in diaspora can support their country in times of crisis through raising donations and creating awareness in the global village. The Ukrainian diaspora NGOs mobilized support and donation from the global community to support its army confronting Russian forces while promoting its countries interest in international environment (Kuts, 2023).

Foreign policy is regarded as a beneficiary of civil society, considering that global civil society services in host countries supplement the roles of foreign policy architectures in that they contribute to achieving their home country's international interests. Several countries deliver their foreign aid, which helps to promote their interest through civil societies. Countries/donors such as the European Union, the United States, the United Kingdom, the Netherlands, and Sweden channel more than \$1 billion in assistance to other countries via their

civil societies. These donors that formed more than 47.6 percent of the Development Assistance Committee (DAC) protect their foreign policies abroad by assisting third-world countries through their civil societies working in the diaspora (Tomlinson, 2013). For this reason, we can extrapolate that foreign policy benefits from civil society by making them an avenue to reach its goal in the global village.

Foreign policy is considered a component of soft power on the hinges that soft power is the inner room that utilizes culture and political values as well as foreign policy to enact a change in the international system. For instance, the action of some transnational civil societies in collaboration with some governments to ban landmines supports the notion that foreign policy is a component of soft power (Carothers, 2000).

Soft power is tagged as a persuasive approach to foreign policy because it uses positive attraction and persuasion rather than force to achieve foreign policy goals. The principle of soft power lies in the rubrics of public diplomacy, which entails the adoption of ideas, culture, sports, education, and cuisines to lure others into doing what they want, to manipulate their motives through tactical maneuvers to achieve the desired foreign policy objectives (Ali, 2022). This approach that contradicts the use of force is one of the pillars of foreign policy besides military and economic strategies. Today, considering the failures of challenging power applications, several countries opt for soft power techniques to advance their foreign policy.

Soft power is viewed as a dependent of civil society based on the fact that it is primarily located in civil society as it begins at home, more to society, then domestic and to international (Nisbett, 2015). The bases of soft power been a dependent on civil society can be traced to the assumption of Gramsci that sees political society and civil society as significant in determining the outcome of public diplomacy. The fact that hegemony is necessary in exacting influence through society, culture, class, economy, and ideology that generally emanate from civil societies makes it necessary to regard soft power as dependent on civil society (Yukaruç, 2017). The basis of every soft power is to exact influence to make target groups react to the whims and comprises of a particular institution or state; however, the influence must not be tricky like that of military or economic strength, but it has to be soft that includes motivational strategies and humanitarian approaches that are part of the functions of civil societies.

Civil society functions as a strategic conduit of soft power based on the justification that in the contemporary world, most of the country's soft power emanates from its civil society (Nye, 2017). In other words, the persuasion strategies needed to promote the objective of foreign policy is naturally embedded with the civil societies. Civil societies serve different countries in the modern world, especially in humanitarian and developmental perspectives. By so doing, they become a source of foreign policy in their home countries because most developed countries soften part of their foreign policy development through their civil societies. Global civil societies nowadays collaborate with their home country to foster foreign relations by promoting their countries' cultural values in the countries where they function. For instance, Canadian non-governmental organizations have been actively engaged in forms of long-distance nationalism, contributing meaningfully to political transformations in Southeast Asia. Additionally, the Canadian Asia Pacific Working Group (APWG), operating under the Canadian Council for International Co-operation (CCIC), brings together NGOs, faith-based organizations, unions, and solidarity networks from across Canada, all of which share a strong commitment to development, social justice, and human rights in Asia (Kusno, 2023). The APWG has consistently advocated for the inclusion of Asian perspectives and experiences in policy dialogue and development initiatives, thereby exemplifying the notion of “diaspora civil society” examined in this article.

## Conclusion

The connection between civil society, soft power, and foreign policy is strongly justified by the notion of Nye (2004), who suggested that civil society is a strategic source of a country's soft power alongside culture, history, and domestic political arrangement. The concept, which is generally defined as the ability of a country to promote its foreign policy objectives through persuasions rather than military might or economic sanctions, is supported by civil society (Shah, et al., 2017). The support rendered by civil society to soft power strategies that foster a more assertive foreign policy of a country justifies the nexus between the three concepts in international relations.

In this article, we drew a concept map after reviewing relevant literature to justify the links between civil society, soft power, and foreign policy in international affairs. As shown on the map, we find out that while civil society can be an instrument of foreign policy, foreign policy can benefit from civil society. This is particularly true in achieving foreign policy goals; countries use civil society as an agent of persuasion to make citizens of other countries appreciate their efforts in that country, thereby promoting their image and fostering their global foreign policy objectives. Similarly, civil society helps foreign policy prosper; by mobilizing public opinion and increasing awareness, civil societies not only affect the formulation but also help to promote the foreign policy of their native country abroad.

Another reason for pinpointing the link of the trio variables is that while foreign policy is an element of soft power, soft power is a non-coercive method of foreign policy. Unlike military and economic might that opt for the hard way to achieve foreign policy aims, soft power chooses the more skillful way through inducement and convincing, which are carried out by civil society and other institutions of soft power to ensure a successful foreign policy plan. Through knowledge sharing, education strategies, cultural richness, historical trace, and diplomatic skills, soft power projects its home countries' foreign policy worldwide (Erdil, 2022). A country's historical traces, art, and innovation are disseminated most by civil societies' efforts, which make them an inseparable part of foreign policy.

The link between the three concepts can be further buttressed because while soft power depends on civil society, the latter is regarded as a source of the former. Countries worldwide adopt innovative power, combining soft and hard power to achieve their goals. While hard power comprises military and economic strength, whose sources are soldiers and sanctions, soft power uses humanitarian and cultural institutions, including nongovernmental organizations such as civil societies. These organizations complement their government efforts in promoting both domestic and foreign policies. They assist in external issues in a variety of areas including advocacy, democratic uplifting, human rights projection, reconciliation, encouragement of women equality, poverty reduction, and corruption prevention in a particular country. Civil societies increase their home countries' acceptability through these services abroad, allowing for resilient foreign policy processes.

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The authors declared that the ethical rules for research and publication followed while preparing the article.

Yazarlar makale hazırlanırken arařtırma ve yayın etięine uyulduęunu beyan etmiřtir.

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**Research Article**

**Examining the Relationship Between Consumers' Responsible Environmental Behaviors and Green Product Purchasing Behaviors: The Role of Demographic Variables**

**Bahar Çelik<sup>a</sup> & Güller Şahin<sup>b</sup>**

**Abstract**

**Introduction:** Recently, especially due to population growth, we are faced with problems such as pollution in the environment and living spaces. In this context, people's concerns about the environment continue to increase along with today's environmental challenges. Among these challenges, climate change, global warming and depletion of natural resources precisely straight and/or obliquely affect consumer preferences and decisions. In connection with these concerns, this research targets to determine the existence of a relationship between consumers' responsible environmental behavior and green purchasing behavior.

**Method:** Within the scope of the purpose, in theory, a survey-based approach was applied to validate the research model. The study tool was aimed at 389 participants through the 'environmental behavior scale' and 'green purchasing behavior scale' surveys on individuals aged 18 and over living in Kutahya province by convenience sampling method. T-test, one way-ANOVA test and correlation analysis were used to test the research hypotheses. Based on the findings of the research, the research model was redesigned.

**Results or Findings:** The results confirmed the existence of a statistically positive and significant relationship between consumers' responsible environmental behavior and green purchasing behavior. It was also observed that individuals' responsible environmental behavior and green purchasing behavior differed according to some demographic characteristics.

**Discussion or Conclusion:** Since the study was conducted on the population living in Kutahya province, it is suggested that forthcoming studies be conducted in different provinces and/or regions consisting of larger and culturally diverse populations.

*Keywords:* consumer theory, green purchasing behavior, responsible environmental behavior

*JEL Codes:* D12, M31, Q50

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**Araştırma Makalesi**

**Tüketicilerin Sorumlu Çevre Davranışları ile Yeşil Ürün Satın Alma Davranışları  
Arasındaki İlişkinin İncelenmesi: Demografik Değişkenlerin Rolü**

**Bahar Çelik<sup>a</sup> & Güller Şahin<sup>b</sup>**

**Öz**

**Giriş:** Son dönemlerde özellikle nüfus artışına bağlı olarak çevre ve yaşam alanları kirliliği gibi sorunlarla karşı karşıya kalmaktayız. İnsanların çevreye ilişkin endişeleri de bu bağlamda günümüzdeki çevresel zorluklarla birlikte artmaya devam etmektedir. Söz konusu zorluklar arasında küresel ısınma, iklim değişikliği ve doğal kaynakların tükenmesi olguları, tüketici tercihlerini ve kararlarını doğrudan ve/veya dolaylı olarak etkilemektedir. Bu endişelerle bağlantılı olarak bu çalışmada, tüketicilerin sorumlu çevre davranışı ile yeşil satın alma davranışı arasındaki ilişkinin varlığının belirlenmesi amaçlanmıştır.

**Yöntem:** Amaç kapsamında araştırma modelinin teorik olarak doğrulanması için anket tabanlı bir yaklaşım uygulanmıştır. Araştırma aracı, rastgele örnekleme yöntemiyle Kütahya ilinde yaşayan 18 yaş ve üzeri bireyler üzerinde ‘çevre davranış ölçeği’ ve ‘yeşil satın alma davranış ölçeği’ anketleri aracılığıyla 389 katılımcıya yöneliktir. Araştırma hipotezlerini test etmek için t-testi, tek yönlü ANOVA testi ve korelasyon analizi kullanılmıştır. Araştırmanın bulgularına dayanarak araştırma modeli yeniden tasarlanmıştır.

**Sonuçlar ya da Bulgular:** Sonuçlar, tüketicilerin sorumlu çevre davranışı ile yeşil satın alma davranışı arasında istatistiksel olarak pozitif yönlü ve anlamlı bir ilişkinin varlığını doğrulamıştır. Aynı zamanda bireylerin sorumlu çevre davranışları ile yeşil satın alma davranışlarının, bazı demografik özelliklere göre farklılık içerdiği görülmüştür.

**Tartışma ya da Yapılan Çıkarımlar:** Çalışmanın Kütahya ilinde yaşayan nüfusa yönelik olarak yapılması nedeniyle gelecek araştırmaların daha büyük ve farklı kültürlere sahip nüfustan oluşan farklı illerde ve/veya bölgelerde uygulanması önerilmektedir.

*Anahtar Kelimeler:* tüketici teorisi, yeşil satın alma davranışı, sorumlu çevre davranışı

*JEL Kodlar:* D12, M31, Q50

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## Introduction<sup>1</sup>

According to the Global Footprint Network (GFN), the natural resources that the Earth could regenerate in 2024 had been depleted as of August. This indicates that humanity is presently using natural sources at a rate 1.7 times faster than the regenerative capacity of Earth's ecosystems. Naturally, resources consumed at such a fast rate cause various natural disasters such as erosion and floods (GFN, 2024). Moreover, as long as the balance between consumption and production is not achieved, it does not seem possible to ensure the sustainability of resources. In today's world, the act of consumption is increasing dramatically with the influence of many variables such as modern marketing, popular culture, and social media. The amount of consumption in electronics, clothing, and food is growing exponentially every year (Dikmen, 2022).

Phenomena such as global warming, climate change, and ecological crises pose growing threats to the planet's ecological balance and require urgent attention. Sharing on topics such as global warming, resource depletion, recycling, and renewable energy on both social media and news channels increases the consumer's awareness on this issue. This supports consumers' tendency towards companies that conduct marketing activities on green products and share details regarding the addition of eco-friendly products to the ecological harmony (Siddique & Hossain, 2018). Similarly, social and political pressures have led companies to go beyond just waste disposal and make changes to the product itself, its packaging and design. However, in order for companies to gain an advantage in green product marketing, which has become a competitive element today, they need to become more sensitive to both environmental factors and the determinants influencing consumers' purchasing behaviors regarding green products (Straughan & Roberts, 1999).

The study draws on Ajzen's (1991) Theory of Planned Behavior to understand individuals' green product purchasing behavior. Theory of Planned Behavior is one of the theories widely used to explain human behavior in many areas. This theory posits that the components that shape individuals' behavior are attitude, subjective norm, and perceived behavioral control (Akt. Toklu, 2019).

This research targets to resolve whether a relation exists between consumers' sense of responsibility and their green shopping behavior or whether it varies according to demographic variables. When the academic literature is examined, many studies are found on green product marketing, green consumer behavior and consumers' environmental sensitivity. However, it is seen that studies on how much consumers' levels of responsibility towards the environment are reflected in green product purchasing behavior or whether there is any relationship between these two concepts are quite limited. Due to the stated reasons, the research is awaited to help bridge this gap in the literature.

## Conceptual Framework and Empirical Literature

As environmental and climate-related problems come to light worldwide, studies addressing environmental issues in the fields of marketing and economics are increasing. Because it is seen that environmental issues are affected not only by production but also by consumption. Therefore, changing consumers' purchasing behaviors towards protecting the environment becomes critical. In order to develop consumers' green purchasing behaviors

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<sup>1</sup> Permission was obtained from the Ethics Committee of Kutahya Health Sciences University with the decision dated 30.09.2024 and document number 2024/11-22.

(GPBs), their awareness of environmental problems must first be increased and their responsible environmental behaviors (REBs) must be strengthened (Aagerup & Nilsson, 2016).

REB describes a series of activities such as energy saving and waste recycling activities that eliminate negative environmental impacts and maximize environmental benefits (He et al., 2022). The terms coincidental friendly behavior and pro-environmental behavior are used interchangeably. Environmentally sensitive (responsible) behavior is attributed to an individual's ecological commitment, knowledge, and concern (Liu et al., 2022). Therefore, it involves consumers choosing products offered by environmentally responsible companies or those implementing eco-friendly practices as a means of supporting environmental protection. Within this framework, the concept reflects collective action, which pertains to the collaborative attempts of multiple particulars working together toward a common goal (Jiang et al., 2024).

It is widely acknowledged that individual participation in environmental protection initiatives is crucial for preventing and addressing environmental issues to achieve a sustainable future. The environmental literature identifies four primary classes of fluctuating factors that assume REB. These classes are defined as: (1) personality factors, including environmental concern, sensitivity, attitudes, responsibility, moral responsibility perception, verbal commitment, locus of control, and values; (2) numerical factors like gender, age, schooling level, residence, and revenue; (3) cognitive factors encompassing skills and knowledge; and (4) external factors, including pressure groups, availability of alternative actions, and other external influences (Erdogan et al., 2012).

The academic literature review provides information that studies on consumers' REBs and GPBs are usually evaluated separately. In this context, it is seen that the surveys carried by Alkaya et al. (2016), Canio et al. (2024), Cheng and Wu (2015), Han and Yoon (2015), Li et al. (2019), Luo et al. (2024), Sia et al. (2010), Widayat et al. (2021) concentrate on environmental responsibility. For instance, Alkaya et al. (2016) checked the environmental sensitivity dimensions and the effects of these aspects on green commodity purchasing behavior. It was determined that there was an internal correlation among ecological, personal and behavioral sensitivity dimensions and green product purchasing, and that these dimensions were effective on green product purchasing behavior. Canio et al. (2024) determined consumers' tendencies towards bulk products and the potential benefits and obstacles consumers faced when purchasing unpackaged products by putting into use a mixed method way to info come together in the time of and afterwards the pandemic. It has been found that consumers are enthusiastic about purchasing collective commodities because they recognize them as a private input into environmental quality. Cheng and Wu (2015) examined tourists' REBs from the view of environmental knowledge in addition to individual commitment, attraction, and participation. It was found that tourists' environmental awareness towards island tourism was positively related to area connection, and the level of area connection observed by travelers was positively related to environmentally responsible behavior. It was also found that environmental awareness and zone attachment had important influences in moderating the relationships between environmental knowledge and REB. Han and Yoon (2015) conducted a study to extend the target-oriented manner model by merging environmental awareness, perceived effectiveness, environmentally friendly behavior, and fame variables to explain customers' environmentally friendly behavior. The results told that the offered analytical scheme has a powerful capability to predict thought, integrates builds that play a crucial role in hotel visitors' choice-making, and identifies behaviours and wants that act as advocates. Li et al. (2019) conducted a literature review to reveal the determinants of environmentally friendly behavior in resource conservation and recycling during the period of 1987-2017. The results

showed that internal and external factors have affected environmentally friendly behavior, and especially demographic and psychological factors have an important place. Luo et al. (2024) focused on green investment goods, environmental governance, and ecological protection in 30 cities in China during the period of 2010-2022. The results indicated that green investments positively affect economic growth and clean energy, and consumer behavior and income showed a U-shaped trend. In addition, it was stated that green investments encourage consumer behavior. Sia et al. (2010) predicted the REBs of individuals. The estimation results showed that the variables of environmental awareness level, identified awareness about biodegradable activity methods, psychological gender performance distribution, perceived talent in using biodegradable activity methods, group locus of control, individual position of control, and attitude towards pollution were statistically important, while the variable of belief in technology was insignificant. Widayat et al. (2021) examined the relationships among environmentally friendly behavior, norms, attitudes, awareness, intention, and within the plan of the theory of prepared behavior in order to test the responsible consumption behavior model. It was reported that behaviours, criterions, and consciousness are important to forecasting in belief to involve in post-consumer plastic packaging movement.

In the latest decennium, authors have widely studied and debated the influence of consumption on the environment. They have accepted environmentally friendly behaviors as the ultimate solution through which individuals can lead to a secure planet. They have tried to understand the elements that impress and motivate individuals to adjust environmentally friendly behaviors. Environmentally friendly behaviors describe the aware activities or decisions that individuals and producers make to prevent or minimize the negative impression of their constant actions on the environment. Globally, it has been observed that excessive consumption and the continuous economy paradigm have led to crucial environmental degradation. In this context, the issue of environmentally-safe consuming has been explored by applying diverse proxies and hypothesis on the part of constructors and consumers. GPB is the acquirement of environmentally friendly services or goods with the aim of declining unfavorable environmental impressions and accomplish a sustainable future. In other words, it is environmentally friendly behavior that encompasses choices and activities that are aware of the civil results of exclusive consuming and use purchasing power to create societal modification. It is a socially responsible pattern of consumption that increases awareness against environmental deterioration (Asiamah et al., 2024; Gautam & Bhalla, 2023; Ng et al., 2025; Ramadhanti et al., 2024). It is the acquisition of goods that contain environmental values that are assumed to be safer for people and society. Evaluations have intensified that GPBs are influenced by individual factors (manners, perceived behavioral control, perceived consumer effectiveness, emotions, trust, knowledge, prices and personal criterions, etc.) and situational factors (eco-labeling, product features and quality, price, product availability, brand image, certification, etc.) (Liu et al., 2022; Ogiemwonyi et al., 2023). Existing literature emphasizes that individual personal characteristics or social pressure can affect individual purchasing preferences.

Studies by Bertrandias and Elgaaied (2014), Chaudhary (2018), Chen et al. (2024), Gonçalves et al. (2016), Graça and Kharé (2023), Hu et al. (2024), Kumar (2021), Muralidharan et al. (2016), Pontes et al. (2024), Saeed et al. (2025), Sun et al. (2022), Temizkan (2022), Wang et al. (2024) are examples of literature on consumers' GPB. In this context, Bertrandias and Elgaaied (2014) investigated the attributional effect of environmental concern toward others through a survey conducted with 468 French participants, aiming to elucidate the social aspect emphasizing GPB. Their findings indicated that attributing environmental concern to others increases the likelihood of selecting products with lower biodegradable impression over more

destructive alternatives. This relationship is intermediate by identified societal hazard and self-discrepancy affiliated with non-environmentally friendly products. Similarly, Chaudhary (2018) applied the theory of planned behavior to examine the relative importance of various determinants in predicting GPB among young, educated consumers in India. The study revealed that perceived value and willingness to pay a premium significantly predicted green purchase intention, which, in turn, exerted a strong influence on actual green purchase behavior. Chen et al. (2024) empirically examined the impression of green info display on purchasers' green participation behavior in the context of continual fashion brands, based on 477 responses. Their findings demonstrated that green messages from fashion brands, which facilitate relationship-building and convey behavioral cues, can directly or indirectly influence consumers' green participation by activating internal cognitive and emotional processes. Gonçalves et al. (2016) argued that while practical values derived from the approach of consumption values are insufficient alone to predict GPB, a consolidation of practical, emotional, conditional, and social valuations collectively provides a comprehensive framework for accurately predicting green purchasing. Graça and Kharé (2023) investigated the effect of educational factors on purchasers' green buying intentions and the development of a trademark's green figure. They further assessed the mediating roles of environmental worry and perceived consumer efficiency in the relationship between educational elements and GPB. Their findings indicate that sustainability education, whether initiated by consumers or organizations, significantly enhances a trademark's green figure, with environmental worry and perceived consumer efficiency serving as key mediators between educational factors and GPB. Hu et al. (2024) examined the relationships among consumers' green purchasing objective, corporate societal well-being low-carbon behavior, and GPB within a Chinese context. The findings revealed a strong association between allied societal well-being low-carbon behavior and green purchase objective, with societal well-being low-carbon attendance and encouragement virtually influencing consumers' green purchase objective. Kumar (2021) examined an extended model integrating the method of programmed manner and the value-attitude-behavior position within Indian demographics. The results identified recognized behavioral management as a significant independent predictor driving consumers' GPB. Muralidharan et al. (2016) assessed the relative impression of various socialization components on the GPB of millennials, while also examining how cultural differences influence the selection of these socialization sources for acquiring green product information. Their findings revealed that interpersonal communication channels hold greater significance than mass media in fostering environmental awareness and promoting GPB. Additionally, environmental worry was diagnosed as a key mediating variable within the socialization process, facilitating the translation of social influences into pro-environmental purchasing actions. Pontes et al. (2024) integrated theoretical frameworks from organized behavioral and consuming valuation viewpoint to examine senses of environmental deterioration during the COVID-19 pandemic and their impact on environmentally responsible purchasing behavior. Utilizing structural equation modeling with data collected from 390 participants, the study found that participants perceived a significant decline in environmental conditions throughout the pandemic. This perception functioned as a mediating factor between green purchase objectives and actual purchasing behavior, highlighting the critical role of environmental awareness in bridging intention and activity in sustainable consumption. Saeed et al. (2025) examined the relationships among three ranges of green customer-based trademark equitableness-namely, eco-friendly trademark quality, green trademark awareness, and eco-friendly trademark image-and eco-friendly trademark purchasing behavior, both directly and indirectly via green brand loyalty. The findings indicated that all three dimensions positively influenced both green brand purchasing behavior and green brand loyalty. Furthermore, green brand loyalty was described as a significant mediating in the

relation between eco-friendly customer-based trademark equitableness aspects and green trademark purchasing behavior. Sun et al. (2022) researched the mechanisms through which social media marketing influences green product purchasing behavior among 489 Chinese consumers in the post-pandemic period, employing the theory of planned behavior as a theoretical framework. Their results demonstrated that product knowledge, crisis awareness, and social media marketing exerted both direct and indirect positive effects on consumers' purchase intentions. Temizkan (2022) assessed the effect of purchasers' environmental attitudes, values, and objectives on GPB utilizing the attitude-knowledge-practice model. The study revealed that environmental values essentially and positively impacted both green consumption objective and environmental attitude. Similarly, green consumption intention was discovered to exert a considerable positive effect on GPB. However, environmental values and green consumption behaviour did not demonstrate a statistically serious direct effect on GPB. Wang et al. (2024) explored the antecedents of GPB by integrating the expanded theory of formed attitude with self-decision theory, grounded in previous research on green marketing and consumer psychology. Structural equation modeling results indicated that green purchasing objective, constructively shaped by innate ambition and environmental behaviour, significantly predicts GPB.

Empirical studies report that 30–40% of ecological environmental degradation is attributable to individual and household consumption patterns. Therefore, transitioning to green consumption models, which minimize adverse environmental impacts, is critical for achieving sustainable human–environment interaction. However, the literature frequently highlights the 'attitude–behavior gap,' denoting the inconsistency between consumers' approving attitudes toward green goods and their certain purchasing behaviors, which often fail to align with these attitudes (Jing et al., 2022).

Studies conducted by Mahmud (2024), Ogiemwonyi et al. (2023), Prakash et al. (2024), Ramadhanti et al. (2024) contain similarities in the investigation about the relation between consumers' responsible ecological behaviors and eco-friendly goods purchasing behaviors. Mahmud (2024) applied the theories of logical activity and organised behavior to investigate the impact of combine social duty awareness on GPB and environmental behaviour among 336 students in Bangladesh between August 9 and November 8, 2022. The results showed that consumer corporate social responsibility awareness significantly improved GPB and consumer environmental behaviour. It was also found that consumer environmental attitude partially mediated the relation between consumer combine social duty awareness and GPB. Ogiemwonyi et al. (2023) empirically investigated the factors effecting GPB of 375 consumers using structural equation modeling. The conclusions indicated that GPB was directly influenced by awareness of consequences, personal criteria, and environmental attitude, while environmental responsibility, environmental concern, and awareness of consequences exerted an indirect effect through environmental attitude. Prakash et al. (2024) conducted an empirical study, employing structural equation modeling, on individuals who utilize cosmetic goods and actively follow zero-waste elegance influencers on social media. The results indicated that environmentally friendly belief, environmentally friendly packaging, and para-social interaction positively effected consumers' purchase intention and altruistic motivation. Ramadhanti et al. (2024) studied the role of circular packaging in GPB with data collected from 287 young consumers in Indonesia using structural equation modeling. The results explained the positive and important impacts of environmental attitude, socialization, and environmental self-identity factors regarding green purchasing intention. It was also stated that green purchasing intention was a powerful predictor of GPB.

A limited number of studies addressing responsible environmental and GPBs can be found in the academic literature. Determining the level at which REB is reflected in GPB is important for marketing and consumer studies to be carried out to create REB. The context in question is attributed to the importance within the study.

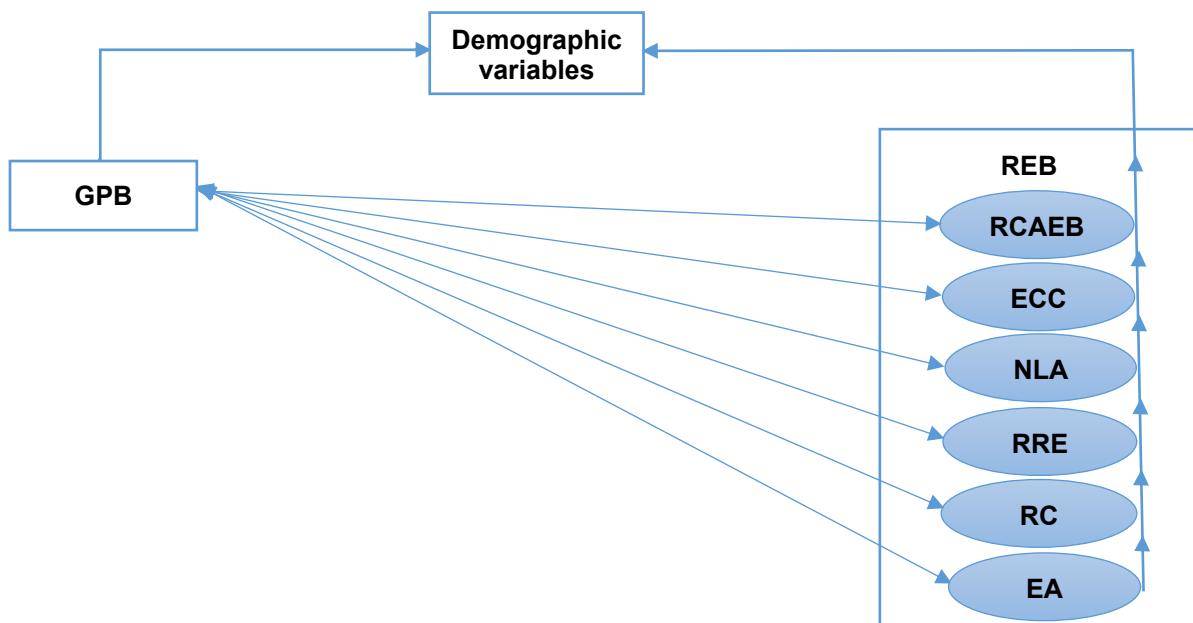
## Methodology

### Target and Model of the Research

The target of this study is to examine the relation between REB and GPB among consumers in Kutahya. In line with this purpose, the research model in Figure 1 was created.

**Figure 1**

*Research Model<sup>2</sup>*



Note. This figure was created by authors via draw.io.

### Hypotheses of the Research

In this study, in line with the aim of the study, a research model was created to examine the relationship between consumers' responsible environmental behaviors and green product purchasing behaviors and to examine the potential differences between these two constructs according to demographic characteristics. This model, built based on previous research findings in the literature, assumes that demographic factors may play a determining role in shaping individuals' environmentally responsible actions and green product purchasing tendencies. Furthermore, previous studies have shown that there is a conceptual link between environmental responsibility and green purchasing tendencies and that individuals who demonstrate a higher level of environmental responsibility may show stronger preferences for environmentally friendly products (Goldman et al., 2006; Gedik et al., 2014). Based on these observations, the following hypotheses were developed:

<sup>2</sup> RCAEB: Resource Conservation Activities for the Economic Benefit of the Person, ECC: Environmentally Conscious Consumer, NLA: Nature-Related Leisure Activities, RRE: Responsible Recycling Effort, RC: Responsible Citizenship, EA: Environmental Activism.

H1: Consumers' REBs differentiate in accordance with individuals' demographic properties.

H1a: Consumers' REBs differ depending on the gender of the individuals.

H1b: Consumers' REBs differ depending on the marital status of the individuals.

H1c: Consumers' REBs differ depending on the age of the individuals.

H1d: Consumers' REBs differ depending on the education of the individuals.

H1e: Consumers' REBs differ depending on the monthly household income of the individuals.

H1f: Consumers' REBs differ depending on the job of the individuals.

H1g: Consumers' REBs differ depending on the number of children of the individuals.

H2: Consumers' GPBs differentiate in accordance with individuals' demographic properties.

H2a: Consumers' GPBs differ depending on the gender of the individuals.

H2b: Consumers' GPBs differ depending on the marital status of the individuals.

H2c: Consumers' GPBs differ depending on the age of the individuals.

H2d: Consumers' GPBs differ depending on the education of the individuals.

H2e: Consumers' GPBs differ depending on the monthly household income of the individuals.

H2f: Consumers' GPBs differ depending on the job of the individuals.

H2g: Consumers' GPBs differ depending on the number of children of the individuals.

H3: There is a statistically significant relationship between consumers' REBs and GPBs.

## **Method and Sample**

The study utilized the 'Environmental Behavior Scale,' originally progressed by Goldman et al. (2006) and subsequently adjusted into Turkish by Timur and Yılmaz (2013), to assess consumers' REB. For GPB, the 'green purchasing behavior scale' adapted from various studies was applied by Gedik et al. (2014).

In the research, 389 participants were reached in Kutahya province between 13.11.2024 and 15.12.2024 with a survey prepared through Google form by convenience sampling. The inclusion criteria of the study are individuals living in Kutahya province, aged 18 and over, literate and without any restrictions (not requiring a guardian). The study was limited to Kutahya province due to time and cost constraints. All individuals failing to meet the inclusion criteria are classified under the study's exclusion criteria. Surveys are in the form of a five-point Likert-type scale.

## **Research Ethics Permission**

Ethics Committee approval from a university is mandatory for all research conducted since 2020. As this study employed a survey as its data collection tool, approval was granted by the Ethics Committee of Kutahya Health Sciences University, with the decision dated 30.09.2024 and document number 2024/11-22.

## **Findings**

Table 1 reports the information on frequency distributions of demographic variables. When the data is examined in this context, it is seen that the participants are mostly women (68,40%). It is also stated that the participants are mostly between the ages of 18-45 and that marital status is almost equal. While the marital status of the participants is similar, the rate of

individuals who do not have children is higher. When the occupational groups are examined, it is understood that the participants are mostly students and public employees. Although the incomes of the participants are closely distributed, it can be said that the rate of income of 65 thousand TL and above is higher. The participants, who are not members of any environmental organization have a very large extent, look at quality, functionality/usability and price respectively when shopping. 13% of the participants state that they take these three statements into consideration at the same time. Only 1% of the participants consider the environmental impact of the product when shopping.

**Table 1**

*Frequency Distributions Regarding Demographic Variables<sup>3</sup>*

<b>Gender</b>	Female	68,40		25.000 TL and below	17,70
	Male	31,60		25.001 / 35.000 TL	11,60
<b>Age</b>	Ages 18/25	36,50	<b>Monthly household income</b>	35.001 / 45.000 TL	15,90
	Ages 26/35	24,40		45.001 / 55.000 TL	13,90
	Ages 36/45	26,20		55.001 / 65.000 TL	12,10
	Ages 46/55	10,80		65.001 TL and above	28,80
	Ages 56 and up	2,10		Price	12,30
<b>Marital status</b>	Married	49,10		Price, Quality	4,90
	Single	50,90		Price, Quality, F/U	13,10
<b>Number of children</b>	No	57,80	<b>What do you pay attention to when shopping?</b>	Price, Quality, F/U, Brand	5,40
	1 child	15,40		Price, Quality, F/U, Brand, EA	6,90
	2 children	21,60		Price, Quality, F/U, EA	3,90
	3 children	4,90		Price, Quality, Brand	3,60
	4 children and above	0,30		Quality	23,90
<b>Job</b>	Unemployed	9,00		F/U	17,50
	Student	30,80		Other	8,50
	Private sector	9,50	<b>Membership in an environmental organization</b>	Yes	16,20
	Public sector	45,20		No	83,80
	Pensioner	2,10			
	Self-employed	3,30			

Note. Calculated by the authors using Jamovi.org statistical software

The scale is deemed dependable if the Cronbach's alpha ratio is 0.70 or higher. Hence, the reliability coefficients are strong and acceptable. Based on this statement, it is said that the scales are reliable according to the values in Table 2 (Faiz, 2019). According to the exploratory factor analysis, the scale consists of two dimensions: 'Responsible Environmental Behavior' and 'Green Purchasing Behavior'. Following, there are four dimensions: 'Resource Conservation Activities for the Economic Benefit of the Person (RCAEB)', 'Environmentally Conscious Consumer (ECC)', 'Responsible Recycling Effort (RRE)' and 'Environmental Activism (EA)'. Since the REB dimension is not similar to the study Turkish adaptation by Timur and Yılmaz (2013), the dimensions obtained from this study were renamed.

<sup>3</sup> Functionality (F), usability (U), environmental activism (EA)

**Table 2***Reliability Analysis Regarding Dimensions*

	<b>Dimension</b>	<b><math>\alpha</math></b>
Responsible Environmental Behavior		0,749
Green Purchasing Behavior		0,898

Note. Calculated by the authors using Jamovi.org statistical software

According to Table 3, in the survey consisting of 30 items in total, the following items with very low factor loadings were removed from the analysis: 'I take waste such as newspapers and plastic bottles to recycling collection points', 'I send letters to the media about environmental problems', 'I buy environmentally friendly products (ozone-friendly sprays, products with recycling packages and economically sized products)', 'I warn people who litter in public areas or harm the environment', 'I collect the garbage that people throw in public areas and throw it in the trash can', 'I put used batteries in suitable collection boxes for batteries instead of trash cans', 'I turn off air conditioners etc. when leaving the room', 'I leave the devices on', 'I notice the sounds of birds, animals and flowers when I am outside', 'I read articles about environmental issues in daily newspapers or magazines', 'I watch television programs about the environment and nature' and 'I use the containers/boxes/packaging of products (such as yogurt-oil boxes, cola bottles) for other purposes after use'. The analysis was continued with a total of 19 statements. Since the statements that were continued to be investigated were collected under newly named dimensions, item analyses were conducted with the help of confirmatory factor analysis. Accordingly, since the RMSEA value was not at the desired level (Schermelleh-Engel & Moosbrugger, 2003), the model fit values were increased by making modifications between the GPB9 and GPB10 variables (CMIN/df 2,52; RMSEA 0,063; CFI 0,989; NFI 0,981; TLI 0,987; RFI 0,978, NNFI 0,987).

**Table 3***Factor Analysis Relating to Dimensions*

Statements regarding scale	REB				
	1. Dimension RCAEB	2. Dimension ECC	3. Dimension RRE	4. Dimension EA	5. Dimension GPB
I save energy by turning off unused electrical appliances and lights.	0,700				
I save water at home (I turn off the tap when brushing my teeth or doing the dishes, etc.)	0,793				
I reuse used paper as scrap paper.		0,742			
I reuse plastic bags that have been used as shopping bags before.		0,772			
I report environmental problems to the authorities.			0,681		
I return soft drink bottles that have a deposit.			0,742		
I participate in campaigns to protect and clean public places.				0,719	
I take part in campaigns to prevent environmental pollution.				0,854	
I actively participate in an environmental organization.				0,836	

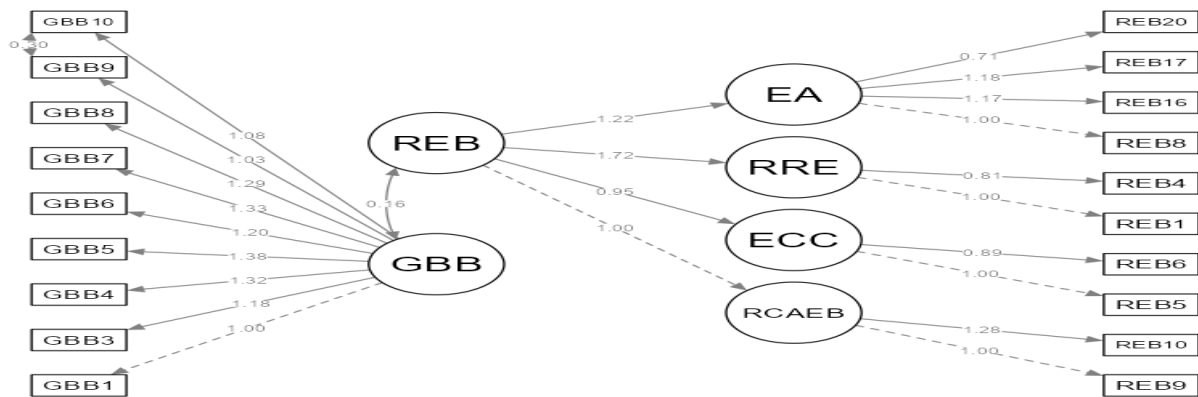
I go on nature walks and trips.					0,635
When I have to choose between two equal products, I buy the one that does the least harm to people and the environment.					0,524
I prefer products that cause less pollution.					0,656
I am careful when purchasing products from companies that act irresponsibly towards the environment.					0,699
I care about whether the manufacturer of the product I purchase is environmentally friendly.					0,774
I believe that I contribute to the protection of the environment by purchasing an environmentally friendly product.					0,746
Before purchasing a product, I am concerned with the environmental consequences.					0,789
I try to convince my family members and friends not to buy products that will harm the environment.					0,748
I pay more for products that are produced, processed and packaged in an environmentally friendly way than their alternatives.					0,737
I buy recyclable products even if they are expensive.					0,728
Variance (%)	9,548	5,681	5,427	11,023	32,819
Cronbach Alpha			0,749		0,898
Kaiser-Meyer-Olkin (KMO) Sample Measurement			0,880		
Barlett Sphericity Test			$x^2 = 3,025E3$		
			Df = 171		
			Sig. = 0,000		

Note. Calculated by the authors using Jamovi.org statistical software

The confirmatory factor analysis model for the scale is visualized in Figure 2.

**Figure 2**

*Confirmatory Factor Analysis Model Regarding the Scale*



Note. This figure was created by authors via jamovi.org, where Arial font customization is not supported. GBB describes green purchasing behavior.

As a consequence of the factor analyses, the aspects in some scales could not be separated as defined by the scale developers. This situation required confirmatory factor analysis and convergent validity and compliance analyses to evaluate the structural validity of the scales (Temel, 2022).

Depend on the info presented in Table 4, it can be observed that AVE and CR are above the acceptable value ( $AVE > 0.50$ ;  $CR > 0.70$ ) and the values meet the  $CR > AVE$  rule. Accordingly, it can be said that the expressions related to the variables are related to each other and the factor they constitute and that convergent validity is established (Temel, 2022).

**Table 4***Convergent Validity Regarding the Construct Validity of the Scale*

Variables	MLE estimated factor loading/measurement error		Multiple correlation squared	Convergent reliability (CR)	Mean variance inference (AVE)
<b>Responsible Environmental Behavior</b>					
REB1	0,681	0,536239	0,463761		
REB4	0,742	0,449436	0,550564		
REB5	0,742	0,449436	0,550564		
REB6	0,772	0,404016	0,595984		
REB8	0,719	0,483039	0,516961	0,927	0,563
REB9	0,700	0,510000	0,490000		
REB10	0,793	0,371151	0,628849		
REB16	0,854	0,270684	0,729316		
REB17	0,836	0,301104	0,698896		
REB20	0,635	0,596775	0,403225		
<b>Green Purchasing Behavior</b>					
GPB1	0,524	0,725424	0,274576		
GPB3	0,656	0,569664	0,430336		
GPB4	0,699	0,511399	0,488601		
GPB5	0,774	0,400924	0,599076	0,903	0,512
GPB6	0,746	0,443484	0,556516		
GPB7	0,789	0,377479	0,622521		
GPB8	0,748	0,440496	0,559504		
GPB9	0,737	0,456831	0,543169		
GPB10	0,728	0,470016	0,529984		

Note. Calculated by the authors using Jamovi.org statistical software

After analyzing the reliability, validity, and goodness-of-fit values used in the study, the hypotheses were tested. Both the independent samples t-test and the one-way ANOVA test were used to test hypotheses H1 and H2. Correlation analysis was performed to test hypothesis H3. The findings related to the hypotheses are given below:

H1: Consumers' REBs differentiate in accordance with individuals' demographic properties.

When Table 5 is examined, which includes the independent sample t-test results for the H1 hypothesis, there is a important difference in the RCAEB and ECC levels of individuals according to gender, while no significant difference was found in the RRE and EA levels. When the average values are examined, women show higher levels of RCAEB and ECC behavior than men. According to marital status, it is understood that a significant difference was found between only at RRE level and that married individuals show higher levels of RRE behavior. According to the findings, hypotheses H1a and H1b were accepted.

**Table 5***Independent Sample T-Test for Variables*

Dimensions Related to Scale		Gender	$\bar{x}$	ss.	p.
REB	RCAEB	Female	4,59	0,560	<0,001
		Male	4,35	0,754	
	ECC	Female	4,37	0,643	0,005
		Male	4,15	0,894	
	RRE	Female	2,99	0,971	0,060
		Male	3,20	1,076	
	EA	Female	2,53	0,827	0,594
		Male	2,48	0,897	
Dimensions Related to Scale		Marital status	$\bar{x}$	ss.	p.
REB	RCAEB	Married	4,53	0,595	0,685
		Single	4,50	0,674	
	ECC	Married	4,35	0,671	0,213
		Single	4,26	0,796	
	RRE	Married	3,19	1,019	0,009
		Single	2,93	0,984	
	EA	Married	2,52	0,875	0,842
		Single	2,51	0,824	

Note. Calculated by the authors using Jamovi.org software

Table 6 shows that when the RRE, ECC, RCAEB, and EA dimensions are examined by individuals' age, education, monthly household income, occupation, and number of children, there is a significant difference only in monthly household income. This indicates a significant difference in monthly family income between 25.000 TL and below, and between 55.001-65.000 TL ( $p= 0.039$ ). According to the findings, hypotheses H1c, H1d, H1f and H1g were rejected and hypothesis H1e was partially accepted.

**Table 6***One-Way ANOVA Test Regarding Variables*

<b>Variables</b>	<b>Dimensions</b>	<b>df</b>	<b>F</b>	<b>Sig.</b>
<b>Age</b>	RRE	4	1,277	0,279
	ECC	4	0,432	0,786
	RCAEB	4	0,908	0,459
	EA	4	1,359	0,248
<b>Education</b>	RRE	5	0,525	0,757
	ECC	5	0,999	0,418
	RCAEB	5	1,255	0,283
	EA	5	0,313	0,905
<b>Monthly household income</b>	RRE	5	0,175	0,972
	ECC	5	1,100	0,360
	RCAEB	5	2,373	0,039
	EA	5	0,700	0,624
<b>Job</b>	RRE	5	1,593	0,161
	ECC	5	0,801	0,549
	RCAEB	5	1,012	0,411
	EA	5	0,988	0,425
<b>Number of children</b>	RRE	4	1,796	0,129
	ECC	4	1,063	0,375
	RCAEB	4	1,310	0,266
	EA	4	1,424	0,226

Note. Calculated by the authors using Jamovi.org statistical software

H2: Consumers' GPBs differentiate in accordance with individuals' demographic properties.

According to Table 7, which includes the independent sample t-test results regarding the H2 hypothesis, is evaluated, The findings indicate no meaningful difference in the GPB levels of individuals according to gender, but there is a important difference according to marital status and married individuals exhibit higher levels of GPB behavior. According to the findings, hypothesis H2a was rejected and hypothesis H2b was accepted.

**Table 7***Independent Sample T-Test Regarding Variables*

<b>Dimensions Related to Scale</b>	<b>Variables</b>	$\bar{x}$	<b>ss.</b>	<b>p.</b>
GPB	Female	3,41	0,713	0,079
	Male	3,27	0,824	
GPB	Married	3,52	0,714	<0,001
	Single	3,21	0,757	

Note. Calculated by the authors using Jamovi.org statistical software

In the findings of the one-way ANOVA test conducted on REB diversity according to the demographic variables of the individuals in Table 8, the green purchasing behavior of the individuals does not show a statistically significant difference according to the variables of age,

number of children, monthly household income, education and job. According to the findings, hypotheses H2c, H2d, H2e, H2f and H2g were rejected.

**Table 8**

*One-Way ANOVA Test Regarding Variables*

Variables	Dimensions	df	F	Sig.
Age	GPB	4	0,906	0,460
Number of children	GPB	4	0,552	0,697
Monthly household income	GPB	5	1,745	0,124
Education	GPB	5	0,541	0,745
Job	GPB	5	0,957	0,444

Note. Calculated by the authors using Jamovi.org statistical software

H3: There is a statistically significant relationship between consumers' REBs and GPBs.

When the correlation analysis given for the variables in Table 9 is explored, it is seen that there is a statistically noteworthy connection between consumers' REBs and GPBs, the highest relationship is between GPB and RRE sub-dimensions, and the lowest relationship is between GPB and ECC. In this context, responsible recycling behavior, which is one of the sub-dimensions of consumers' REB, again affects individuals' GPB at a moderate level. Although it is seen that there are other factors affecting GPB, it is possible to say that responsible recycling effort behavior turns into a similar behavior in shopping. Again, as seen in Table, it is possible to say that the sub-dimensions of REB have a statistically positive and significant relationship with each other. Accordingly, it can be said that the highest level of relationship is between environmental activism and responsible recycling effort. According to the findings, hypothesis H3 was accepted.

**Table 9**

*Correlation Analysis Regarding Variables*

Dimensions	Correlation	RRE	ECC	RCAEB	EA
GPB	Pearson Corr.	0,426**	0,235**	0,255**	0,358**
	Sig.	0,000	0,000	0,000	0,000
RRE	Pearson Corr.	1	0,207**	0,195**	0,402**
	Sig.		0,000	0,000	0,000
ECC	Pearson Corr.		1	0,364**	0,162**
	Sig.			0,000	0,001
RCAEB	Pearson Corr.			1	0,154**
	Sig.				0,002
EA	Pearson Corr.				1
	Sig.				

Note: \*\* Correlation is noteworthy at the 0.01 level (2-tailed). Calculated by the authors using Jamovi.org statistical software

## Conclusion

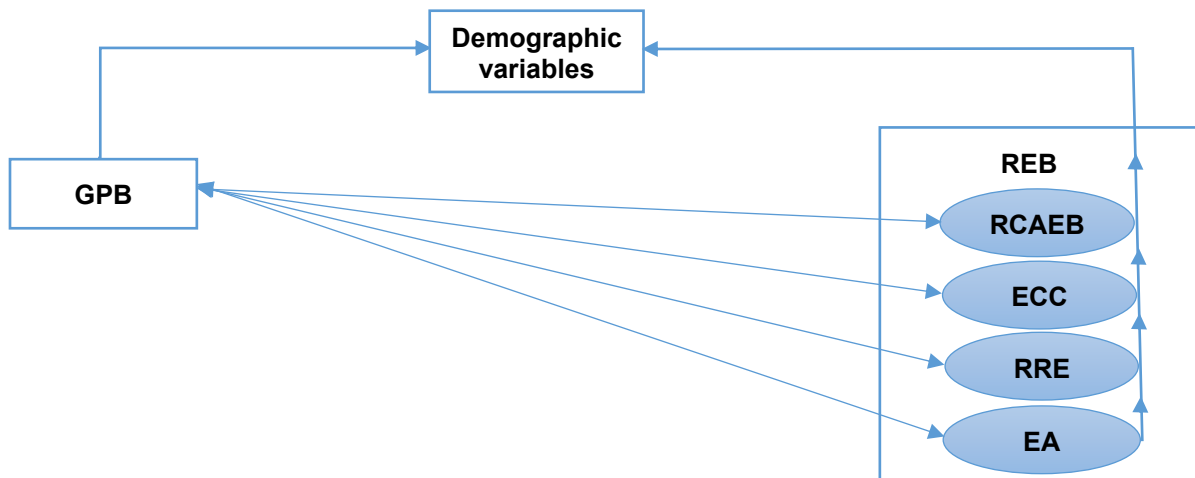
The rapid increase in the world population, coupled with the similar decrease in assets to satisfy the demands of this population, increases sensitivity and awareness towards the environment. For this reason, almost every company tries to use recycled materials as raw materials or produce products using resources at a minimum level within the scope of both legislative sanctions, social responsibility projects and differentiation strategies. At the same time, they try to attract the attention of consumers by highlighting these sensitivities in their promotional strategies. It is seen that more green products are on the shelves day by day. When the literature is examined in general, it is understood that consumers are trying to be sensitive about the environment. However, since the studies showing the level of environmental sensitivity that turns into purchasing behavior are quite limited, it is not possible to make a clear statement on this subject (Eze & Ndubisi, 2013; Moser, 2015; Zheng et al., 2020). In this study, a research was conducted by combining REB and GPB, which were developed by different authors and used in separate studies, and an attempt was made to evaluate these two types of behavior together. Accordingly, it is possible to talk about the presence of a mathematically positive and significant relation between REB and GPB. When REB and GPB were evaluated according to demographic variables, it was determined that these two behaviors differed according to several variables. Comparable findings were reported across the studies (Demir et al., 2022).

According to the research findings, individuals' responsible environmental behaviors show a statistically significant difference based on gender, marital status, and monthly household income, but no significant difference based on age, education, occupation, or number of children. No significant difference was observed in green product purchasing behavior based on individuals' demographic characteristics. A positive and significant relationship was also found between individuals' responsible environmental behaviors and green product purchasing behavior. A review of studies in the literature indicates that Cottrell's (2003) study revealed that demographic variables partially influence responsible environmental behavior. Değirmenci's (2022) study found that responsible environmental behavior did not show a significant difference based on gender, occupation, or education. However, a moderately positive and significant relationship was revealed between individuals' responsible environmental behaviors and green product purchasing behavior. Zheng et al. (2021) stated that there is a significant relationship between perceived environmental responsibility and green purchasing behavior. In conclusion, our research supports some literature studies while differing from others. Therefore, it is recommended that further studies be conducted on similar topics to contribute to the clarification of the different findings obtained as a result of the research.

In the analyses related to the research model in Figure 1, similar results could not be obtained in the factor distribution and new dimensions were obtained. For this reason, the model related to the new dimensions was drawn and the research model was revised as in Figure 3.

**Figure 3**

*Revised Research Model<sup>4</sup>*



Note. This figure was created by authors via draw.io

Since no scientific research has been found in the literature that these two behaviors together have been used, it is thought that a similar study to be conducted in the future will support this study and enrich the literature in this sense. The manuscript was operated on the population existing in the province of Kutahya. Therefore, it is advised that a similar research be run in different cities or regions with larger and different cultural populations. In addition, the concept of word-of-mouth marketing is also considered to be added to the study and how this concept affects the transformation of REB into GPB is examined.

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<sup>4</sup> RCAEB: Resource Conservation Activities for the Economic Benefit of the Person, ECC: Environmentally Conscious Consumer, RRE: Responsible Recycling Effort, EA: Environmental Activism

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### **The Ethical Rules for Research and Publication / Arařtırma ve Yayın Etięi**

The authors declared that the ethical rules for research and publication followed while preparing the article.

Yazarlar makale hazırlanırken arařtırma ve yayın etięine uyulduęunu beyan etmiřtir.

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The authors have no conflict of interest to declare.

Yazarlar ıkar atıřması bildirmemiřtir.

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**Research Article**

**Examining the Relationship Between Growth, Urbanization and Physical Capital  
with the Bootstrap Causality Test: The Example of E-7 Countries**

**Mert A. Atamer<sup>a</sup>**

**Abstract**

**Introduction:** The study investigated the causal relationship between economic growth, physical capital, and urbanization variables in E-7 countries (Brazil, China, India, Indonesia, Mexico, Russia and Türkiye). The purpose of this study is to contribute to the more effective design of economic growth strategies and development policies by revealing the structural characteristics of the relationships between the variables in question in E-7 countries. The limited number of comprehensive empirical analyses in the literature, which address the simultaneous effects of physical capital and urbanization on economic growth in these countries, highlights the originality and importance of the study.

**Method:** The analysis was carried out with annual data from 1990 to 2022. Bootstrap Causality (2006) analysis was used.

**Results or Findings:** According to the findings obtained from the analysis, the panel results are as follows: bidirectional causality was determined between growth and urbanization, unidirectional causality was observed from growth to physical capital. Similarly, unidirectional causality was found from urbanization to physical capital. It was observed that the results differed at the cross-section level.

**Discussion or Conclusion:** The results emphasize that the effects of urbanization and physical capital on economic growth vary depending on country characteristics and policy preferences. In addition, policy inferences were made on both panel and country basis.

*Keywords:* economic growth, physical capital, urbanization, causality analysis

*JEL Codes:* O44, O47, C23

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**Araştırma Makalesi**

**Büyüme, Kentleşme ve Fiziki Sermaye Arasındaki İlişkinin Bootstrap Nedensellik Testi ile İncelenmesi: E-7 Ülkeleri Örneği**

**Mert A. Atamer<sup>a</sup>**

**Öz**

**Giriş:** Çalışmada E-7 ülkelerinde (Brezilya, Çin, Hindistan, Endonezya, Meksika, Rusya ve Türkiye) ekonomik büyüme, fiziki sermaye ve kentleşme değişkenleri arasındaki nedensel ilişki incelenmiştir. Bu çalışmanın amacı, E-7 ülkelerinde söz konusu değişkenler arasındaki ilişkilerin yapısal özelliklerini ortaya koyarak ekonomik büyüme stratejilerinin ve kalkınma politikalarının daha etkin bir şekilde tasarlanmasına katkıda bulunmaktır. Bu ülkelerde fiziksel sermaye ve kentleşmenin ekonomik büyüme üzerindeki eş zamanlı etkilerini ele alan literatürdeki kapsamlı ampirik analizlerin sınırlı sayıda olması, çalışmanın özgünlüğünü ve önemini vurgulamaktadır.

**Yöntem:** Analiz, 1990-2022 yılları arasındaki yıllık verilerle gerçekleştirilmiştir ve Bootstrap Nedensellik (2006) analizi kullanılmıştır.

**Sonuçlar ya da Bulgular:** Analizden elde edilen bulgulara göre panel sonuçları şu şekildedir: büyüme ve kentleşme arasında çift yönlü nedensellik, büyümeden fiziksel sermayeye doğru tek yönlü nedensellik tespit edilmiştir. Benzer şekilde, kentleşmeden fiziksel sermayeye doğru tek yönlü nedensellik bulunmuştur. Sonuçların kesit düzeyinde farklılık gösterdiği görülmüştür.

**Tartışma ya da Yapılan Çıkarımlar:** Sonuçlar, kentleşmenin ve fiziksel sermayenin ekonomik büyüme üzerindeki etkilerinin ülke özelliklerine ve politika tercihlerine bağlı olarak değiştiğini vurgulamaktadır. Ayrıca hem panel hem de ülke bazında politika çıkarımları yapılmıştır.

*Anahtar Kelimeler:* ekonomik büyüme, fizik sermaye, kentleşme, nedensellik analizi

*JEL Kodlar:* O44, O47, C23

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## Introduction

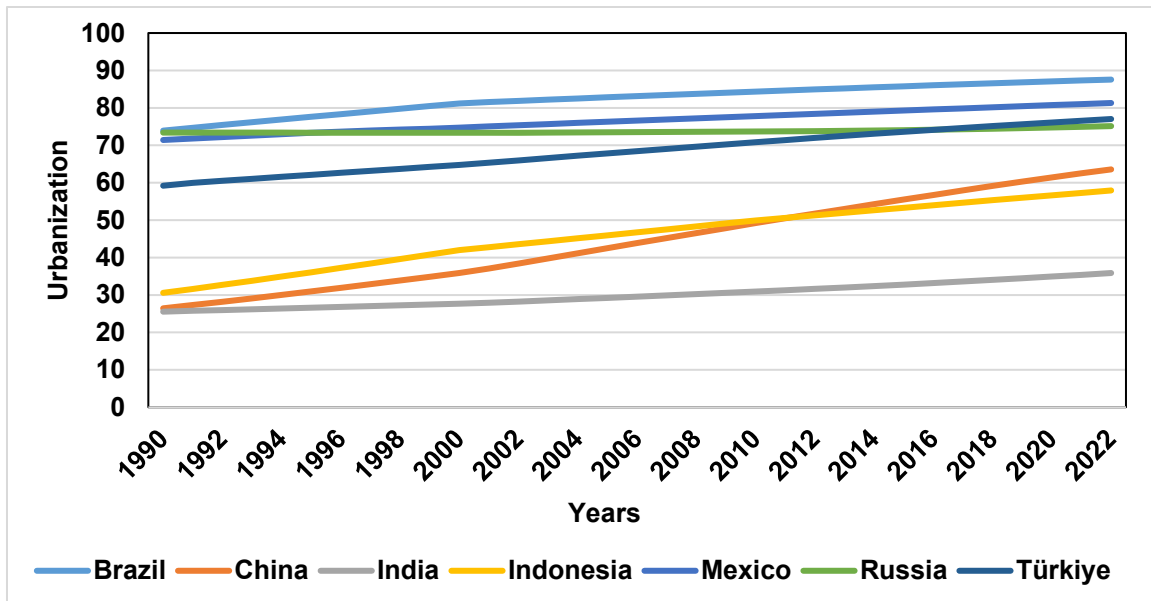
The determinants of economic growth have been at the center of economic literature for many years. In this context, resource endowments, especially physical capital, stand out as a key element in explaining growth differences at regional and national levels (Li et al., 2015). Traditional growth models reveal that investments in physical capital such as infrastructure, machinery, and technology, as well as the availability of natural resources, shape production processes and directly affect economic performance (Widarni & Bawono, 2021). Physical capital is considered one of the main drivers of growth due to its ability to increase production capacity and its potential to strengthen economic infrastructure. This view is supported by both theoretical and empirical studies (Li et al., 2015; Sen, 2013).

Physical capital accumulation not only encourages more efficient use of existing production factors but also contributes to productivity growth by facilitating the adoption of technological developments. This makes physical capital an indispensable element for the sustainability of long-term development (Uddin et al., 2025). On the other hand, physical capital investments contribute to the creation of an attractive economic environment for both local entrepreneurs and international investors, thus playing a structural role in directing capital flows (Casi & Resmini, 2017).

In addition to physical capital, urbanization is widely accepted as an important factor driving economic growth (Shaban et al., 2024). This process mostly involves the movement of an increasing portion of the national population from rural areas to urban centers and the spread of urban lifestyles (Potts, 2012). Urbanization leads to population growth in cities that already have limited resources (Ülger et al., 2024). In this context, the increase in the level of urbanization creates a supportive effect on economic growth through mechanisms such as the expansion of labor markets, the development of industrial and service sectors, the concentration of infrastructure investments and the increase in innovation capacity.

Figure 1 shows the development of urbanization rates in the E7 countries (“Brazil, China, India, Indonesia, Mexico, Russia and Türkiye”) between 1990 and 2022. When the graph is examined, it is understood that Brazil has the highest urbanization rate, while India has the lowest. Urbanization rates have increased steadily over time in all countries except Russia. China, in particular, stands out as the country with the most significant increase in urbanization rates during the period examined.

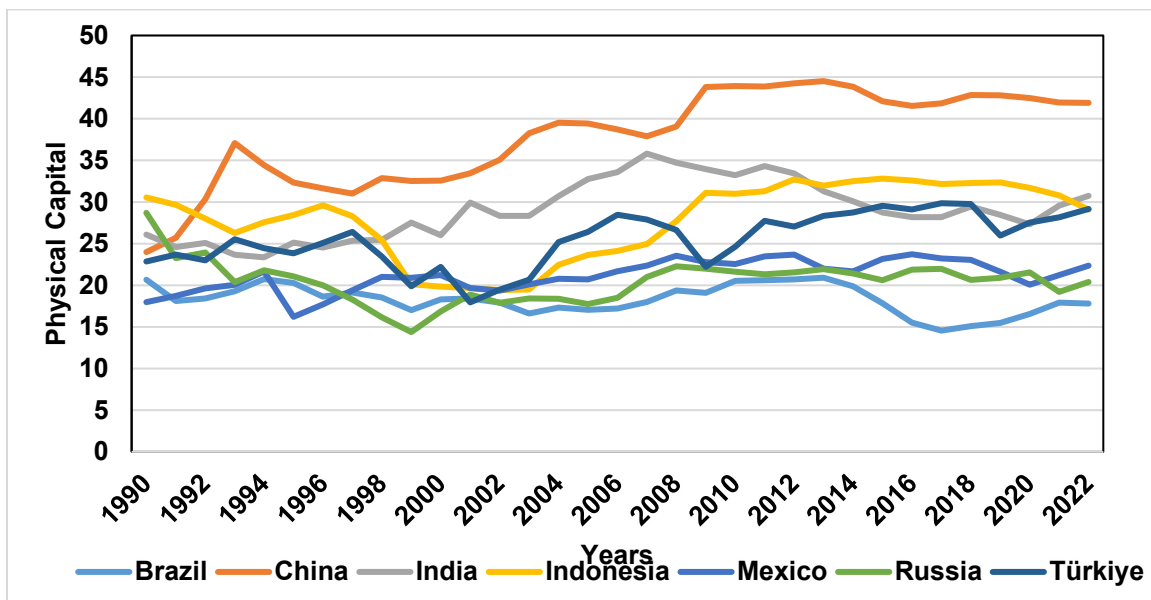
**Figure 1**  
Urbanization in E7 countries (%)



Note. This figure created by the author using Microsoft Excel.

Figure 2, reveals significant disparities in physical capital accumulation among E7 countries. China's high ratios reflect a capital-intensive growth strategy, whereas countries such as Turkey, Brazil, and Mexico exhibit lower and more stagnant trajectories.

**Figure 2**  
Physical Capital in E7 countries



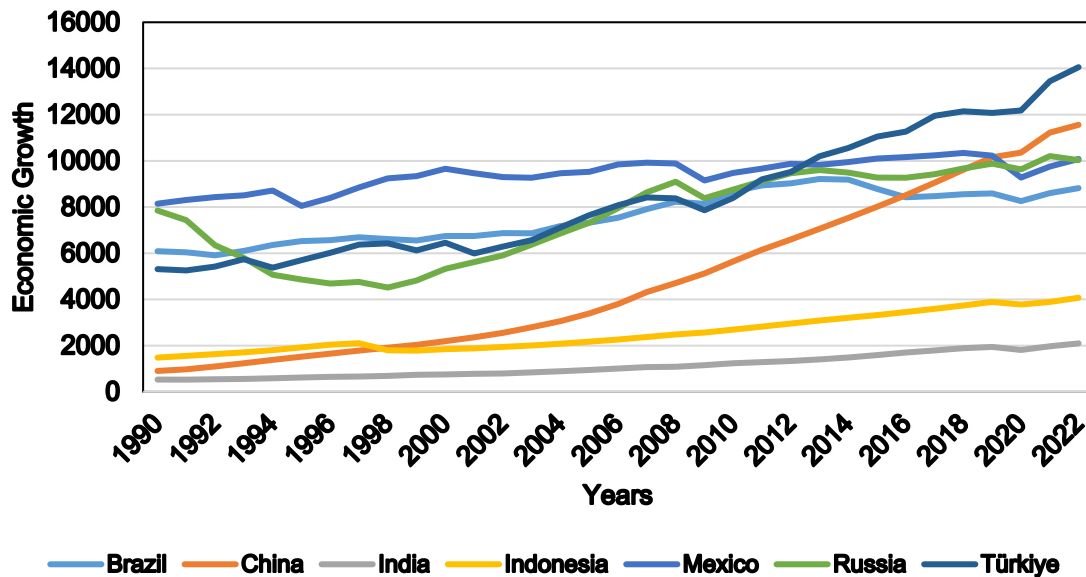
Note. This figure created by the author using Microsoft Excel.

Figure 3, demonstrates that, among the E7 countries, China and India have emerged as global economic power centers, while Indonesia has distinguished itself as a rising regional actor. In contrast, the growth performances of Brazil, Mexico, Russia, and Turkey have

remained more limited, and these countries have faced difficulties in enhancing their relative weight within the E7 on a global scale.

**Figure 3**

*Economic Growth in E7 countries*



Note. This figure created by the author using Microsoft Excel.

In recent years, the relationships between physical capital, urbanization, and economic growth have been investigated with increasing interest, especially in developing economies. E-7 countries attract attention with their rapid economic growth, demographic transformations, and acceleration of urbanization processes, and therefore, their weight in the global economy increases daily. The E-7 countries comprise a group of developing countries, with many similarities but also significant differences. While some variables may be observed significantly across the panel, they may differ significantly at the country level. In this context, this sample group is worth examining in terms of its socio-economic activities and will contribute to the literature with its results. Therefore, in order to ensure the sustainability of growth processes in these countries, it has become a critical need to better understand the interaction of physical capital, urbanization, and economic growth dynamics.

The motivation of this study is to contribute to the more effective design of economic growth strategies and development policies by revealing the structural characteristics of the relationships between the variables in question in E-7 countries. The limited number of comprehensive empirical analyses in the literature, which address the simultaneous effects of physical capital and urbanization on economic growth in these countries, highlights the originality and importance of the study. In this direction, the main objective of the study is to empirically investigate the causal relationship between physical capital, urbanization, and economic growth variables in E-7 countries using annual data for the period 1990-2022. The findings to be obtained in the study are aimed at contributing to a better understanding of the drivers of growth in these countries and to guide sustainable development policies.

In the continuation of this study, the second section includes the relevant literature and in the third section, the definition of the data set and model, the method and findings are

presented in detail. In the last section, a general evaluation was made in line with the results obtained and policy recommendations were included.

### Literature Review

The empirical literature investigating the determinants of economic growth is quite extensive. In recent years, the impact of the energy factor on economic growth has been a wide field of study. The fact that physical capital is the determining factor of economic growth is one of the cornerstones of the classical model. This study investigates the causal relationships between the variables of physical capital, urbanization, and economic growth. In this section, a summary of the studies investigating the relationship between physical capital, urbanization, and economic growth, especially those investigating the causal relationship, is included.

**Table 1**  
*Literature Review*

Author	Country/Country Group	Years	Method	Variables	Findings
Liddle (2013)	Four country groups (high-income, upper-middle-income, lower-middle-income, and low-income countries)	1970-2007	AMG	UR, EC, and EG	The impact of UR on EG varies significantly from negative to neutral to positive as countries develop.
Liddle and Messinis (2015)	100 countries	1960-2009	Dumitrescu-Hurlin causality analysis	UR change and EG	There is no causal relationship between the variables in middle-income countries and Latin American countries. For African countries, however, there is a two-way causal relationship between UR and EG.
Du (2017)	35 cities in China	2003-2012	Granger causality analysis	Land quality and EG	There is a long-term causality between UR and EG. Furthermore, EG has a positive effect on the quality of UR.
Pablo-Romero and Sánchez-Braza (2015)	38 countries	1995-2007	Panel data analysis	Energy use and EG	Energy use productivity flexibilities have been calculated positively for all country groups.
Nguyen and Nguyen (2018)	7 ASEAN countries	1993-2014	Granger causality analysis, FE, RE, Driscoll ve Kraay, D-GMM ve PMG	UR and EG	There is a causal relationship between UR and EG and UR has a positive effect on EG.

Malumfash and Gambo (2018)	1980-2016	Nigeria	ARDL	UR and EG	UR has a positive impact on EG in the short term, but no significant impact in the long term.
Long (2020)	1980-2016	6 ASEAN countries	Frequentist and Bayesian inferences	UR and EG	UR has a significant and positive impact on EG.
Odugbesan and Rjoub (2020)	1993-2017	MINT countries	ARDL	EG, CO2 emissions, UR, and EC	There is a long-term relationship between EG, EC, CO2 emissions, and UR.
Osiobe (2020)	14 Latin American countries	1950-2014	Granger causality analysis	Physical capital and EG	No causal relationship has been identified.
Pomi et al. (2021)	Bangladesh	2000-2018	VAR model	Physical capital and EG	Physical capital can contribute to EG in different time dimensions.
Mehmood et al. (2021)	Pakistan	1979-2019	Granger causality analysis	UR, institutional development, human capital, and EG	UR is the cause of growth and plays an important role in the accumulation of human capital through structural changes.
Haryanto et al. (2021)	Indonesia	1990-2018	VECM model	UR, education, and EG	EG and education have a strong causal effect on UR.
Jacobs et al. (2022)	South Africa	1997-2020	Granger causality analysis	Population, UR, and EG	There is no causal relationship between population and EG.
Duran et al. (2023),	D-8 countries	1981-2016	Dumitrescu-Hurlin causality analysis	Capital, energy use, and per capita income	A unidirectional causal relationship has been identified from capital to GDP per capita and from GDP per capita to EC.
Hacımamoğlu and Sungur (2024),	1970-2017	Turkey	BFGC-Q (Fourier Granger causality in canticles)	Human capital, physical capital, economic complexity index, and EG	Human capital, physical capital, and economic complexity index have been found to have a positive effect on EG.
Jemulyi and Jeke (2024),	1991-2022	Nigeria	ARDL-EMC model	UR and EG	UR does not support EG.

UR=Urbanization, EG=Economic growth, EC=Energy consumption

Note. This table was created by autor

In the summary of the literature reviewed, it was observed that the effect of urbanization and physical capital on economic growth was generally positive. In addition, it was observed that physical capital, urbanization, and economic growth were in a causal relationship. The difference between this study and the existing literature is the causality estimator used. The method used is a second-generation causality test. That is, it is sensitive to cross-sectional dependence. It also allows variables to be stationary at mixed levels (I(0)-I(1)). Its most significant feature is that it produces results at the panel level while also producing results at the country level. This distinguishes it from other causality tests. In this context, since the results differ across panel and cross-section units, it is possible to observe the specific countries responsible for the differences. The findings allow us to evaluate the results for both the panel and the countries, and to make policy recommendations. Therefore, this method has many advantages and offers a different perspective than other studies.

### Data and Model Definition, Method and Findings

#### Explanations on Data and Model

This study investigates the causal relationship between economic growth, physical capital and urbanization variables in E-7 (“Brazil, China, India, Indonesia, Mexico, Russia and Türkiye”) countries. The analysis was carried out with annual data for 1990-2022. The variables used are obtained from the “World Bank” database. The definitions of the variables are as follows; Physical capital; Gross fixed capital formation (% of GDP), urbanization; urban population (% of total population), economic growth; GDP per capita (constant 2015 US\$). The models estimated in the study are as follows;

$$\log eb_{i,t} = \beta_0 + \beta_1 \log k_{i,t} + u_{i,t} \quad (1)$$

$$\log k_{i,t} = \beta_0 + \beta_1 \log eb_{i,t} + u_{i,t} \quad (2)$$

$$\log eb_{i,t} = \beta_0 + \beta_1 \log fs_{i,t} + u_{i,t} \quad (3)$$

$$\log fs_{i,t} = \beta_0 + \beta_1 \log eb_{i,t} + u_{i,t} \quad (4)$$

$$\log k_{i,t} = \beta_0 + \beta_1 \log fs_{i,t} + u_{i,t} \quad (5)$$

$$\log fs_{i,t} = \beta_0 + \beta_1 \log k_{i,t} + u_{i,t} \quad (6)$$

#### Methods and Findings

The study used the variables economic growth, physical capital, and urbanization. Table 2 contains the summary statistics for these variables.

**Table 2**  
*Summary Statistics and Correlation Matrix*

Variables	Obs	Mean	St.Dev.	Min	Max
<b>Logeb</b>	231	3.653	0.371	2.723	4.147
<b>Logk</b>	231	1.751	0.164	1.407	1.942
<b>Logfs</b>	231	1.394	0.114	1.157	1.648

Note. Created by autor using Stata 10 for Windows

In the summary statistics table, the maximum value is observed for the economic growth variable. The minimum value is for the physical capital variable. The number of observations is 231. This number is sufficient for panel data analysis.

In this study, the Breusch and Pagan (1980) LM test was used to examine the existence of cross-sectional dependence. This test was developed to determine whether the units in panel data sets are independent of each other. It acts on the assumption that events that occur in one country can affect other countries, especially in cases where economic integration is high at the global level. This situation is evaluated as an indicator of the interactions of countries in economic and other sectors. In this direction, the test used to analyze the level of dependency among the cross-sectional units in the panel with each other is expressed as follows.

$$y_{it} = \alpha_i + \beta x_{it} + \varepsilon_{it} \quad (7)$$

In the equation,  $y_{it}$  is the dependent variable for the  $i$  unit and  $t$  time period and  $x_{it}$  is the independent variables.  $\alpha_i$  is used to represent the fixed effects specific to the units and  $\varepsilon_{it}$  is used to represent the error term. The test statistic is as follows;

$$LM = T \sum_{i=1}^{N-1} \sum_{j=i+1}^N \hat{\rho}_{ij}^2 \quad (8)$$

$T$  is the time,  $N$  is the cross-sectional units, and  $\hat{\rho}_{ij}$  is the correlation coefficient between the estimated error terms. The estimated correlation coefficient of the error terms,  $\hat{\rho}_{ij}$  is calculated as follows;

$$\hat{\rho}_{ij} = \frac{\sum_{t=1}^T \hat{\varepsilon}_{it} \hat{\varepsilon}_{jt}}{\sqrt{\sum_{t=1}^T \hat{\varepsilon}_{it}^2 \sum_{t=1}^T \hat{\varepsilon}_{jt}^2}} \quad (9)$$

The null hypothesis of the test is "H0: There is cross-sectional independence between error terms".

Delta test is a method used to evaluate the homogeneity of coefficients in panel data models. This test is applied to test the validity of the homogeneity assumption of the coefficients, especially in cases where differences between individuals (cross-sectional units) may be found in panel data analysis. The mathematical expression used to test the homogeneity assumption is illustrated by the following equation.

$$y_{it} = \beta_i x_{it} + \varepsilon_{it} \quad (10)$$

The test investigates whether all units have the same coefficient ( $\beta$ ). The hypotheses of this test are as follows;

Null Hypothesis: The coefficients are homogeneous among all units ( $\beta_i \neq \beta$  for all  $i$ ).

Alternative Hypothesis: The coefficients are different for at least one unit ( $\beta_i \neq \beta$  for all  $i$ ).

The delta test was first developed by Swamy (1970) and later expanded by Pesaran and Yamagata (2008). The equation used in calculating the test is as follows:

$$\Delta = \frac{1}{N} \sum_{i=1}^N (\hat{\beta}_i - \bar{\beta})^2 \quad (11)$$

$\hat{\beta}_i$  represents the estimated coefficient for section unit  $i$ , and  $\beta$  represents the weighted average of the coefficients for all section units.

Table 3 shows the cross-sectional dependence and homogeneity test results.

**Table 3**  
*Cross-Section Dependency and Homogeneity Test Findings*

Panel Cross Section Results		
Test	Statistics	p-value
LM	79.73	0.000***
LMadj	27.33	0.000***
LMcd	0.7	0.483
Homogeneity Test		
	Delta	p-value
	22.495	0.000***
adj.	23.997	0.000***

\*\* and \*\*\* are used to represent significance at 5% and 1% significance levels.

Note. Created by autor using Stata 10 for Windows

According to the results in the first part of the table, the null hypothesis was rejected and the existence of cross-sectional dependence was accepted. According to the delta test results, it was concluded that the slope coefficients were heterogeneous.

Unit root tests are used to determine the stationarity properties and stationarity degrees of the variables in the model. In this study, since the estimated model has cross-sectional dependence, the “CADF (Cross-sectional Augmented Dickey-Fuller) test”, which is one of the second generation unit root tests and is considered to be effective for heterogeneous and homogeneous series, was preferred. The test in question was developed by Pesaran (2006) and first calculates the CADF test statistics for each series in the panel. Then, the arithmetic average of these statistics is taken to obtain the CIPS statistic representing the entire panel. The CADF test is calculated based on the following model proposed by Pesaran (2006).

$$t_i(N, T) = \frac{\Delta y_i' \bar{M}_w y_{i-t}}{\sigma_i (y_{i-1}' \bar{M}_w y_i)^{1/2}} \quad (12)$$

Table 4 shows the stationarity levels of the variables.

**Table 4**  
*CADF Test Findings*

Variables	Constant		Trendli	
	t-bar/ Z[t-bar]	p-val	t-bar/ Z[t-bar]	p-val
Logeb	-2.667/-2.497	0.006***	-2.438/-0.295	0.384
Logk	-3.144/-3.839	0.000***	-4.288/-5.856	0.000***
Logfs	-2.518/-2.077	0.019**	-3.206/-2.603	0.005***

\*, \*\*, and \*\*\* indicate significance at 10%, 5%, and 1% significance levels. 1 is used as the lag length.

Note. Created by autor using Stata 10 for Windows

Both fixed and trended options were used in the CADF unit root test. When the probability values were examined, it was observed that all variables became stationary at level.

In the study, the causality test developed by Konya (2006) was used to analyze the causal relationships between the variables. The test in question differs from other causality tests because it can reveal the causality relationships at the unit level, as well as panel-level causality results. In addition, this method stands out with its sensitivity to cross-sectional dependency and its applicability in the presence of both homogeneous and heterogeneous slope coefficients. The equations used in the calculation of this test are as follows: Konya (2006);

$$y_{1,t} = \alpha_{1,1} + \sum_{l=1}^{mly_1} \beta_{1,1l} y_{1,t-1} \sum_{l=1}^{mlx_1} \gamma_{1,1l} x_{1,t-1} + \varepsilon_{1,1,t} \quad (13)$$

$$y_{2,t} = \alpha_{1,2} + \sum_{l=1}^{mly_1} \beta_{1,2l} y_{2,t-1} \sum_{l=1}^{mlx_1} \gamma_{1,2l} x_{2,t-1} + \varepsilon_{1,2,t} \quad (14)$$

$$y_{N,t} = \alpha_{1,N} + \sum_{l=1}^{mly_1} \beta_{1,Nl} y_{N,t-1} \sum_{l=1}^{mlx_1} \gamma_{1,Nl} x_{N,t-1} + \varepsilon_{1,N,t} \quad (15)$$

and

$$x_{1,t} = \alpha_{2,1} + \sum_{l=1}^{mly_2} \beta_{2,1l} y_{1,t-1} \sum_{l=1}^{mlx_2} \gamma_{2,1l} x_{1,t-1} + \varepsilon_{2,1,t} \quad (16)$$

$$x_{2,t} = \alpha_{2,2} + \sum_{l=1}^{mly_2} \beta_{2,2l} y_{2,t-1} \sum_{l=1}^{mlx_2} \gamma_{2,2l} x_{2,t-1} + \varepsilon_{2,2,t} \quad (17)$$

$$x_{N,t} = \alpha_{2,N} + \sum_{l=1}^{mly_2} \beta_{2,Nl} y_{N,t-1} \sum_{l=1}^{mlx_2} \gamma_{2,Nl} x_{N,t-1} + \varepsilon_{2,N,t} \quad (18)$$

In the equations used in the test, the variables y and x represent those for which the causality relationship is investigated. N is the cross-section unit of the panel (i = 1,2,...,N); t denotes time (t = 1,2,...,T). The lag length is indicated by the symbol 'l', while 'mly' and 'mlx' indicate the lag lengths of the variables 'y' and 'x', respectively. With this method, not only the causality relationship is determined, but also the direction of causality. The analysis is carried out by comparing the bootstrap critical values specific to each cross-section unit with the Wald statistics. In cases where the Wald statistics are greater than the bootstrap critical values, the null hypothesis of no causality is rejected and it is concluded that there is a causal relationship between the relevant variables.

Table 5 shows the Konya Causality test findings for Model 1.

**Table 5***Bootstrap Panel Causality Results Model 1**H<sub>0</sub>: Growth is not the cause of urbanization*

Countries	Wald Statistics	Bootstrap Probability Value	Critical Value		
			%1	%5	%10
Brazil	0.082	1.000	59.148	44.245	37.636
China	17.370**	0.044	23.368	16.755	14.237
India	4.375	0.336	14.365	10.068	8.155
Indonesia	10.926**	0.038	15.151	9.930	7.992
Mexico	11.448**	0.036	15.201	10.672	8.328
Russia	3.520	0.609	25.817	16.951	13.597
Türkiye	8.457	0.514	23.567	18.530	15.699
<b>Panel Fisher</b>	<b>Statistics: 23.940</b>		<b>Probability Value: 0.047**</b>		

\*\*\*, \*\*, \* represent critical levels of 1%, 5% and 10%. Bootstrap was run for critical values as 10,000. Lag length is 1.

Note. Created by autor using Stata 10 for Windows

This test shows both panel results and cross-section results. According to the null hypothesis, when the panel is examined in general, the probability value of the hypothesis is rejected. In this context, a causal relationship from growth to urbanization is observed. At the cross-section level, the null hypothesis is rejected in China, Indonesia and Mexico, and causality from growth to urbanization is detected in these countries.

The estimation results for Model 2 are shown in Table 6.

**Table 6***Bootstrap Panel Causality Results Model 2**H<sub>0</sub>: Urbanization is not the cause of growth*

Countries	Wald Statistics	Bootstrap Probability Value	Critical Value		
			%1	%5	%10
Brazil	18.061	0.650	56.397	42.181	37.304
China	4.760	0.569	25.087	16.297	13.074
India	9.891**	0.037	13.077	8.794	6.687
Indonesia	3.491	0.327	21.733	12.195	8.193
Mexico	15.736**	0.038	19.603	14.239	11.887
Russia	3.696	0.269	16.995	10.244	7.765
Türkiye	10.807	0.408	29.234	21.857	17.985
<b>Panel Fisher</b>	<b>Statistics: 21.778</b>		<b>Probability Value: 0.083*</b>		

\*\*\*, \*\*, \* represent critical levels of 1%, 5% and 10%. Bootstrap was run for critical values as 10,000. Lag length is 1.

Note. Created by autor using Stata 10 for Windows

Firstly, when the panel results are evaluated, the hypothesis that urbanization is not the cause of growth is rejected. In this context, causality from urbanization to growth has been determined. When the panel results for Model 1 are compared, bidirectional causality between urbanization and growth has been found. In the unit level results, the results are significant in India and Mexico. Accordingly, causality from urbanization to growth has been found in these countries. In line with these results, bidirectional causality relationship between urbanization and growth has been found in Mexico.

**Table 7**  
*Bootstrap Panel Causality Results Model 3*

*H<sub>0</sub>: Growth is Not the Cause of Physical Capital*

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Countries	Wald Statistics	Bootstrap Probability Value	Critical Value		
			%1	%5	%10
Brazil	2.942	0.708	23.892	16.719	13.187
China	14.412**	0.030	18.082	12.092	9.856
India	2.000	0.956	33.062	23.989	19.098
Indonesia	14.787***	0.001	9.890	6.465	4.954
Mexico	7.001	0.582	25.753	18.229	15.771
Russia	12.159*	0.051	18.155	12.197	9.650
Türkiye	15.978	0.566	40.213	30.139	26.645
<b>Panel Fisher</b>	<b>Statistics: 29.782</b>		<b>Probability Value: 0.008***</b>		

\*\*\*, \*\*, \* represent critical levels of 1%, 5% and 10%. Bootstrap was run for critical values as 10,000. Lag length is 1.

Note. Created by autor using Stata 10 for Windows

According to the results in the table; the panel probability value led to the rejection of the hypothesis that growth is not the cause of physical capital. This result showed that there is a one-way causality from growth to physical capital. In the unit-level results, the null hypothesis was rejected in China, Indonesia and Russia, while it was accepted in other countries. Therefore, causality from growth to physical capital was found in these countries.

**Table 8**  
*Bootstrap Panel Causality Results Model 4*

*H<sub>0</sub>: Physical Capital Is Not the Cause of Growth*

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Countries	Wald Statistics	Bootstrap Probability Value	Critical Value		
			%1	%5	%10
Brazil	12.514	0.104	25.307	16.407	12.983
China	5.236	0.209	16.009	9.991	7.805
India	2.954	0.933	35.988	25.336	21.129
Indonesia	2.821	0.210	13.333	7.168	5.245
Mexico	12.758	0.163	28.066	19.394	15.637
Russia	5.343	0.239	14.063	10.087	8.146
Türkiye	7.386	0.883	44.178	32.286	28.820
<b>Panel Fisher</b>	<b>Statistics: 17.657</b>		<b>Probability Value: 0.223</b>		

\*\*\*, \*\*, \* represent critical levels of 1%, 5% and 10%. Bootstrap was run for critical values as 10,000. Lag length is 1.

Note. Created by autor using Stata 10 for Windows

When the results for Model 4 were evaluated, it was observed that the panel result was not significant. This result shows that there is no causality from physical capital to growth. Similarly, in the results at the cross-section level, no causality from physical capital to growth was detected in any country.

Table 9 shows the estimation results for Model 5.

**Table 9**  
*Bootstrap Panel Causality Results Model 5*

*H<sub>0</sub>: Urbanization is not the cause of physical capital*

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Countries	Wald Statistics	Bootstrap Probability Value	Critical Value		
			%1	%5	%10
Brazil	10.983*	0.088	18.226	12.859	10.681
China	5.892	0.746	30.031	21.983	18.298
India	7.526	0.277	20.117	14.093	11.247
Indonesia	8.677	0.251	23.306	15.423	12.722
Mexico	9.252	0.110	15.890	12.320	9.750
Russia	15.068***	0.007	13.094	8.062	6.243
Türkiye	10.741	0.503	31.946	24.572	20.510
<b>Panel Fisher</b>	<b>Statistics: 26.492</b>		<b>Probability Value: 0.022**</b>		

\*\*\*, \*\*, \* represent critical levels of 1%, 5% and 10%. Bootstrap was run for critical values as 10,000. Lag length is 1.

Note. Created by autor using Stata 10 for Windows

In model number 5, the panel results revealed that there is causality from urbanization to physical capital. In the unit-level results, the probability values in Brazil and Russia are significant, and the null hypothesis is rejected. Accordingly, one-way causality from urbanization to physical capital is identified in these countries.

Finally, Table 10 shows the statistical findings of Model 6.

**Table 10**  
*Bootstrap Panel Causality Results Model 6*

*H<sub>0</sub>: Physical Capital Is Not the Cause of Urbanization*

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Countries	Wald Statistics	Bootstrap Probability Value	Critical Value		
			%1	%5	%10
Brazil	8.339*	0.098	17.160	10.398	8.287
China	13.190*	0.075	21.101	15.199	11.631
India	12.319	0.119	22.190	16.128	13.105
Indonesia	4.602	0.716	20.468	16.079	13.502
Mexico	9.432	0.111	18.352	11.466	9.605
Russia	3.102	0.626	15.304	11.861	10.142
Türkiye	4.223	0.897	41.176	29.016	24.711
<b>Panel Fisher</b>	<b>Statistics: 20.302</b>		<b>Probability Value: 0.121</b>		

\*\*\*, \*\*, \* represent critical levels of 1%, 5% and 10%. Bootstrap was run for critical values as 10,000. Lag length is 1.

Note. Created by autor using Stata 10 for Windows

Panel results show that there is no causality from physical capital to urbanization. At the unit level, the null hypothesis was rejected in Brazil and China. In this context, causality from physical capital to urbanization was found in these countries. This result showed that there is a bidirectional causality between urbanization and physical capital in Brazil.

### **Conclusion and Policy Recommendations**

The findings obtained for Model 1 are as follows: the causal relationship from growth to urbanization was determined for the whole panel. At the cross-sectional level, causality from growth to urbanization was also observed in China, Indonesia and Mexico. This finding obtained for both the whole panel and for some countries is in the expected direction. Economic growth affects many areas. In this context, growth provides an increase in infrastructure investments, and this encourages migration from rural areas to urban areas. This situation can be especially evident in fast-growing economies such as China, Indonesia and Mexico. Job opportunities created by the effect of growth increase the attractiveness of urban areas, and this accelerates the urbanization process. Physical capital investments support urbanization by developing transportation, health, education, and industrial infrastructure in cities. In countries such as China and Indonesia, the increase in urban population has been supported by planned policies to make economic growth sustainable. The fact that growth triggers urbanization in these countries may be due to these strategies. In countries such as Mexico, urbanization may have occurred due to the effect of internal migration and urban industrialization encouraged by economic growth. The lack of causality from growth to urbanization in some E-7 countries (e.g. Brazil, India, Russia, and Türkiye) may indicate that urbanization processes in these countries are more dependent on demographic and political factors. The impact of physical capital investments on growth and urbanization may vary due to differences in the economic structures of the countries. Since economic growth triggers urbanization, planned urbanization policies should be adopted in fast-growing countries. This may include developing infrastructure in urban areas, improving transportation systems, and providing affordable housing. Urban transformation projects and sustainable urbanization strategies should be prioritized, especially in countries where growth directly affects urbanization, such as China, Indonesia and Mexico. In this way, negative situations that will arise from urbanization driven by growth can be prevented.

Causality from urbanization to growth was observed in Model 2. When this finding was evaluated with the panel results for Model 1, bidirectional causality between urbanization and growth was found. This result is parallel to the study conducted by Liddle and Messinis (2015). In the unit-level results, causality from urbanization to growth was found in India and Mexico. In line with these results, a bidirectional causality relationship was found between urbanization and growth in Mexico. Urbanization supports economic growth by increasing productivity. Urbanization may encourage the concentration of industrial and service sectors by concentrating and using a more efficient workforce. In places where urbanization accelerates, infrastructure such as education, health and transportation develop more rapidly, which triggers economic growth. Rapid urbanization may increase the impact of growth-oriented sectors concentrated in urban areas. In addition, India's demographic structure may cause the urban workforce to contribute more to growth. Industrialization and export-oriented production in cities may lead to urbanization, which triggers growth. In addition, the observation of bidirectional causality highlights the influence of urban infrastructure development and the ability of economic growth to support urbanization. The fact that no direct effect of urbanization on growth is observed in other countries suggests that different economic dynamics such as rural development or natural resource-oriented growth may be dominant in these countries. Infrastructure investments should be prioritized in rapidly urbanizing countries. In countries

where urbanization triggers growth, such as India and Mexico, more investment in transportation, education, health, and energy infrastructure may have a positive effect on growth. Planned urbanization policies should be adopted to reduce the environmental and social costs of urbanization. For example, green city policies can be implemented in Mexico to reduce environmental impacts. Urban-rural linkages should be strengthened to extend the causal effect from urbanization and growth to rural areas. This can increase the growth potential in countries with large rural populations, such as India. In countries such as Mexico, where there is a bidirectional causality between urbanization and growth, policies that support economic growth along with urban development should be prioritized. For example, innovative and high value-added production should be encouraged in industrial zones.

In Model 3, one-way causality from growth to physical capital was found. Osiobe (2020) could not detect any causality between these two variables in her study, so the results obtained differ from this study. In unit-level results, causality from growth to physical capital was observed in China, Indonesia and Russia. Economic growth leads to an increase in financial resources for more capital investment. GDP growth can create market confidence that encourages investments. Growth accelerates infrastructure investments and the expansion of the private sector, which in turn increases physical capital. In China, high growth rates and strong orientation towards public-private sector investments support capital accumulation. In Indonesia, this result may be due to the fact that incomes obtained from natural resources allow growth to be channeled into physical capital. This finding may be because growth obtained from energy and raw material exports in Russia is channeled into infrastructure and other capital investments. In other countries (India, Türkiye, etc.), this relationship may be weak due to the limited depth of financial markets or the failure to transform growth into capital investments. Therefore, the results may have emerged in this way. In line with these findings, public-private partnerships should be encouraged, and the effect of growth on physical capital should be increased by directing the income from growth to capital investments. In India and Türkiye, financial instruments should be diversified to facilitate the transformation of growth into capital accumulation; and it would be a good practice to develop credit markets. In Russia and Indonesia, the income from growth should be directed not only to certain sectors but also to capital investments on a large scale. In addition, appropriate legal and economic environments should be provided to attract foreign direct investments and support local capital formation. Applications in this direction can increase the positive effect of growth on physical capital.

Model 4 shows that there is no causality from physical capital to growth. The results are also similar at the cross-sectional level, and no causality from physical capital to growth was detected in any country. . In this respect, the results differ from the study conducted by Pmi et al. (2021), which found that physical capital contributes to economic growth, and from the study conducted by Duran et al. (2023), which found a one-way causality relationship from capital to economic growth. These findings can be evaluated as follows: investments in physical capital may not have been used efficiently enough to trigger economic growth. Growth dynamics in E-7 countries may be more dependent on factors such as human capital, technology, and innovation. Investments may have been directed to low-impact areas rather than high value-added sectors that will support long-term growth. In this context, investments in areas such as technology, green energy, and digital transformation should be increased to enhance the impact of physical capital on economic growth. In addition, effective management, accountability, and monitoring mechanisms should be strengthened in infrastructure projects to increase the impact of physical capital on growth. The quality of physical capital investments can be increased by creating an attractive economic and legal environment for foreign investors. Policies that support different growth dynamics in rural and urban regions of E-7 countries should be

developed. These policy recommendations are critical for E-7 countries to increase the impact of physical capital on growth.

Model number 5 investigates the causal relationship between urbanization and physical capital. The panel results show that there is a causality from urbanization to physical capital. In a similar study, Mehmood et al (2021) found that urbanization plays an important role in capital accumulation. In the unit-level results, one-way causality from urbanization to physical capital was detected in Brazil and Russia. Urbanization encourages physical capital investments by increasing the demand for infrastructure projects (housing, transportation, energy). Urbanization triggers capital investments by causing economic activities and production processes to concentrate in cities. Brazil undergoes the intensive urbanization process that requires large-scale infrastructure projects and industrial investments. In Russia, the parallel progress of urbanization and the development of industrial zones based on natural resources may have increased capital investments. Policy recommendations based on these findings can be as follows: long-term strategic planning should be made for infrastructure projects to evaluate the investment opportunities brought by urbanization. Urbanization processes should be planned effectively and efficiently, and efficient use of investments should be ensured; balanced development should be encouraged in the industry, trade, and housing sectors. In countries such as Brazil and Russia, the economic opportunities created by urbanization should be distributed equally for regional development. Incentive mechanisms should be established to direct physical capital investments to sustainable infrastructure (green buildings, renewable energy projects, public transportation). To strengthen the link between urbanization and physical capital investments, incentives for the expansion of industrial and service sectors in urban centers should be increased.

The last model investigates whether there is causality from physical capital to urbanization. Panel results show that there is no causality from physical capital to urbanization. At the unit level, causality from physical capital to urbanization was found in Brazil and China. This result shows that there is a bidirectional causality between urbanization and physical capital in Brazil. These observations suggest that physical capital investments may have been directed to industrial and export-oriented sectors rather than housing, infrastructure, and transportation projects that encourage urbanization. Heterogeneous demographic and economic structures at the panel level may make it difficult to generalize the relationship between physical capital and urbanization. Physical capital investments were directed to urban infrastructure projects, which encouraged urbanization. In addition, bidirectional causality shows that urban demand increases investment. Rapid economic growth and large-scale infrastructure projects may have increased physical capital investments supporting urbanization. In light of these possible reasons, priority should be given to infrastructure investments that encourage urbanization (public transportation, housing, water and energy infrastructure). Instead of concentrating physical capital investments only in certain cities, physical capital investments should be distributed more evenly to facilitate the transition from rural to urban areas. According to the results conducted in Brazil, it would be appropriate to increase investments in urban planning and infrastructure projects to optimize the two-way relationship between urbanization and capital. In China, investments in green infrastructure projects and environmentally friendly urban planning are crucial for the sustainability of rapid urbanization and economic growth processes. Diversification and increase in physical capital investments should be encouraged to meet the economic demand arising from urbanization. Physical capital investments should be integrated into strategic plans to ensure sustainable urban growth.

The study analyzes the causal relationships between economic growth, urbanization, and physical capital in E-7 countries, and it presents important findings. The Konya Causality

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test conducted at the panel level and on a country basis revealed the heterogeneous structure of the interactions between growth, urbanization, and physical capital. The panel results show that there is a bidirectional causality relationship from growth to urbanization and from urbanization to growth. However, no unidirectional causality from physical capital to urbanization or growth is found. At the country level, countries such as “China, India, Brazil and Russia” exhibit different dynamics in terms of causality between urbanization and physical capital investments. The emergence of different causality patterns among countries is due to differences in the economic structure, urbanization dynamics and historical development process of each country. These results emphasize that the effects of urbanization and physical capital on economic growth vary depending on country characteristics and policy preferences.

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Yazar makale hazırlanırken arařtırma ve yayın etięine uyulduęunu beyan etmiřtir.

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**Research Article**

**Density-based Clustered Airline Network Carriers and Efficiency Comparison  
with Robust DEA**

**Yasin Kütük<sup>a</sup>**

**Abstract**

**Introduction:** This research examines the concept of a network carrier, specifically its structure. In the idea of network carriers, the primary structure is constructed as a service carrier that applies a high comfort level and high ticket fares, and the secondary structure is built as a low-cost carrier that applies a low comfort level and low ticket fares for its customers. In this research, the three concepts of airline restructuring are explained in detail.

**Method:** Robust Data Envelopment Analysis (DEA) methodology is used to analyze network carriers by two outputs and four inputs. The outputs are: passengers carried (PC) and passenger kilometres flown (PKF). The inputs are: passenger tonne kilometers (PTK) performed in thousands, available seat kilometers (ASK), passenger load factor (PLF), and kilometres flown (KF) in thousands.

**Results or Findings:** These parameters are used to assess the efficiency and consistency of efficiency levels among identified airlines that employ a network carrier strategy. The results of the efficiency analyses show that the majority of airlines exhibit minor time-related drops in their efficiency while the two low-cost carriers which are the top performers keep on doing so, and the grouping of firms into three categories -better, slightly good, and worst- based on efficiency levels and stability is done using k-means clustering and the coefficient of variation.

**Discussion or Conclusion:** This research employs Data Envelopment Analysis to evaluate the efficiency and consistency of airlines operating as network carriers, offering insights into the effectiveness of this strategic approach.

*Keywords:* aviation, aircraft, network carriers, data envelopment analysis, k-means clustering, unsupervised machine learning

*JEL Codes:* L93, C44, C38, L25, M21

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**Araştırma Makalesi**

**Yoğunluk Tabanlı Kümeleme ile Havayolu Ağ Taşıyıcılarının Dirençli VZA ile Etkinlik Karşılaştırması**

**Yasin Kütük<sup>a</sup>**

**Öz**

**Giriş:** Bu çalışmada, havayolu ağ taşıyıcısı (network carrier) kavramı ve yapısal özellikleri incelenmektedir. Ağ taşıyıcısı kavramı kapsamında, birincil yapı yüksek konfor seviyesi ve yüksek bilet ücretleri sunan tam hizmet taşıyıcısı (full service carrier) olarak, ikincil yapı ise düşük konfor seviyesi ve düşük bilet ücretleri sunan düşük maliyetli taşıyıcı (low cost carrier) olarak tanımlanmıştır. Bu çalışmada, havayolu yeniden yapılanmasına ilişkin üç temel kavram ayrıntılı biçimde açıklanmıştır.

**Yöntem:** Havayolu taşıyıcılarını analiz etmek amacıyla Dirençli Veri Zarflama Analizi (VZA) yöntemi kullanılmıştır. Analizde iki çıktı ve dört girdi dikkate alınmıştır. Çıktılar: taşınan yolcu sayısı (PC) ve yolcu kilometresi (PKF); girdiler ise: bin yolcu ton-kilometresi (PTK), mevcut koltuk kilometresi (ASK), yolcu doluluk oranı (PLF) ve bin kilometre uçuş mesafesi (KF) olarak belirlenmiştir.

**Sonuçlar ya da Bulgular:** Belirlenen havayolu şirketlerinin, ağ taşıyıcısı stratejisini uygulayanlar arasından seçilenlerin etkinlik düzeyleri ve bu düzeylerin tutarlılığı söz konusu parametreler aracılığıyla hesaplanmıştır. Verimlilik analizlerinin sonuçları, havayollarının çoğunun verimliliklerinde zamanla ilgili küçük düşüşler sergilediğini, en iyi performans gösteren iki düşük maliyetli havayolunun ise bu performansını sürdürdüğünü göstermektedir. Firmaların verimlilik düzeyleri ve istikrarlarına göre “daha iyi”, “biraz iyi” ve “en kötü” olmak üzere üç kategoriye ayrılması, k-means kümeleme yöntemi ve değişim katsayısı kullanılarak yapılmıştır.

**Tartışma ya da Yapılan Çıkarımlar:** Bu çalışma, havayolu taşıyıcısı olarak faaliyet gösteren havayolu şirketlerinin etkinliğini ve bu etkinliğin tutarlılığını değerlendirmek amacıyla Veri Zarflama Analizi yönteminden yararlanmakta; bu stratejik yaklaşımın etkililiğine dair önemli bulgular sunmaktadır.

*Anahtar Kelimeler:* havacılık, havacılık sanayi, hava yolu şirketleri, veri zarflama analizi, k-ortalamlar kümeleme analizi, gözetimsiz yapay öğrenme

*JEL Kodlar:* L93, C44, C38, L25, M21

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## Introduction

Civil aviation meets the sole transportation needs of global business development and tourism, strengthening across the globe. It is the only and fastest transportation option between the countries and continents. Air transportation is one of the significant services that affect the social and economic status of countries. Aviation affects tourism and trade. In this way, it contributes to economic growth by providing jobs and tax revenues.

Furthermore, it is significant for the rapid movement of people and freight worldwide (Air Transport Action Group [ATAG], 2008). The airline industry holds a prominent position due to its uniqueness and fascination. It receives all attention by enhancing the number of consumers worldwide. The airline industry is also developing by attracting and reaching a high level of technological improvements (Chan, 2000). The airline industry's most important element is the selection of airlines. Airlines implement two different strategies. These are: low-cost carriers (LCCs) and full-service network carriers (FSNCs). FSNCs have two different strategies. These are legacy carriers and airline within-airline strategies.

Full-Service Network Carrier (FSNC) model is resting on the strategic base of wide connectivity, great customer service and varying fare structure. Such a case contains hub-and-spoke operations, different classes like economy, business, first of all, and in-flight and other services like meals, handling luggage, and access to lounges for the premium customers. FSNCs target to give a smooth travel experience in both domestic and international markets which is often backed up with code-sharing and global airline association such as Star Alliance, SkyTeam or Oneworld. FSNCs are, for instance, Lufthansa, famous for its world network and premium services; Singapore Airlines, which has received the Asia-Pacific region's award for service excellence; and Vietnam Airlines, which provides good service along with its extensive international routes. In Europe, Air Europa is working as a powerful FSNC under the roof of the SkyTeam alliance while in the U.S. Trans States Airlines played the role of a regional feeder, indicating the model's reach to strategic partnerships. FSNCs factor in passengers' decisions largely in terms of quality expectations, perceived quality, service value, satisfaction, and airline image factors. Customers typically expect high service from FSNCs, and through their perception and satisfaction, they become an integral part of the entire travel experience. The aim of those carriers is to give the alternatives that attract a large variety of passengers hence building up their brand. LCCs, however, have become a major challenge to FSNCs particularly in the areas of budget-conscious leisure and short-haul business as they adopt the same price, flexibility, and frequent flyer incentive approach as the FSNCs do.

With the shifting competitive landscape between FSNCs and LCCs, main question that needs further examination is: In what ways does the change of passenger preferences—especially the ones of business travelers—along with the operational strategies of LCCs, affect the long-term efficiency, market positioning, and service differentiation of FSNCs in short-haul and long-haul markets? So this paper tries to solve it using data envelopment analysis with k-means clustering.

The structure of the paper is as follows: the literature review then examines prior research on airline strategies, including post-deregulation shifts, hybrid models (e.g., airlines-within-airlines), and service quality metrics. Next, the Methodology section details the use of Data Envelopment Analysis (DEA) to assess efficiency, employing variables like passenger load factor (PLF) and seat kilometers (ASK) from 152 FSNCs (2003–2013). The Results present efficiency trends, clustering airlines into superior, moderate, and poor performers based on consistency. Finally, the conclusion highlights the success of FSNCs, such as Vietnam

Airlines, in striking a balance between efficiency and service, while also calling for future research on LCCs and dynamic market adaptations.

## **Literature Review**

### **Airline Business Models and Strategies**

The primary advantage of domestic business travel is prompt, dependable service, so additional amenities offered by FSNC airlines are deemed unnecessary by Mason (2000, 2001) and Evangelho et al. (2005). On long-haul and international flights, however, FSNC airlines offer the primary advantage of a particular comfort service. Therefore, business travelers tend to favor the FSNC model on short-haul flights, while leisure travelers prefer the LCC model. Because the LCC concept is unsuitable for long-haul flights, the FSNC model is the only option available to passengers (Acar & Karabulak, 2015).

After defining the LCC and FSNC models, the network model for scheduled airlines has gained market growth over the last few years. In this model, a flag carrier or full-service carrier airline employs the FSNC model, while its structure incorporates elements of the LCC model (Caves, 1962; Jordan, 1970). For instance, X airline is named as a network carrier. It incorporates both the FSNC model and the LCC model into its structure. The annual report of X airline is structured as an FSNC model airline, and the LCC model data of this airline are shown in this report. The network model for scheduled airlines has contributed to their year-after-year market growth. They have enhanced their profits and productivity, and they have reduced the average prices of ticket sales since the 1990s. After the 9/11 events, the civil aviation industry was increasingly questioned. During this period, the hub (or central airport used by the flag carrier airline) concept was bypassed, and point-to-point flights constituted a significant portion of the market. Thereupon, various airlines operation ceased their activities, and the civil aviation industry underwent downsizing. Consumers' reliance on the civil aviation industry decreased. Alternative models have been implemented recently. At the beginning of the 1990s, the model LCC gained value in recent days because of cheap ticket prices. In the following years, with the increasing implementation of security measures in the civil aviation industry, consumers have felt confident again. The LCC model is simple to implement, and besides its simplicity, this model has helped to reduce costs by 40% - 50% of liable airline costs.

With higher load factors and labour cost benefits, a 60% decline in expenses has resulted in the establishment of new markets, and the flow of traffic has increased by 3-4 times the former levels on several routes. LCC airlines have grown and incrementally exceeded the network carrier markets. For instance, Southwest Airlines began operating transcontinental flights in the US as an enduring network carrier hub, serving as a base for development. Network Carriers have come back in two ways;

1. The foundation of low-cost and in-airline strategies.
2. Venture to lift an important amount of costs from their operations, but without changing their business passenger models.

The first mission has three feasible objectives;

1. To filter profitable tasks.
2. To observe LCC rivalry in key markets.

3. To institute a trial sample for adapting the LCC model to their central operation system.

The second goal is to reduce expenses and increase efficiency without the LCC sprout. For example, Air Canada, United Airlines, Delta Airlines, Continental Airlines (previously), and US Airways are the first strategy, as FSNC model airlines, in North America. American Airlines, Northwest Airlines, America West Airlines, and (later) Continental Airlines are LCC model airlines that use a secondary strategy. British Airways first employed this tactic in Europe, where it competed against expanding low-cost carriers such as Ryanair and EasyJet. To reduce mainline costs, British Airways assessed new procedures by lowering operating costs, improving comfort levels, and adjusting ticket prices. The hub model concept will evolve in this way. These days, LCC airlines are typically used as a nation's secondary hub, while full-service airlines are typically used as its primary hub. This tactic will become widely used in the future. Regarding the idea of network carrier airlines, there are differing views. Network carriers first determined evidence of the need for cost reduction. Second, enlarging aircraft to accommodate the heavy traffic volume, especially on short-haul routes, does not result in the expected reduction in unit costs. Thirdly, new point-to-point low-cost airlines are using secondary hubs with a new generation of small business jets, making the hub approach of today a failure (Woerth, 1995).

The concept of a hub has been argued since the fast growth of LCC point-to-point operations in North America and Europe in the mid-1990s. US big-scale airlines improved the profitability of the hub concept in the mid-1990s by closing several hubs in the US and transitioning from a directional to a continuous hubbing concept (Morrel, 2005). For instance, Northwest Airlines wanted to restructure its business model and reinforce its hubs. It has been a loyal protector of the network model since the beginning of the 1990s to the present day. One of the US's big-scale airlines, United Airlines, risked losing its brand image by dropping out of two markets (Kimes & Young, 1997). United Airlines doubted that Southwest Airlines' threats to enter long-haul markets would materialize. Another example is that American Airlines did not try the LCC model because it is difficult to prove how to behave as a group of consumers differently from others. Without important cost savings, consumers may not appreciate brand image.

Network Carriers operate primarily as full-service (legacy or traditional) and secondary as low-cost (no-frills). Their mainline fleet is equipped with large-scale aircraft for long-haul, full-service flights and smaller aircraft for short-haul, low-cost flights. They are the creation of the "carriers within carriers" (CWCs) strategy, which does not constitute an innovation because the strategic structure of network carriers is already included in their strategies. International, national, charter, and regional flights are operated either wholly owned or by leasing aircraft. Leasing aircraft is separated into two ways. These are wet leases and dry leases. Wet lease means leasing an aircraft with its crew and fuel. Dry lease refers to leasing an aircraft without any accompanying services. Furthermore, the creation of the CWC strategy is an operating system that applies lower unit costs than the leading airline. Nowadays, this system is the dynamic internal of the global airline industry.

The CWC strategy presents four potent advantages to full-service carriers. According to these are;

1. It can authorize the airline to cut down costs, especially in terms of labour, to compete with LCC airlines.

2. A CWC can be a more suitable product for leisure or hub-overcome routes, and in this way, the mission serves as an advanced form of market segmentation in network enlargement.
3. A CWC can authorize an inhibitor market entrance to stop other LCC airlines from entering the same market.
4. Alternatively, a CWC can operate as a direct competitor to an LCC already established in the market.

The quality of a commodity is of great importance in the airline industry. There are too many similar airlines. When an airline presents a distinct commodity to its passengers, this airline, in a manner of speaking, has its cake and eats it. Later, other similar airlines will adopt this strategy, but it will not be as effective as the first airline that implemented it. Due to this situation, selecting an airline individually is risky. If this airline cannot apply individual selections effectively, then it will be factored out of the purchasing determination.

To counter this possibility, airlines are seeking ways to establish their brand image, identity, and personality, aiming to implement quality strategies that foster passenger loyalty. This approach enables them to differentiate themselves from their competitors. Airlines should pay attention to the concept of the airline quality rating approach for their positive development. First of all, airlines should examine the strategies of other similar-sized competitor airlines and present arguments in support of these strategies. Secondly, airlines should also examine the traditional passenger inquiries, which accurately reflect the situation. Finally, airlines should consider expanding the number of reports about airline quality.

In the 1990s, it was unclear whether the quality ranking statistics accurately reflected the differences between airlines. Because of this, 1990s reports were not wholly accurate. For instance, the rankings of airlines in 1996 differed significantly from those in 1997. This was not possible because, in recent years, the parameters related to service quality have not been examined correctly. Also, in the last period of the 1980s and 1990s, regional carriers grew primarily in the US. Therefore, it was not easy to identify the proper service quality parameters that distinguish between airlines<sup>1</sup>. After the crash of ValuJet Airlines, several arguments were made about the safety of regional carriers. Regional carriers (generally applying a low-cost carrier strategy) were examined regarding their safety standards. Because of this, the differences in quality related to the civil aviation industry might be more apparent among airlines that implemented different strategies.

1978 was the year of deregulation, which initiated the last stage of civil aviation history. After deregulation, safety standards and hub-and-spoke concepts were developed first in the US and subsequently adopted worldwide. During this period, full-service carrier airlines' long-haul flights were constrained by regulations regarding load factors. This situation prevented the institution of economies of scale and the setting of fares on scheduled destinations, so in many cases, these routes were 50 percent higher than nonregulated intrastate destinations. Full-service carrier airlines that could not compete on fares were expected to base their competition on the quality of service.

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<sup>1</sup> AvStat Associates, Inc. (1998). Report for the Regional Airline Association.

## Efficiency Measurement in Aviation

The strategy of competition based on service quality rather than fares forced airlines to focus on offering cheap and below-cost air fares for passengers. To overcome this difficult status, especially US airlines launched a long and painful process of restructuring and induration. To solve this difficulty, at least for the large-scale airlines that remained viable, was a cost-competitive state that was familiar to their international competitors. This situation centres on cost-cutting regarding complaints, which increased among consumers, and an outstanding absence from the service arrangements of <sup>2</sup> of the top ten international airlines.

The quality of service is a significant issue for network and full-service carriers. These carriers have defined service quality as a profit strategy, which resulted in five outcomes. These are: more new passengers, more business possibilities from existing passengers, fewer lost customers, more isolation from price competition, and fewer mistakes requesting the reperformance of service level.

The service quality is separated into ten components. These are: listening to customers' complaints, listening to employees' complaints, ensuring transworthy service, taking care of the basic service standards, figure out the design of service standards, informing customers about different innovations, recovering from the problems of service standards, composing servant leaders, implementing the concept of fair play, and to foster the concept of teamwork. Four of these components are recovering: listening to customers' complaints, impressing customers with innovative solutions, addressing service standards issues, and implementing the concept of fair play. These components are involved in forming comprehension about customers' expectations, sensations, and also assembling or gathering them. All of these fields are focused on the quality of consumer surveys. There are responses related to the significance of varied views of airline service, food alternatives, comfort level, and in-flight entertainment issues, which are asked of the airlines for ranking them. All three components, fostering teamwork, listening to employees, and forming servant leaders, are activities that are indirectly monitored by customers. These activities are designed to develop employee spirit and contribute to a total quality culture. The remaining three components aim to ensure trustworthy service, maintain basic service standards, and demonstrate reliability and consistency in service judgment through the analysis of data from the Air Travel Consumer Report.

In addition to the issues identified in the 1997 Frequent Flyer Survey, the top three factors contributing to overall airline contentment were examined: on-time performance, schedule-flight accommodation, and airport check-in, which are key aspects of basic service standards and service design. <sup>3</sup>

### Utilized Variables

Six parameters are used in this research to calculate the efficiency and consistency of the efficiency levels of network carriers. These parameters are: the number of passengers carried (PC) and passenger kilometres flown (PKF) used as outputs to measure the performance of any network carrier. Available seat kilometers (ASK), passenger tonne kilometer performed in thousands (PTK), passenger load factor (PLF), and kilometers flown thousands (KF) are the parameters used as inputs to calculate the network carriers' efficiency and consistency of efficiency in order to contribute to the literature on network carrier airline industry related with the term of civil aviation in general.

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<sup>2</sup> Zagat (1992). Zagat United States Travel Survey, Zagat, New York.

<sup>3</sup> Frequent Flyer. (1997). The people's choice, Frequent Flyer, June 24-26

## Methodology and Data

Using information from IATA and annual reports, this study evaluates the effectiveness of 152 network airlines between 2003 and 2013<sup>4</sup>. The analysis uses passenger load factor, available seat kilometers, and passenger tonne kilometers as inputs and passengers carried as the output. All variables were converted to their natural logarithms in order to account for significant numerical differences. Three primary steps comprised the methodology: First, a Pearson's correlation analysis is used to determine whether the variables are related; second, a Data Envelopment Analysis (DEA) with bootstrapping is used to determine input-oriented efficiency scores under different returns-to-scale assumptions; and third, a k-means clustering of the carriers' coefficient of variation in efficiency is used to classify them into three groups: low efficiency/high volatility, balanced efficiency/volatility, and high efficiency/low volatility.

This study examined data for 152 network carriers over the 11-year period from 2003 to 2013 in order to evaluate airline efficiency over time. The performance output identified by the model is passengers carried (PC). The airlines use passenger load factor (PLF), available seat kilometers (ASK), and passenger tonne-kilometers (PTK) as inputs. Natural logarithms were used to transform all four variables because of the notable scale differences.<sup>5</sup>

A sequential approach was taken. First, Pearson's correlation coefficients were calculated to identify and steer clear of issues with perfect collinearity between variables. Second, we used Data Envelopment Analysis (DEA) to estimate efficiency. This input-oriented DEA was enhanced by incorporating a bootstrapping algorithm to generate confidence intervals for the efficiency coefficients, under the assumptions of constant, variable, and non-decreasing returns to scale.

The stability of each carrier's efficiency over time was assessed by calculating the coefficient of variation (CV<sup>6</sup>) for their scores after the efficiency calculations were completed. An airline's average efficiency and performance volatility are effectively balanced by this standard deviation-to-mean ratio. Based on their CVs, the carriers were then divided into three groups using a k-means clustering algorithm, which produced clusters characterized by low efficiency/high volatility, moderate efficiency/moderate volatility, and high efficiency/low volatility.

### Robust Data Envelopment Analysis

Data Envelopment Analysis (DEA) is a non-parametric method used to measure the relative efficiency of decision-making units (DMUs). DEA is primarily aimed at quantifying the relative efficiency of DMUs -like companies, educational institutions, medical facilities, or airlines- that combine several resources to generate several outputs. DEA is one of the non-parametric methods based on linear programming that builds an efficiency boundary from the top-performing DMUs and ascertains the nearness of each unit to this boundary, not requiring any pre-specified weights or functional forms. It distinguishes between units that are efficient and inefficient, sets performance standards, and even indicates input cuts or output growth necessary to reach efficiency. However, the standard DEA models are sensitive to data uncertainty and outliers. Robust Data Envelopment Analysis (RDEA) addresses this issue by incorporating uncertainty into the model, providing more stable and reliable efficiency scores.

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<sup>4</sup> <https://www.iata.org/en/about/worldwide/europe/value-of-aviation/>

<sup>5</sup> For intermittent missing data points, we used mean imputation based on the specific carrier's values from adjacent years to maintain the integrity of the time-series analysis.

<sup>6</sup>  $CV_i = \sigma_i / \bar{X}_i$ , the ratio of standard deviation to mean in which  $i = \{1, \dots, 9\}$ .

### The Standard CCR Model

The efficiency of a specific DMU, denoted as  $DMU_o$ , is calculated by solving the following linear programming problem. Let's assume there are  $n$  DMUs, each using  $m$  inputs to produce  $s$  outputs.

Let:

- $x_{ij}$  be the amount of input  $i$  for  $DMU_j$ .
- $y_{rj}$  be the amount of output  $r$  for  $DMU_j$ .
- $u_r$  be the weight for output  $r$ .
- $v_i$  be the weight for input  $i$ .

The objective of the CCR model is to maximize the efficiency ratio of  $DMU_o$ :

$$\max \theta = \frac{\sum_{r=1}^s u_r y_{ro}}{\sum_{i=1}^m v_i x_{io}} \quad (1)$$

Subject to:

$$\frac{\sum_{r=1}^s u_r y_{rj}}{\sum_{i=1}^m v_i x_{ij}} \leq 1, \quad j = 1, \dots, n \quad (2)$$

$$u_r, v_i \geq 0$$

This fractional problem can be transformed into a linear programming problem:

$$\max \sum_{r=1}^s u_r y_{ro} \quad (3)$$

Subject to:

$$\sum_{i=1}^m v_i x_{io} = 1 \quad (4)$$

$$\sum_{r=1}^s u_r y_{rj} - \sum_{i=1}^m v_i x_{ij} \leq 0, \quad j = 1, \dots, n \quad (5)$$

$$u_r, v_i \geq 0$$

### Robust DEA with Interval Data

Now, let's consider the case where the input and output data are not known precisely but are assumed to lie within certain intervals. This is a common approach to robust DEA.

Let the uncertain data be represented by intervals:

- $\tilde{x}_{ij} \in [x_{ij}^L, x_{ij}^U]$
- $\tilde{y}_{rj} \in [y_{rj}^L, y_{rj}^U]$

To find a robust efficiency score  $DMU_o$ , we can formulate the problem from a worst-case perspective. We want to find the efficiency  $DMU_o$  under the most unfavorable realization of the data for  $DMU_o$  and the most favorable realization for all other DMUs.

The robust counterpart of the CCR model can be formulated as follows:

$$\max \theta$$

Subject to:

$$\sum_{r=1}^s u_r y_{ro}^L - \theta \sum_{i=1}^m v_i x_{io}^U \leq 0 \quad (6)$$

$$\sum_{r=1}^s u_r y_{rj}^U - \sum_{i=1}^m v_i x_{ij}^L \leq 0, \quad j = 1, \dots, n, \quad j \neq o \quad (7)$$

$$\sum_{r=1}^s u_r y_{ro}^L - \sum_{i=1}^m v_i x_{io}^U \leq 0 \quad (8)$$

$$\sum_{r=1}^s u_r = 1 \quad (9)$$

$$u_r, v_i \geq 0$$

This formulation ensures that the efficiency of  $DMU_o$  is maximized while considering the worst possible values for its own data and the best possible values for all other DMUs' data within their respective uncertainty sets. This provides a lower bound on the efficiency of  $DMU_o$ , making the assessment more robust.

The analysis via Data Envelopment Analysis (DEA) was performed on R with the rDEA package, which is capable of performing input-oriented DEA models at constant (CRS), variable (VRS), and non-decreasing returns to scale (NDRS) for the purpose of the robustness assessment of efficiency scores and to deal with sampling variability. The decision to use  $k = 3$  clusters was the result of a combination of quantitative validation and ease of interpretation. The elbow method (which plots the within-cluster sum of squares against  $k$ ) indicated a clear inflection point at  $k = 3$ , after which the explained variance increased only marginally. This was confirmed by the silhouette analysis which showed that  $k = 3$  had the highest average silhouette width (0.52), meaning that the clusters were quite separated from each other and also very uniform and compact. Moreover,  $k = 3$  created clusters that were highly interpretable from the standpoint of airline performance—“Better,” “Slightly good,” and “Worst,” which were, in turn, quite similar to the theoretical assumptions about efficiency and stability patterns. Lower  $k$  clusters were lacking in precision whereas higher values for  $k$  resulted in creating either too much fragmented or too much overlapping groups with not much of a practical distinction.

## Results

To scale the variables in a lower range and linearize them against both extreme values (outliers) and strong volatility, the variables PC, PTK, ASK, and PLF used in this study are converted into their natural logarithm. Table 1 below provides descriptive statistics for the data:

**Table 1.***Descriptives of the Data Set*

Variable	Obs.	Min	P25	Median	Max	SD
PC	1,672	4.7100	15.0100	14.9500	18.6100	1.5710
PTK	1,672	1.7920	13.0800	12.9800	17.2300	1.7820
ASK	1,672	4.2340	15.7900	15.7100	19.6700	1.7240
PLF	1,672	0.0070	0.7141	0.7085	1.7470	0.0945
PKF	1,672	4.1430	15.4500	15.3500	19.4800	1.7960
KF	1,672	4.1740	10.8100	10.7700	14.4300	1.4870

Note. All variables are taken as natural logarithms. Created by the author using R statistical software.

It is evident that the data are somewhat normalized because the median and mean are so near to one another. To avoid the collinearity issue, pairwise correlations are calculated as shown in Table 2:

**Table 2.***Pearson Correlations of variables*

	PTK	ASK	PLF	PKF	KF
PTK	0.9059***				
ASK	0.9124***	0.9907***			
PLF	0.4439***	0.5211***	0.4641***		
PKF	0.9136***	0.9940***	0.9976***	0.5140***	
KF	0.9539***	0.9439***	0.9487***	0.4328***	0.9461***

Significance levels \*, \*\* and \*\*\* denote .10, .05, .01 respectively.

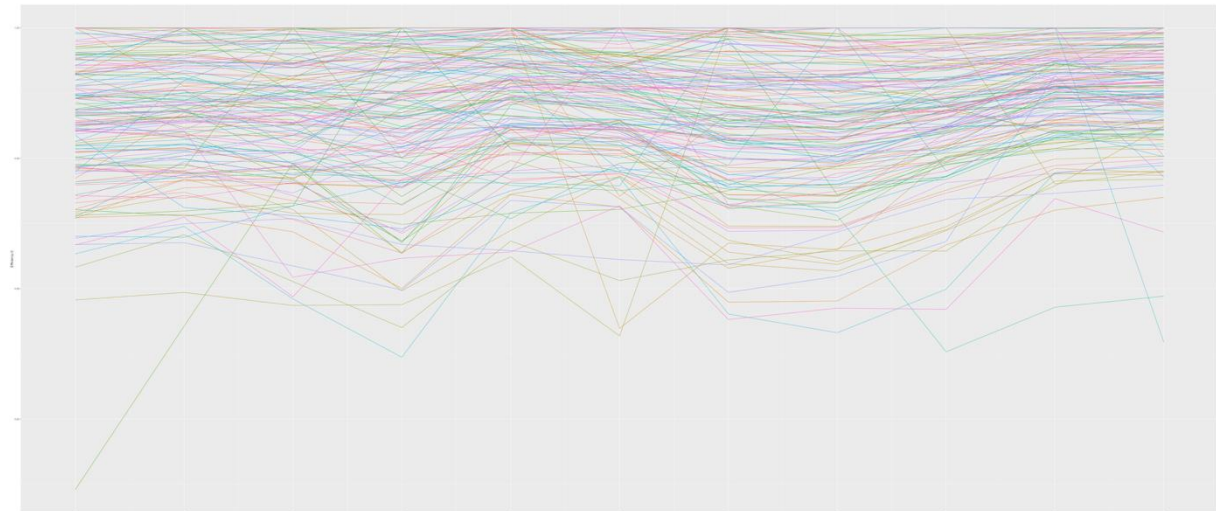
Note. Created by the author using R statistical software.

PTK and ASK have the highest correlation coefficient. Since Table 2 lacks perfect collinearity, they can be combined in the DEA to determine efficiencies. Three assumptions regarding returns to scale -constant, variable, and non-decreasing- are made when running DEA under input-oriented methodologies in order to obtain these coefficients.

Firms' efficiency scores are displayed in Figures 1, 2, and 3 based on assumptions about constant, variable, or non-decreasing returns to scale. The Appendix provides a summary of the findings.

**Figure 1**

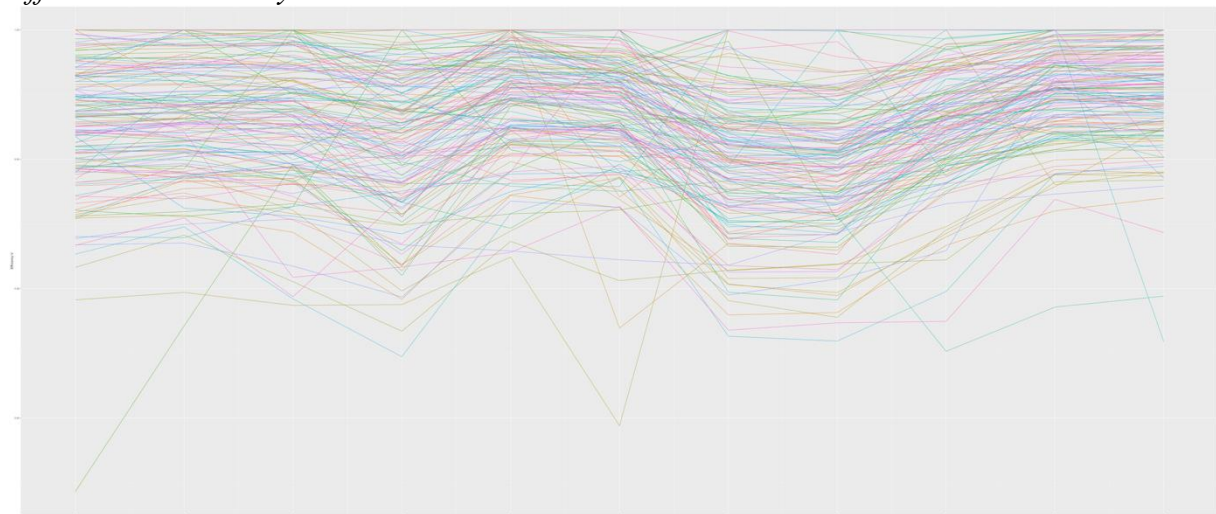
*Efficiencies over the years with Constant Returns to Scale*



Note. This figure was created via R-Studio, where Arial font customization is not supported.

**Figure 2**

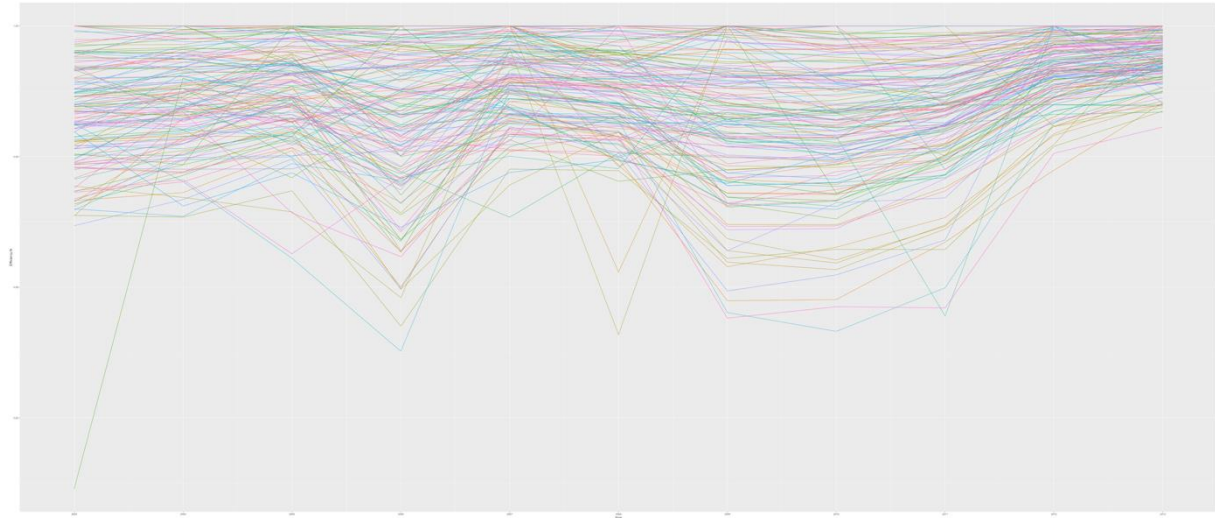
*Efficiencies over the years with Variable Returns to Scale*



Note. This figure was created via R-Studio, where Arial font customization is not supported.

### Figure 3

#### *Efficiencies over the years with Non-increasing Returns to Scale*



Note. This figure was created via R-Studio, where Arial font customization is not supported.

The results clearly show that the figures showing the pattern of efficiencies over time are comparable in terms of constant and non-decreasing returns to scale (Figures 1 and 3). With the exception of seven low-cost carriers, two of them consistently perform better and earn the highest efficiency ratings. The rest show at least a slight decline in one or more years.

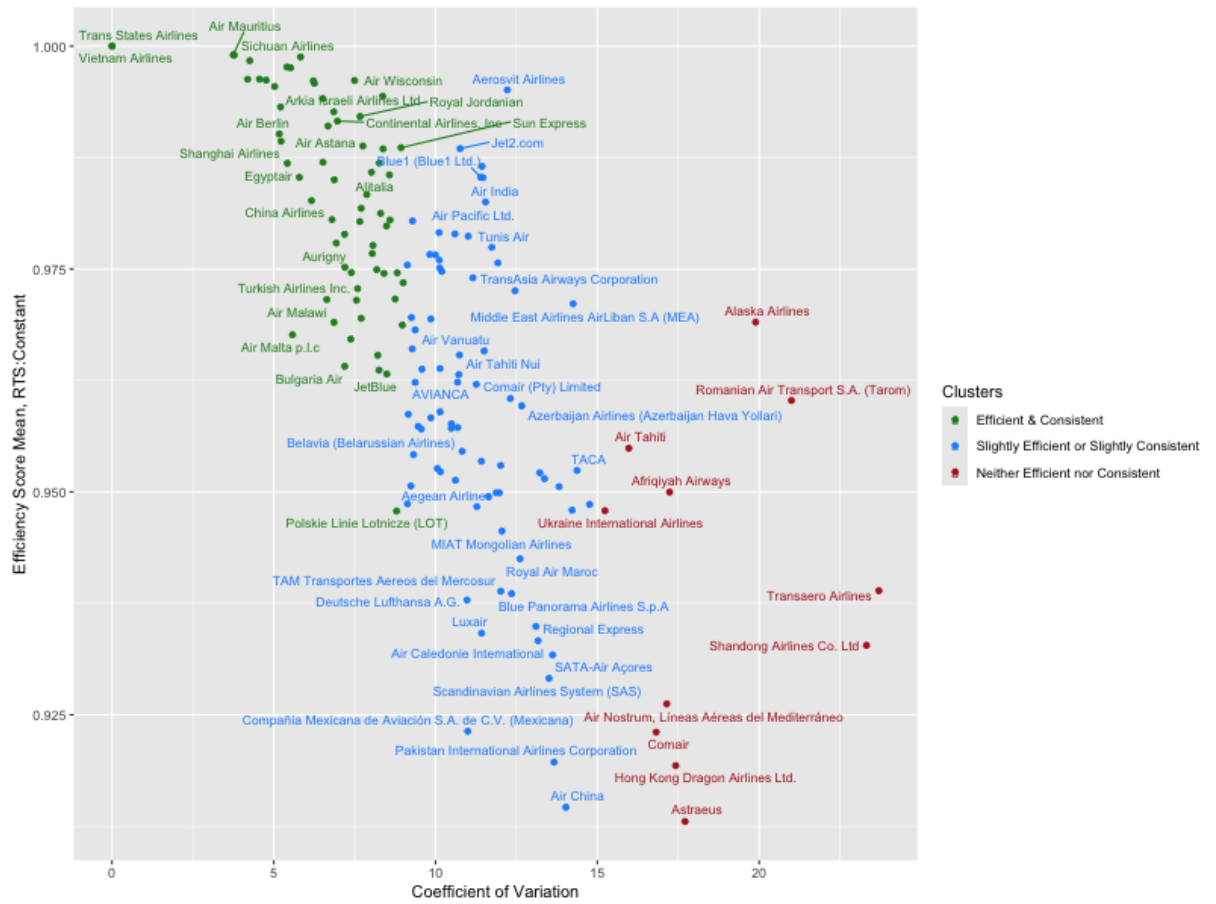
The mean efficiencies and changes in efficiency scores over time are also the main topics of this study. This is accomplished by calculating their means and variances over their estimated efficiency scores. Patterns are examined using the coefficient of variation formula to see if they hold true over time, change, or stay the same. CV can be used to examine stabilization because it is less susceptible to consistency issues. If the airline is less efficient, CV suffers. Once more, if the airline's efficiency score is unstable over time, CV falls because the square root of the variance falls. Their resumes are then grouped using k-means clustering, a clustering algorithm based on centroids. It is assumed that there are three clusters because any number less than or greater than three does not produce satisfactory results. Authors can give the clusters the following names:

These are the clusters;

1. Better, meaning the airline is less erratic but has higher efficiency ratings.
2. Slightly good, meaning that the airline's efficiency ratings are either marginally high or somewhat erratic over time.
3. Worst, meaning that despite its extreme volatility over time, the airline has comparatively lower efficiency scores.

**Figure 4**

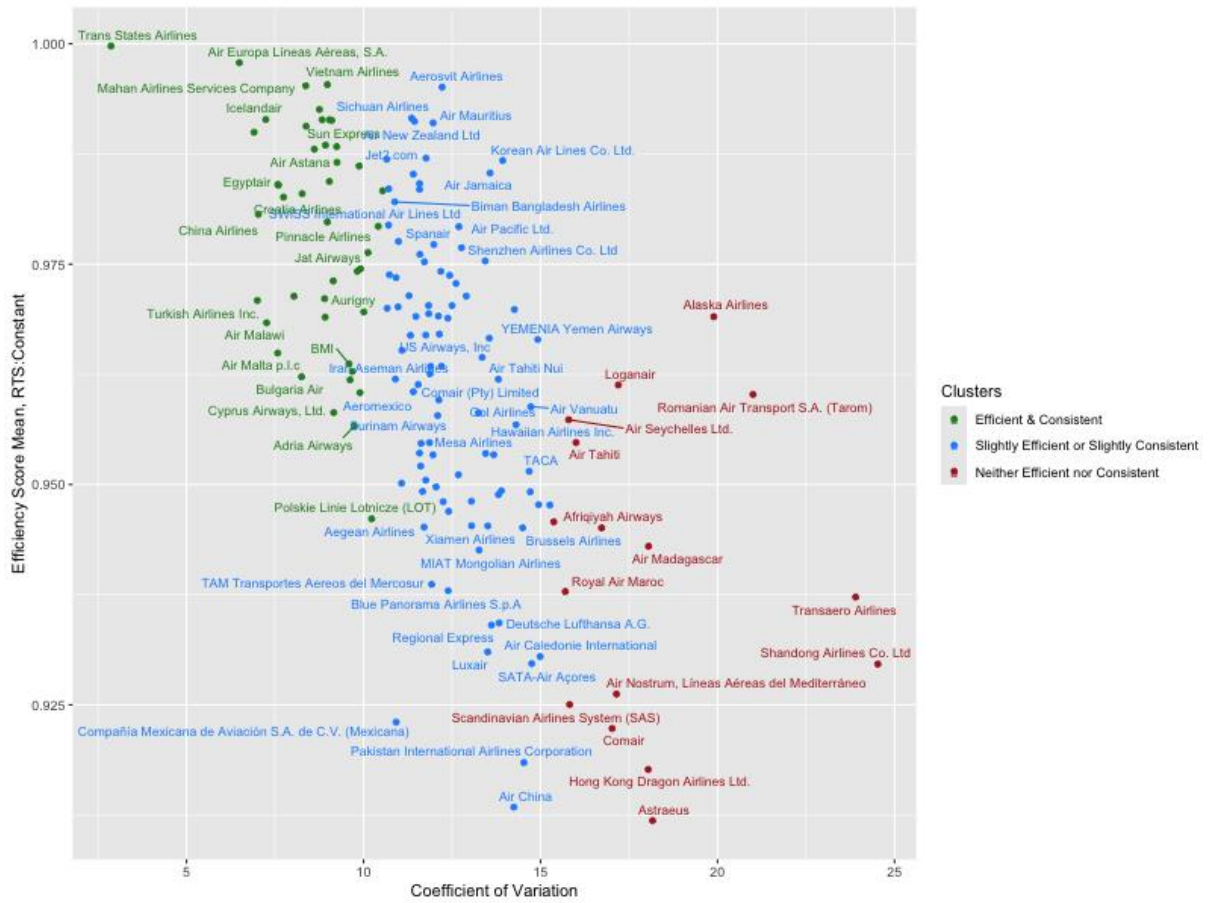
*K-means clusters of 152 FSNC with Constant Returns to Scale*



Note. This figure was created via R-Studio, where Arial font customization is not supported.

**Figure 5**

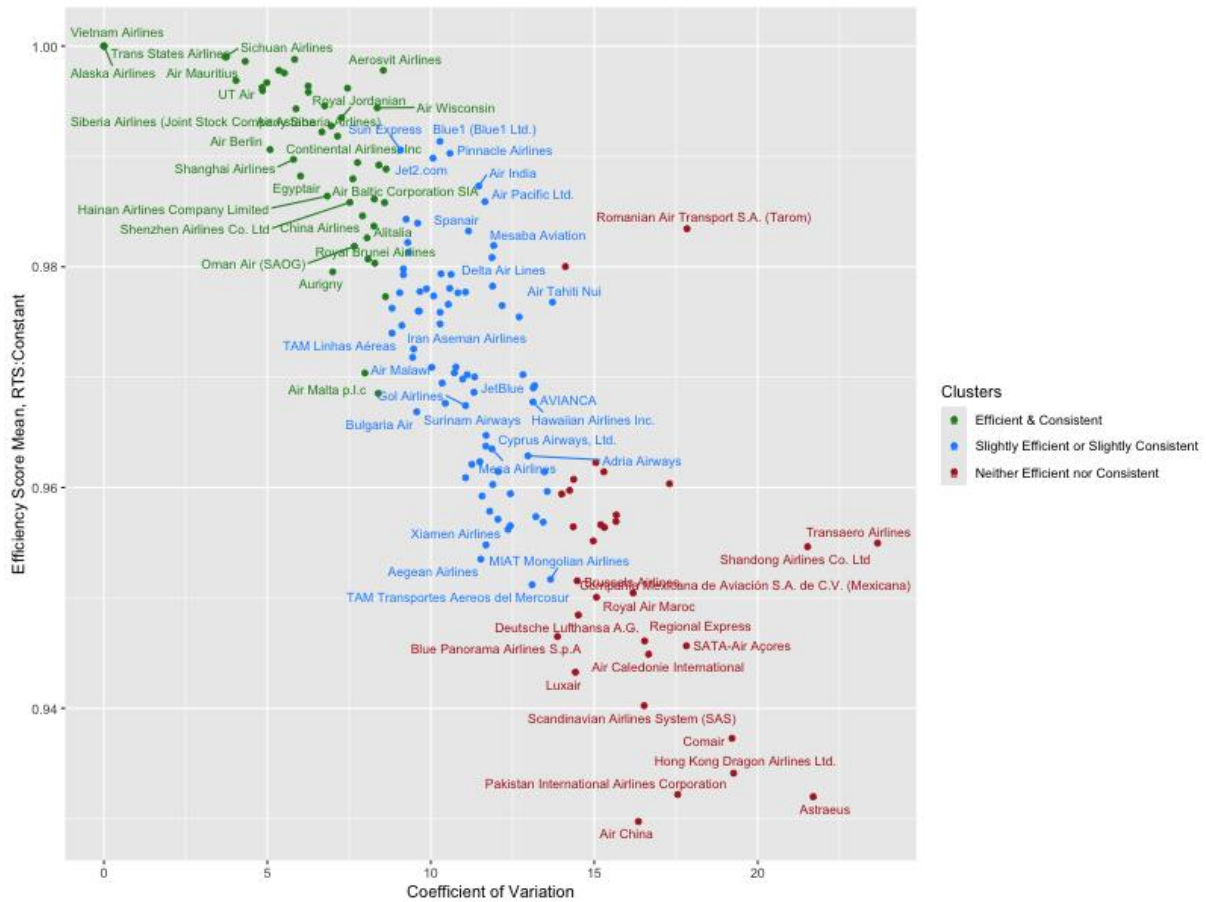
*K-means clusters of 152 FSNC with Variable Returns to Scale*



Note. This figure was created via R-Studio, where Arial font customization is not supported.

**Figure 6**

*K-means clusters of 152 FSNC with Non-increasing Returns to Scale*



Note. This figure was created via R-Studio, where Arial font customization is not supported.

### Conclusion

This study compares the efficiencies of 152 network carriers (FSNC). Efficiency can be defined as an airline's performance level. It can be claimed that this airline is successfully run if the efficiency level remains constant from year to year. The FSNC strategy is characterized by the highest level of comfort and the most efficient medium ticket prices. These airlines profit from the offtake of passengers by implementing a low fare strategy. By offering a low-cost ticketing strategy, these airlines hope to meet the demand for short-haul travel. For the past 25 years or so, the FSNC model has been in use. Trans States Airlines, Air Europa Líneas Aéreas, and Vietnam Airlines are the top FSNC airlines in terms of fleet size and strategy. This year was the cornerstone of FSNC Airlines' development. Airlines are now divided into three categories. First and foremost, the network strategy is a secondary FSNC strategy that is connected to an airline's primary mission of operating as a full-service carrier. Second, full-service carriers apply high ticket prices to their passengers by using the high comfort level method. Finally, the focus of this study is the FSNC strategy, which has to do with airlines that use a low-level comfort and low ticket fare approach. The success of an airline is defined by two broad topics. Seat spacing, seat width, the maximum baggage policy, the weight of luggage permitted in the cabin, in-flight entertainment, the number of restrooms per person, and other factors are all part of the service level. The degree of comfort in applications is gauged by these factors. For FSNC airlines, service level is not a determining measurement value. Second, the

parameters of available seat kilometers (ASK), passenger load factor (PLF), passenger tonne kilometers (PTK), and number of passengers carried (PC) are all considered in the analysis of efficiency in this study. The other parameters are used as outputs, and only the PC parameter is used as an input. The PLF parameter is a percentage that ranges from 0 to 1, whereas the other parameters are large numbers that cannot be changed without the use of a transformation, such as a natural logarithm. In comparison to other airlines, Trans States Airlines, Air Europa Líneas Aéreas, and Vietnam Airlines are efficient and consistent from 2003 to 2013, according to the figures that determine the efficiency level. Trans States Airlines, Air Europa Líneas Aéreas, and Vietnam Airlines are some of the most well-known FSNC airlines. They all demonstrate the model by combining a sizable fleet with careful network planning. This timeframe was crucial to the development of FSNCs and established their fundamental position in the aviation world. These days, airlines usually fall into one of three strategic categories. The most important of these is the network strategy, in which the primary goal of an airline is to operate as a full-service carrier, a feature of the FSNC model, with supplementary tactics tailored to particular market demands or competitive positioning.

By adopting a robust quantitative methodology that incorporates Robust Data Envelopment Analysis (RDEA) and k-means clustering for airline performance assessment, this research significantly advances the aviation management field. The simultaneous application of the two methods renders the argument much stronger than the one made by the traditional models since they are capable of not only examining the actual efficiency but also checking its fluctuation over time. The study offers a precise standard for the comparison of the performance of the airlines against 152 other network carriers to the airline managers, illuminating the leading ones such as Trans States Airlines and Vietnam Airlines. Giving the "Better," "Slightly good," and "Worst" designations to airlines according to efficiency and stability, the study provides valuable information for strategic planning and operational improvement through clustering.

After analyzing these FSNC airlines, the data envelopment analysis is used in this study. To evaluate the consistency or variability of the efficiency models, CVs are calculated between years, using the efficiency coefficients from 2003 to 2013. This is in addition to the DEA. As can be seen, future research on full-service and low-cost carriers must examine their efficiency and consistency of efficiency to enlighten the literature on the airline industry, where such quantitative studies are relatively lacking compared to other disciplines.

The empirical backing for some important theoretical frameworks in aviation management is given by the results of this study and at the same time a new light is thrown on the concept of carrier stability. To be more specific, the "carriers-within-carriers" (CWC) strategy analyzed by Morrell (2005) and Graham and Vowles (2006) gets confirmed through the high efficiency and consistency scores of the Full-Service Network Carriers (FSNCs) such as Vietnam Airlines and Air Europa. While the studies of Mason (2000, 2001) and Evangelho et al. (2005) suggest that the passenger segmentation is different according to the business travelers resorting to the service on FSNCs and leisure travelers going for the lowest cost on LCCs, our Robust DEA findings imply a convergence. The most efficient FSNCs in our 'Better' cluster of efficiencies seem to be those that have been able to implement LCC-like cost savings (with increased ASK and PLF inputs) without giving up the service differentiation that is crucial for the long-haul market, a point made by Acar and Karabulak (2015). Also, if O'Connell and Williams (2005) attributed the competitive threat LCCs pose to legacy carriers, then our clustering analysis adjusts this narrative by revealing that FSNCs are not uniformly inefficient; the truth is that efficiency is highly stratified with network carriers at the top level showing a resilience that contests the idea of inevitable LCC dominance in all markets.

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## Appendix

### Appendix 1:

#### Average Efficiency Scores of Network Carriers over 2003-2013

Mean.C	Mean.V	Mean.N	Firm
0,95705575	0,9566409	0,96287064	Adria Airways
0,98696812	0,98403762	0,98797027	Air Baltic Corporation SIA
0,97673552	0,97015423	0,9776523	Malmö Aviation Schedule A.B.
0,97163218	0,96705873	0,97587599	Meridiana S.p.A.
0,95830606	0,95352073	0,96350595	Mesa Airlines
0,97867898	0,97536078	0,98192598	Mesaba Aviation
0,94560756	0,94255515	0,95168492	MIAT Mongolian Airlines
0,97109926	0,96985445	0,98002354	Middle East Airlines AirLiban S.A (MEA)
0,94990324	0,94804397	0,95686436	Monarch Airlines
0,96228729	0,96041367	0,96763442	Myanmar Airways Int.
0,98180412	0,96958335	0,98185481	Oman Air (SAOG)
0,91969541	0,91845138	0,93219029	Pakistan International Airlines Corporation
0,99014511	0,98332174	0,99062321	Air Berlin
0,97459666	0,96695297	0,97623979	Philippine Airlines, Inc.
0,98650402	0,97929049	0,99028115	Pinnacle Airlines
0,94786415	0,94611318	0,95653884	Polskie Linie Lotnicze (LOT)
0,95764245	0,95474483	0,96143516	Qatar Airways Company (W.L.L)
0,93491825	0,934046	0,9460991	Regional Express
0,96025811	0,96021918	0,98344676	Romanian Air Transport S.A. (Tarom)
0,95225291	0,95014962	0,9561999	Rossiya - Russian Airlines
0,94249395	0,93785645	0,95006353	Royal Air Maroc
0,9805363	0,97373326	0,98262375	Royal Brunei Airlines
0,99210617	0,99065116	0,99350717	Royal Jordanian
0,93331297	0,93047655	0,94490003	Air Caledonie International
0,93172694	0,92967885	0,94565735	SATA-Air Açores
0,96955916	0,9689855	0,9748196	Saudi Arabian Airlines
0,92909637	0,9250381	0,94024119	Scandinavian Airlines System (SAS)
0,93278686	0,92962059	0,95463931	Shandong Airlines Co. Ltd
0,98933107	0,98299567	0,98973347	Shanghai Airlines
0,98500332	0,97687177	0,98583566	Shenzhen Airlines Co. Ltd
0,99316458	0,98996477	0,99432084	Siberia Airlines (Joint Stock Company Siberia Airlines)
0,99897916	0,99156699	0,99902299	Sichuan Airlines
0,99765587	0,99255125	0,9977976	Silkair (Silkair (Singapore) Private Limited)
0,97892797	0,97758001	0,98324163	Spanair
0,91463958	0,91339944	0,92973988	Air China
0,99582791	0,98834174	0,99582791	SriLankan Airlines Ltd.
0,98859624	0,98850446	0,99057837	Sun Express
0,96316314	0,95782518	0,96472476	Surinam Airways
0,98554373	0,97943136	0,98581981	SWISS International Air Lines Ltd

0,95240784	0,95149908	0,95662765	TACA
0,97280235	0,97136322	0,97398557	TAM Linhas Aéreas
0,93886493	0,93867543	0,95119483	TAM Transportes Aereos del Mercosur
0,95296519	0,94916865	0,96225941	TAP-Air Portugal
1	0,99975229	1	Trans States Airlines
0,93891845	0,93722587	0,95496348	Transaero Airlines
0,998773	0,99785855	0,99878774	Air Europa Líneas Aéreas, S.A.
0,97255852	0,9713728	0,97545902	TransAsia Airways Corporation
0,97743764	0,97418758	0,97931426	Tunis Air
0,97157441	0,97087981	0,97597556	Turkish Airlines Inc.
0,94789428	0,94767357	0,95751626	Ukraine International Airlines
0,95214788	0,94885854	0,95974463	United Airlines
0,97150389	0,96443065	0,97468814	US Airways, Inc
0,99628143	0,99138425	0,99687794	UT Air
1	0,9953764	1	Vietnam Airlines
0,98879346	0,98354435	0,98944629	Virgin Atlantic Airways
0,96938969	0,96257432	0,97039425	Vladivostok Air JSC
0,98524607	0,98414367	0,98731881	Air India
0,97450845	0,9714126	0,97775452	Wideroe Flyveselskap A/S
0,95130413	0,94531517	0,95479873	Xiamen Airlines
0,97472906	0,96645013	0,97824731	YEMENIA Yemen Airways
0,99609492	0,98534273	0,99637811	Air Jamaica
0,94834599	0,94529356	0,9564479	Air Macau Company Limited
0,95058844	0,94299639	0,95638839	Air Madagascar
0,96901839	0,96834864	0,97179046	Air Malawi
0,9486663	0,94516465	0,95350535	Aegean Airlines
0,96762331	0,96492206	0,97037722	Air Malta p.l.c
0,99902633	0,9910335	0,99902633	Air Mauritius
0,99836389	0,99120747	0,99861185	Air New Zealand Ltd
0,92622886	0,92622886	0,96033804	Air Nostrum, Líneas Aéreas del Mediterráneo
0,98251459	0,97925764	0,98590557	Air Pacific Ltd.
0,96534517	0,95734596	0,97022905	Air Seychelles Ltd.
0,95489526	0,95475645	0,96142288	Air Tahiti
0,96581167	0,96194238	0,97679405	Air Tahiti Nui
0,96604155	0,9588299	0,96982907	Air Vanuatu
0,99437588	0,99131465	0,99440454	Air Wisconsin
0,96531739	0,96134401	0,96946341	Aer Lingus p.l.c.
0,96903814	0,96903814	1	Alaska Airlines
0,98334777	0,97525954	0,98368566	Alitalia
0,97662888	0,9688708	0,97804477	American Airlines Inc.
0,97764278	0,97347217	0,9798121	American Eagle
0,99262793	0,98654969	0,99276659	Arkia Israeli Airlines Ltd
0,9130368	0,91186492	0,93198534	Astraeus
0,95343398	0,9492854	0,95964761	Atlantic Southeast
0,97789971	0,97108558	0,97953963	Aurigny

0,97567967	0,96911097	0,97648972	Austral Líneas Aéreas S.A.
0,96231132	0,96195751	0,96902696	AVIANCA
0,96713706	0,96283298	0,96853263	Aeroflot Russian Airlines
0,95965409	0,95337133	0,96141944	Azerbaijan Airlines (Azerbaijan Hava Yollari)
0,98584444	0,97723428	0,9861358	Bangkok Airways Co. Ltd
0,95418757	0,95049001	0,96027601	Belavia (Belarussian Airlines)
0,98688409	0,98206957	0,98885261	Biman Bangladesh Airlines
0,9506653	0,94695022	0,95712186	Binter Canarias, S.A. Unipersonal
0,93859192	0,93794434	0,94650054	Blue Panorama Airlines S.p.A
0,97658944	0,97030084	0,97800263	Blue Wings AG
0,98528864	0,9852155	0,99136673	Blue1 (Blue1 Ltd.)
0,96376554	0,96369069	0,9700284	BMI
0,94795344	0,94509211	0,95154805	Brussels Airlines
0,98123485	0,97611291	0,98431181	Aerolíneas Argentinas
0,96408343	0,96222614	0,96686487	Bulgaria Air
0,97457185	0,97309875	0,97735995	Caribbean Airlines
0,98266515	0,98065848	0,98461114	China Airlines
0,99411539	0,98613986	0,99457973	China Eastern Airlines
0,98847379	0,98349047	0,98921738	China Southern Airlines
0,9230627	0,92231909	0,93727911	Comair
0,9604769	0,95959034	0,9692338	Comair (Pty) Limited
0,9571305	0,9511053	0,95923081	Compagnie Aérienne Corse Méditerranée
0,92316226	0,92303846	0,95045361	Compañía Mexicana de Aviación S.A. de C.V. (Mexicana)
0,95455363	0,95208596	0,95785233	Compañía Panamena de Aviación, S.A. (Copa)
0,96365536	0,96052383	0,97022097	Aeromexico
0,97519642	0,96938137	0,97927891	Condor
0,99158372	0,98438723	0,99183541	Continental Airlines, Inc
0,96817774	0,96340536	0,97091435	Continental Micronesia, Inc.
0,97401051	0,96659734	0,97771388	Corse Air International
0,98039197	0,97978677	0,98395947	Croatia Airlines
0,95870161	0,95816284	0,96374684	Cyprus Airways, Ltd.
0,95735253	0,95336363	0,96088932	Czech Airlines - CSA
0,97510645	0,97379499	0,98083694	Delta Air Lines
0,93787292	0,93429539	0,94844951	Deutsche Lufthansa A.G.
0,95263398	0,94973018	0,95944698	Donbass Eastern Airlines
0,99508376	0,99508376	0,9978066	Aerosvit Airlines
0,98685213	0,98396069	0,98822599	Egyptair
0,99628929	0,99137939	0,99669062	El Al Israel Airlines Ltd.
0,97543901	0,96692069	0,97599068	Estonian Air
0,97889067	0,97447624	0,98032901	Ethiopian Airlines Corporation
0,9790824	0,97030808	0,97936868	Eva Airways Corporation
0,96383819	0,95812715	0,96742611	Gol Airlines
0,97599896	0,96906608	0,97659956	Gulf Air Company G.S.C.
0,95721982	0,95356274	0,96233753	Hahn Air Lines GmbH
0,98528147	0,98261242	0,98640294	Hainan Airlines Company Limited

0,962069	0,95678179	0,96775628	Hawaiian Airlines Inc.
0,94998185	0,9450747	0,95692702	Afriqiyah Airways
0,91930308	0,91767114	0,93412042	Hong Kong Dragon Airlines Ltd.
0,98049918	0,97281224	0,98220236	Horizon Air
0,96870583	0,96341651	0,97089495	Iberworld Airlines
0,99546421	0,99141164	0,99596719	Icelandair
0,94859814	0,94770796	0,95515983	Iran Air, The Airline of the Islamic Republic of Iran
0,96946826	0,96522577	0,97255241	Iran Aseman Airlines
0,97983047	0,97631419	0,98129879	Jat Airways
0,95148363	0,94576392	0,96073735	Jet Lite (India) Ltd
0,98850582	0,98690868	0,98984275	Jet2.com
0,96322598	0,96188226	0,96863461	JetBlue
0,99103415	0,98804801	0,99222115	Air Astana
0,94948609	0,94921257	0,957361	Kenya Airways Ltd.
0,99756581	0,98676064	0,99756581	Korean Air Lines Co. Ltd.
0,99618244	0,98702885	0,99624718	Kuwait Airways Corporation
0,95896998	0,95466056	0,96210058	LAM - Linhas Aéreas de Moçambique
0,97492631	0,96999294	0,97729827	Lan Airlines S.A
0,97346259	0,96129693	0,97765155	Loganair
0,93415602	0,93100383	0,94326837	Luxair
0,99613525	0,99524314	0,99618653	Mahan Airlines Services Company
0,98032055	0,97419391	0,9807103	Malaysia Airline System Berhad
0,94991188	0,94810361	0,95941762	MALEV p.l.c. - Hungarian Airline Public Ltd. Co.

Notes. The capital letters after the variables with a “.” C, V and N indicate returns to scales which are constant, variable and non-decreasing respectively for Robust DEA.

All efficiencies are calculated with 1000 bootstrapped iterations to get robust coefficients

## **Information About the Article/Makale Hakkında Bilgiler**

### **The Ethical Rules for Research and Publication / Arařtırma ve Yayın Etięi**

The author declared that the ethical rules for research and publication followed while preparing the article.

Yazar makale hazırlanırken arařtırma ve yayın etięine uyulduęunu beyan etmiřtir.

### **Conflict of Interests/ ıkar atıřması**

The author have no conflict of interest to declare.

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**Research Article**

**Placating: Satir's Argument with African Spouses of Nigerian Prisoners as a  
Pinch of Salt<sup>a</sup>**

**Christian Matthew Adetunji<sup>b</sup> & Anne Gathoni Wambugu<sup>c</sup>**

**Abstract**

**Introduction:** This qualitative phenomenological study applies Virginia Satir's Personal Iceberg Model to explore placating behaviours among the African spouses of incarcerated Nigerian men. Satir conceptualised placating as an incongruent stance characterised by excessive compliance and self-negation.

**Method:** Drawing on the hermeneutic phenomenology of semi-structured interviews and two focus-group discussions with 10 Yoruba women, this paper reinterprets placating within African cultural contexts that valorise endurance, harmony, and moral loyalty.

**Results or Findings:** These findings show that placating is an essential component of Yoruba cultural traditions, promoting flexibility and noble interrelatedness.

**Discussion or Conclusion:** Viewing this viewpoint (the Yoruba cultural-context perspective) via a different lens, such as Satir's, may result in a misconception. The study advances a culturally contextualised reading of Satir's humanistic theory and highlights its implications for cross-cultural family therapy.

*Keywords:* Satir Model, placating stance, hermeneutic phenomenology, African marriage, resilience, cultural congruence.

*JEL Codes:* J12, Z13, Z19, I31

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<sup>a</sup> This study is derived from the doctoral thesis titled "Underneath The Narratives: Consequences of Incarceration on Non-Incarcerated Partners of Inmates At Agodi-Ibadan Medium Correctional Facility, Nigeria", completed by the first author under the supervision of Dr. Anne Wambugu and Dr. Elizabeth Kamau at the Department of Psychology, Pan Africa Christian University, Kenya.

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**Araştırma Makalesi**

**Memnun Etme Davranışı: Nijeryalı Mahkûmların Afrikalı Eşleriyle Satir'in  
Tartışmasına Temkinli Bir Bakış<sup>a</sup>  
Christian Matthew Adetunji<sup>b</sup> & Anne Gathoni Wambugu<sup>c</sup>**

**Öz**

**Giriş:** Bu niteliksel fenomenolojik çalışma, hapsedilmiş Nijeryalı erkeklerin Afrikalı eşleri arasında görülen memnun etme davranışlarını incelemek için Virginia Satir'in Kişisel Buzdağı Modeli'ni uygulamaktadır. Satir, memnun etme davranışını, aşırı uyum ve benliğin inkârı ile karakterize edilen uyumsuz (incongruent) bir duruş olarak kavramsallaştırmıştır.

**Yöntem:** Bu makale, 10 Yorubalı kadınla yapılan yarı yapılandırılmış görüşmeler ve iki odak grup tartışmasının hermeneutik fenomenolojisinden yararlanarak, dayanıklılığı, uyumu ve ahlaki sadakati yücelten Afrika kültürel bağlamları içinde memnun etme davranışını yeniden yorumlamaktadır.

**Sonuçlar ya da Bulgular:** Bu bulgular, memnun etme davranışının Yoruba kültürel geleneklerinin temel bir unsuru olduğunu ve esneklik ile soylu bir karşılıklı bağlılığı teşvik ettiğini göstermektedir.

**Tartışma ya da Yapılan Çıkarımlar:** Bu bakış açısını (Yoruba kültürel bağlamdan gelen perspektif), örneğin Satir'in perspektifi gibi farklı bir mercekten değerlendirmek, yanlış bir anlamaya yol açabilir. Çalışma, Satir'in hümanist teorisinin kültürel bağlam içinde yorumlanmasını ileri sürmekte ve bunun kültürlerarası aile terapisi üzerindeki olası etkilerini vurgulamaktadır.

**Anahtar Kelimeler:** Satir Modeli, memnun etme tutumu, hermeneutik fenomenoloji, Afrika evliliği, dayanıklılık, kültürel uyum

**JEL Kodlar:** J12, Z13, Z19, I31

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## Introduction<sup>1</sup>

Virginia Satir's communication model remains foundational to humanistic family therapy, describing four incongruent stances—placating, blaming, super-reasonable, and irrelevant—contrasted with the congruent or “levelling” stance that represents authenticity (Satir, 1988; Satir et al., 1991). The placater suppresses emotion and over-accommodates others to maintain peace. While this approach may avert conflict temporarily, it can undermine self-esteem (Carlson et al., 2017). However, Satir's framework emerged within Western individualism, where autonomy defines maturity. In African collectivist settings, compliance may instead express moral strength and social responsibility. Few data-driven researches have employed Satir's theory in African traditions, especially focusing on partners who grappled with the pains of their husbands' imprisonment. This qualitative study investigates how women of detained spouses express placating tendencies and if these indicate disempowerment or resilience. This study may propose a modification to Satir's humanistic paradigm, suggesting that placating should be regarded not merely as a singular inclination but also as congruent with the collective moral ideals, beliefs, and obligations of all community members.

### Theoretical Framework: Satir's Model of the Whole Person

Satir defines a complete person as one whose perceptions, feelings, emotional expressions, expectations, innermost desires, and decisions are independent of others. Furthermore, this individual is aware of their potential and is prepared to embrace personal growth (Satir et al., 1991). The concept of a complete human implies a degree of independence. In Africa, individualism is practiced; however, it must function within the framework of communal norms and the ideal of unity (Biar, 2023; Molefe, 2017). Africa upholds and embodies the principle of interdependency, emphasising unity in spirit, soul, and body (Ajitoni, 2024; Ebong, 2020; Emedo, 2025; Gyekye, 1997; Mbiti, 1969). In other terms, appeasing what Satir refers to as incongruent wholesome congruence within Yoruba cosmology. Interpreting and applying Satir's incongruence stance to Yoruba African philosophy is inappropriate.

### Cultural Context: Yoruba Women and Relational Power

Yoruba women historically occupy pivotal roles in domestic, spiritual, and economic life as traders, priestesses, and chieftaincy holders (McIntosh, 2009). The fundamental condition of Yoruba women is characterised by mutual respect, self-esteem, morality, and loyalty. They are not second-class citizens or subordinate to men, despite the complex patriarchal stereotype. Conversely, Yoruba women uphold their dignity and serve as significant pillars of civic virtue (Sudarkasa, 1973; Familusi, 2012). Placating, therefore, reflects a moral expression of endurance and relational duty rather than emotional suppression. Within marriage, compliance preserves *iwà* (character) and *àṣẹ* (spiritual equilibrium), emphasising harmony over self-assertion—values parallel to Satir's congruence, differently framed. Yet this patience did not entail economic or political marginalisation. Ethnographic records show a gender system based on complementarity: Yoruba wives maintained independent income, property, and trade networks, ensuring interdependence without subordination (Sudarkasa, 1978; Apter, 2012). Wycliff (2025) asserts that patriarchal stereotypes that diminish Yoruba women's roles fail to acknowledge their significant contributions to their communities. Muse-Ajumobi and Akinyoade (2025), who challenge the narrative of inferiority regarding Yoruba women, support this assertion. The authors contend that the roles of Yoruba women encompass

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<sup>1</sup> Permission was obtained from the Ethics Committee of Pan Africa Christian University with the decision dated 13th July, 2022

supporting men, serving as sources of inspiration, and participating in warfare. Similarly, Awosusi (2025) examined the anatomy of Yoruba women's intentional activism during the colonial period. Ranging from trade and politics to warfare, Yoruba women, with the support of their husbands, performed brilliantly. According to Falola (2024), trading was the most important precolonial activity of Yoruba women. Prominent Yoruba women like the wife of Reverend Israel Oludotun Ransome-Kuti, Funmilayo Ransome-Kuti; the wife of Chief Obafemi Awolowo, Chief Hannah Idowu Dideolu Awolowo; Efunsetan Aniwura; and the wife of Oba Adele, Efunroye Tinubu did not only excel in politics; they also had an excellent record in business, yet they had a secure marital relationship (Dada, 2025; Dimonye & Ngwaba, 2025; Djie, 2025; Taiwo, 2025). In addition to this, it is pertinent to note that in Yoruba societies, Iyalode was an influential person due to her competence, capability, and responsibilities. Holders of Iyalode and Iyaloja titles integrate the endeavours of women across all dimensions, particularly commercial activities (Charles, 2021; Falola, 2024; Olawuwo, 2022; Oluwaniyi & Qudus, 2025). The exemplary prowess of the women and their commitment to their marital relationships do not support the narrative of placating or marginalisation suggested by the Satir model.

### **Method**

The study adopted a hermeneutic phenomenological design rooted in Heidegger's interpretive ontology and Husserl's descriptive method. The analytical potential offered by Heidegger's hermeneutic phenomenological approach (IPA) allowed the researchers to explore beyond the inquiry of "what" (i.e., the impact of the participants' partners' incarceration on them). For example, Heidegger's hermeneutic ontology underscores the concepts of "being in" and "self and world" (Smith & Fieldsend, 2021). This method let researchers interact with respondents and interpret how and why they were affected by their spouses' incarceration. The researchers used these foundations to enhance comprehension and augment the Satir theory in the investigation. The investigation was carried out at the Agodi-Ibadan medium correctional Centre, Nigeria. Semi-structured interviews and two focus-group discussions was used in this study as a data collection method, having obtained the permission from Ethics Committee of the Pan Africa Christian University with a decision on the date of 13<sup>th</sup> July, 2022. This qualitative research aimed to process the lived experiences of non-incarcerated partners of male prisoners at the facility.

To facilitate the sampling strategy, the director of the welfare office at Agodi-Ibadan medium correctional institution empowered the researchers to intentionally sample the non-incarcerated partners of detainees for this study, as per Bazem et al. (2021). The official in charge coordinated the enlistment of ten offenders who consented to have their non-incarcerated partners reached out to. The decision of the jailed partners aligns with the legal and cultural power of a Yoruba husband (Adebayo, 2021; Adegoke, 2021). The purposive sampling used in this study aligns with established purposeful sampling methodologies, including criterion sampling (Caskurlu et al., 2021), theoretical sampling (Levitt, 2021; Levitt et al., 2021), and convenience sampling (Golzar et al., 2022). The criteria for participant inclusion are women who were romantic partners or co-parents or those who were in a relationship with, separated from, or divorced from them before or during the jail period. Participants whose partners had fulfilled the conditions or had died in detention before the research were excluded.

The ten women in the study have visited their incarcerated partners at Nigeria's Agodi-Ibadan medium correctional facility. Their ages vary from 30 to 68. The minimum level of education attained was a primary school diploma, whereas the maximum was a master's degree. Two respondents were salaried employees, while eight operated personal companies. The

offences perpetrated by their associates encompass robberies, sexual assaults, drug-related crimes, land appropriations, and fraud. Only one partner of the respondents was convicted, while the others remained on trial.

These women, purposively selected for reflective capacity, participated in semi-structured interviews (30–60 minutes) and two focus groups of five participants each. (Creswell & David, 2018; McGregor, 2017). The researchers processed the information with the Interpretative Phenomenological Analysis (Larkin et al., 2011; Smith et al., 2021). The researchers repeatedly read the transcripts and applied inductive coding to identify key themes that emerged directly from the data, then synthesised these themes through a process of double hermeneutics to gain a more profound understanding. They also used reflexivity and peer debriefing to ensure credibility. Ethical approval was obtained from Pan Africa Christian University and the Oyo State Corrections Board; informed consent and confidentiality were observed.

## Results and Discussion

The findings and results shed light on the participants' views of their husbands, the effects of incarceration on their relationship prospects, and their beliefs regarding their incarcerated partners, society, and steadfast commitment and loyalty.

### The Birth of a Huge Vacuum

When the participants were asked to make sense of their partner's imprisonment, they said<sup>2</sup>:

“Oh, the emptiness.... I've lost all sense.” P.01

“My experience has been abysmal. ... I lost face everywhere....” P.02

“His detention... I am now a grass widow.” P.03

“Joy has eluded me since the day he was carted away from me.” P.04

"I am in a newer world than I have ever experienced in my nearly seven decades of life."  
P.05

“As for me, my autonomy to live as me has been temporarily tampered with.” P.06

“His incarceration has spelt doom, disaster... irrationality, loneliness, lack of sleep, and untold hardship await me and the children.” P.07

“I have lost weight...lost sleep...lost my friends...lost my freedom and privacy in the community.” P.08

“His incarceration has shown me that I am irrelevant to the home we built together...”  
P.09

“...His imprisonment woke the monster in him; he became a nuisance and a threat....”  
P 10

The participants' responses do not depict those who were marginalised or treated as less human. Rather, their husbands' incarceration seemed to have interrupted their socioeconomic

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<sup>2</sup> Codes such as ‘P.01’ and ‘P.02’ are used to anonymize the participants, where ‘P’ stands for ‘Participant’ and the numbers correspond to their order in the study.

dynamics, relationship status, and physical and mental health states. Their absence created an emptiness.

### **Shaming and Low-Self Esteem**

Even in their anger, frustration, pain, bitterness, grief and betrayal by their partners, the participants did not feel like second-class citizens, they said:

“Instinct would have hinted at this terrible incident. I should have done better.” P.03

“I am highly ridiculed. My personality is grossly insulted. I am abandoned by the people who once exalted me...I look stupid.” P.04

“People tease me when I walk in the neighborhood—“the wife of a fraudster’. I am castrated.” P.05

"I feel deeply hurt by my husband's disregard for me." P.06

“I am truly devastated, confused... I am overwhelmed. ... 14 more years to go!” P.07

“One thing I know is that I am traumatised and on autopilot. I can be honest here...” P.08

“I have been unwanted. I am treated as a plague. P.09

Rather, the findings show that the gap created by their partners’ incarceration has negatively impacted their social and mental health.

### **Enduring Emotional Loyalty and Identification**

The non-incarcerated partners perceive the phenomenon as more extraordinary than what marginalised women could express, despite the pains it causes, they said:

"...I believe he may have a backup plan. He is far smarter than he appears. He could be using me to score a cheap shot, or...using me as a shield..." P.01

"...You (co-participants)...said I shouldn't blame myself...I know how to reset his brain..." P.03

"Now that I am the wife of a rapist, I might be a target for reprisal... leaving me defenceless." P.04

"I am treated unfairly by society... I believe he is innocent. He was duped, and he fell for it..." P.05

"The grasses suffer when two elephants fight. Even if he is vindicated, we are witnessing a lose-lose situation here..." P.06

“...Everyone appears to be concerned with what they stand to gain from this situation. Predators can freely prey on unarmed prey at this time. " P.08.

"I know my husband is innocent. ...Is this how you (referring to the society) treat newcomers to your community?" I'm terrified..." P.09.

### **Perception of Phenomenon as More Extraordinary**

The non-incarcerated partners perceive the phenomenon as more extraordinary than what marginalised women could express, despite the pains it causes, they said:

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### **Unwavering Loyalty for Partners**

Despite adversity, participants expressed continued loyalty, affection, and admiration toward their incarcerated partners, they said:

"...I think I prefer his authority to his absence. I require his presence at home...the intimacy... He speaks the truth from the bottom of his heart. He is extremely intelligent. I fervently pray for his immediate release. This experience has actually made me to desire him, being the only man I have ever "known" (became intimate with)" P.04

"Right now, my top priority is to get him released. If that is done, I am confident that everything else will fall into place. I'm confident I'd be "fine" (intimate)..." P.05

"He's always my man, drug or no drug. He has always been there for me. ... has always "served me." (Intimate)..." P.06

"My definition of independence is not when I suddenly become the sole decision-maker. I prefer to be submissive and take his instructions, drawing on his wealth of experience and life exposure..." P.08

"All I care about is how to avoid suffering for ...my children and myself the rest of my life...Yes, I want him to be released on time...I want to live my life to the fullest" P.09

Such declarations demonstrate affective continuity and emotional identification. None of the women portrayed their partners as historically oppressive; rather, imprisonment amplified yearning and attachment.

### **Role Change**

During their new normal phenomenon, and as husbands grapple with freedom, the participants assumed new responsibilities which they have accepted enthusiastically, they said:

"I am wearing so many hats these days. I am both a father and a mother to my children, as well as my 'big child' in custody..." P.06

“.. I want to be here for him, to keep the children safe, to put food on the table, to pay school fees, so that he can serve his time here peacefully.” P.07.

“I just want to brace up and challenge all my anxiety, fear, and trauma. I have lost my temperament...concentrate on my daughter.....” P.08.

“I believe I can fortify myself and make it possible for my children to return to school..” P.09.

This attitude show resilience positive adjustment. This shows a complementing efforts to sustain the family, not an outlet to break loose from the shackles of slavery the that supposed placating would have brought upon them.

### **Self-Awareness and Post-Traumatic Growth**

Several women articulated new insights about self-reliance that emerged only after the incarceration, suggesting that prior dependence had been relationally harmonious, they said:

"I am for self-care. I shouldn't expect anything from others if I don't look inward first. ” P.01

"Safety. Yes, safety comes first. I wish I could wake up and pick up the shattered pieces of my life..." P.02

“All I want is that my husband continues to remember how much I am worth.” P03

"... I have already been crucified as the wife of the rapist. I'd like to disprove all of them...." P.04

“...I did not expect our old friends and families to follow in our biased society's footsteps...."P.05

“..... When he is released from here, I expect him to serve himself. My only wish for him is that he forget about me and focus on himself. Everyone should bear his father's surname. ....” P.10.

These reflections illustrate post-traumatic growth—a movement from dependence to self-definition prompted by crisis rather than by chronic subjugation.

### **Deriving Strength in Spirituality**

Southwestern Nigeria is known as a religious setting; it is therefore not surprising that the participants sought strength, courage, and hope from a superior being who can support them in this challenging situation, they said<sup>3</sup>:

“I have accepted his imprisonment and submitted to the will of God. I believe in the efficacy of prayer to sustain me. I am sure that God will intervene, strengthen and vindicate me so I can navigate this difficult time. I really wish all this wouldn't happen. All things work together for good. Surely, an end will come to it, and my stigmatisation will be turned into testimonies. God is my strength” (p. 4).

“I hate my situation. I hate my condition. My only solace is that while there is life, certainly there is hope. Although the road to survival is very tough, I have hinged my

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<sup>3</sup> In here, codes such as ‘p.4’ and ‘p.5’ are used to anonymize the participants, where ‘p’ stands for ‘participant’ and the numbers correspond to their order in the study.

hope on God who liberates. I believe it is God that sustains me despite my meagre income. He will sustain me. I have summoned up the courage to withstand and also developed the spirit of resistance to any form of aggression “ (p. 5).

“I have now put my faith in God since all channels I thought could be of help have proved abortive, and nothing positive came out of them” (p. 6).

“I have allowed the tide to lead me anywhere it wants. I do not have the inner stamina to fight against it. I have resigned myself to my fate. I believe it is the will of God for him to be in custody. Perhaps if he were out there, he could have been eliminated. The same God that knew about his arrest and incarceration would provide me the enablement to stay strong throughout this period” (p. 7).

“When all had failed me, I resorted to God, who will not abandon His children. While I should really be scared when there was a jailbreak at Oyo where many people lost their lives, my faith has grown to the extent that God watches him in prison and that He will not let evil befall him. That actually played out” (p. 8).

### **Thirst for Reunion and Intimacy**

The participants crave for warmth, bond and togetherness with their incarcerated partners, and not a freedom from servitude, they said :

"I have nostalgia for bedroom conversations when no one is spying. Here it is more like washing your dirty linen in public. I long for personal conversation with my husband" (p. 1).

"I need him to tell funny imaginary stories that no one knows where he obtains them from. I have missed his pampering. I want my circle of truth, my human resource manager, back. He is my confidant, business consultant, and planner. My trade has suffered; I need to get back on my feet" (p. 3).

"I simply desire for us to return to the state we have maintained for the past thirty years. I want a life free of suspicion, fear, agitation, and heartache. I want this matter resolved once and for all so that I can live an independent life" (p5).

“I have really missed him because we have done most things in common. Ever since his incarceration, there has been nobody to discuss important family matters with. The family project has been placed on hold. My children’s needs are not adequately provided for, nor are mine" (p. 6).

“I want to have him to myself, like in the past. I desire to take him away from where those girls of low morals will have unhindered access to him. I am scared that any of them could abduct him before I know if his clemency plea comes through. I do not want to be a loser; I would like to spend the rest of my life with him. Here in the yard, there is no privacy. I like to be able to talk to him as my husband and to hear him call me by my pet name and hold my hand. I miss hearing him speak like we did when we were alone. I long to be spoiled and pampered as in the past. I loved being his baby. He took me out and introduced me to his numerous friends as his queen. It drives me crazy when I remember those good times” (P. 7).

“I understand that I spent ample time seeking my husband’s freedom at the expense of my desire to spend time with him. His incarceration made me value the time we had spent together discussing trivial matters, arguing, planning, or parenting, time I had

never valued. What nostalgia! I have realised how helpless I am. I long to take care of him, to serve him his special meal and hot coffee in his special mug. I called him "old man" and followed him to the bedroom on Sunday afternoon. I missed his encouragement and pranks, hiding and grabbing me from behind. I long for his return home”(P. 8).

## Discussion

The aforementioned findings indicate participants' moral and relational narratives. Satir posits that congruent communication facilitates intervention and problem-solving, encompassing flexibility. Nonetheless, the participants' behaviours may be elucidated from a cultural perspective. In Yoruba cultural view, women are expected to exhibit submission in communication, as endorsed by traditional and societal norms. In other words, the Yoruba spouses of imprisoned prisoners demonstrate what Satir characterises as placating behaviour and diminished self-esteem; yet, this occurs beyond the framework of incongruence or marginalisation. Rather, it signifies a conscious acquiescence that conforms to societal conventions. These findings expand the Satir Model by illustrating that congruence can occur as collective rather than individual authenticity. It is wonderful to observe cultural dynamics when the participants expressed their loyalty despite their partners being from home: “I prefer his authority to his absence. I require his presence at home.” P.04; “He's always my man, drug or no drug. He has always been there for me; he has always "served me" (intimately). P.06; I want to be here for him...” P.07: “My definition of independence is not when I suddenly become the sole decision-maker. I prefer to be submissive.” P.08. Obviously, their assertion was not to spite their incarcerated partners but to sustain their fierce loyalty. In Yoruba ethics, perseverance and respect are not merely adaptive traits but also manifestations of moral agency (Familusi, 2012). This reinterprets Satir's concept that placaters suppress authentic emotions; within this framework, emotional repression is deemed both culturally and therapeutically permissible. Moreover, the data corroborate earlier anthropological research indicating that Yoruba women embody emotional and economic resilience (Sudarkasa, 1973; Byfield, 2003, 2021; Mosadomi, 2010).

This self-expansion does not indicate dependence; instead, it embodies a culturally embedded skill that promotes familial continuity. This corroborates assertion that spirituality and relational obligation constitute the foundation for women coping in crisis marriages. The results also challenge Western feminist notions of silence or endurance as forms of submission. In Yoruba cosmology, silence embodies power, patience (sùúrù), and wisdom, all of which are essential for maintaining communal harmony (Aboyeji, 2019; Adegbile, 2023). Therefore, we can interpret Satir's term "incongruent placation" as "ethical congruence" within this cultural context.

The participants' commitment to ensuring their partners' freedom transcends superficial expressions; it demonstrates a profound resolve. This statement could not have originated from a coerced or marginalised spouse: “...Currently, my top priority is to have him released...” This perspective may originate from a partner who values interdependence with her significant other. This approach is culturally appropriate within the Yoruba community and aligns with spiritual principles. (Ajala & Wulemat, 2013; Falola, 2024; Mbiti, 1969; Oláléyè et al., 2024; Olasunkanmi, 2014). Therapists providing interventions to Africans should incorporate these findings with Satir's transformational systemic therapy. Cultural competence is essential to prevent the imposition of Western solutions on Africa's distinct communal contexts. The outcome may negatively impact the client or diminish the efficacy of the intervention. This assertion is in consonance with the thoughts from the Satir Institute of the Pacific (2024), which

employs therapists who employ Satir's technique to engage with both the explicit content and the underlying narratives of their clients. This study introduces an Afro-phenomenological framework in which interpersonal relationships are essential to the notion of completeness. Placation is understood as a relational ethic that helps maintain stability during crises and serves as a potential resource for therapeutic transformation, rather than being regarded merely as a symptom to be addressed.

In conclusion, the interview excerpts above show that participants articulated their inner experiences and interactions with their partners in a mature, adaptable, and accountable fashion, conveying their emotions, perceptions, expectations, desires, and behaviours independently of external judgements regarding their positions.

### **Implications for Practice and Research**

Therapists serving African or diasporic clients must interpret placating within its moral framework. For instance, the Yoruba moral philosophy of 'omoluabi', derived from 'omo-ti-Olu-iwa-bi' (a child begotten by the master of character), represents a pragmatic individual whose existence is anchored in 'iwa rere' (good character), perceived as an intrinsic moral disposition that consistently manifests in behaviour, speech, and social interactions (Olanipekun, 2017). The notion encompasses qualities and virtues such as truth (otító), mutual respect (itẹ́rība), goodwill (inú rere), diligence, bravery, and sound judgement, together delineating moral perfection (Azenabor, 2022; Onamusi, 2020; Lawal, 2024).

Because clients are the experts of their narrative, phenomenon which looks like marginalization or placement as a second-class citizen symbolize must be taken with pinch of salt. What might seem like self-suppression in a specific geographical area may, in fact, signify self-control, dedication, and moral integrity. Integrating Satir's Transformational Systemic Therapy with Yoruba concepts such as iwà pèlẹ́ (gentle, balanced, morally upright character – Gbadegesin, 1991; Wiredu, 2004) and àṣẹ (vital spiritual and performative force – Drewal, 1989; Idowu, 1962) might augment ethnic consilience in therapeutic practices. It is essential for better comprehension of cross-ethnic studies to improve the analysis of how devotion, enhanced capacity, and community principles affect Satir's model. Thus, the creation of culturally sensitive congruence-assessment tools will positively impact both theoretical frameworks and practical applications.

### **Limitations**

This study focused on Yoruba women in Southwestern Nigeria. This constrains its universality. Similarly, the subjective nature of the word, grounded in lived experience, provides reports that may evoke sentiments. Consequently, future comparative research should expand the scope to include male views and employ mixed-method approaches for assessment

### **Conclusion**

Placating, according to Satir, may include diminished self-esteem. This phenomenological investigation, however, brings out the ethnic setting peculiar to Yoruba wives of incarcerated husbands at the Agodi-Ibadan correctional facility. The study revealed that Yoruba women, from time immemorial, are central to household, divine, and profit-making; respect their self-worth; and serve as indispensable supports of significant pillars of patriotism. For Yoruba women in the study, placating demonstrates a virtuous assertion of patience and commitment and not necessarily control. This discovery is significant because Satir's concept of 'placating' in the Eurocentric view is rooted differently in Yoruba philosophy, its comprehensive history, ethical imperatives, beliefs, and the obligations of

community members. Although the participants reported feeling emptiness, shame, low self-esteem, and abandonment by their partners, despite the artificial separations and gaps, they expressed unwavering loyalty for their incarcerated partners, preferring their authority over their absence and praying for their release. Their yearning, warmth, bonds, and togetherness with their incarcerated partners, rather than freedom from servitude, indicate that they remain loyal. This is a clear indication that, among the nonincarcerated Yoruba women, what Satir regards as placating symbolises noble courage and emotional intelligence rather than servility. Contextualising Satir's theory within an African relational ontology redefines congruence as harmony, endurance, and loyalty. Culturally grounded therapy must therefore read compliance not as weakness but as resilience embedded in moral character.

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13<sup>th</sup> July, 2022

**TO WHOM IT MAY CONCERN**

Dear Sir/Madam,

**RE: RESEARCH AUTHORIZATION & ETHICS CLEARANCE LETTER FOR  
ADETUNJI CHRISTIAN MATTHEW REG. NO: PMFT/11205/0/18**

Greetings! This is an introduction letter for the above named person a final year student at Pan Africa Christian University (PAC University), pursuing a Doctor of Philosophy in Marriage and Family Therapy (Phd).

He is at the final stage of the programme and he is preparing to collect data to enable him finalize on the dissertation. The dissertation title is ***"Perceived Effects of Incarceration on Non-Incarcerated Partners Using the Personal Iceberg Metaphor: Evidence from Partners of Inmates Serving at Agodi-Ibadan Correctional Centre of Nigeria."***

We kindly request that you allow him obtain a research permit so as to proceed and collect data to inform his research at Agodi-Ibadan Correctional Centre of Nigeria.

Warm Regards,   
PAN AFRICA CHRISTIAN UNIVERSITY  
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# NIGERIAN CORRECTIONAL SERVICE



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**OFFICE OF THE CONTROLLER OF CORRECTIONS  
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Our Ref:..... Your Ref:..... Date: 12th May, 2022  
23.....

THE HEAD OF DEPARTMENT,  
DEPARTMENT OF PSYCHOLOGY,  
PAN AFRICA CHRISTAIN UNIVERSITY,  
NAIROBI,  
KENYA.

## COMPLETION OF FIELD RESEARCH IN AGODI CUSTODIAL CENTRE OYO STATE.

This is to certify that Mr. **CHRISTIAN MATTHEW ADETUNJI** of Pan Africa Christian University, Nairobi has been permitted to conduct research at Agodi Correction Centre, Ibadan, Oyo State on the topic: **EFFECT OF INCARCERATION OF SELECTED NON-INCARCERATED PARTNERS OF INMATES AT AGODI IBADAN CORRECTIONAL CENTER OF NIGERIA: A Study of personal iceberg metaphor**, for the period ending **13th of May, 2022**

The field research was done and completely successful.

The department wishes him success in all his future endeavors.



DEPUTY S.P.I. OF STATE CORRECTIONS (RESEARCH)  
FOR: CONTROLLER OF CORRECTIONS  
OYO STATE COMMAND

## **Information About the Article/Makale Hakkında Bilgiler**

### **The Ethical Rules for Research and Publication / Arařtırma ve Yayın Etięi**

The authors declared that the ethical rules for research and publication followed while preparing the article.

Yazarlar makale hazırlanırken arařtırma ve yayın etięine uyulduęunu beyan etmiřtir.

### **Conflict of Interests/ ıkar atıřması**

The authors have no conflict of interest to declare.

Yazarlar ıkar atıřması bildirmemiřtir.

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The draft process of the manuscript/ Taslaęın Hazırlanma Sreci C.M.A./A.G.W., Data Collection/Verilerin Toplanması C.M.A., Writing The Manuscript/ Makalenin Yazılması C.M.A./A.G.W., Submit, Revision and Resubmit Process/ Bařvuru, Dzeltme ve Yeniden Bařvuru Sreci C.M.A.



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**Research Article**

**Analyzing the Impact of Economic and Social Dynamics on Crime Rates Using  
the System GMM Method**

**Zekiye Örtlek<sup>a</sup> & Abdullah Kılıçarslan<sup>b</sup>**

**Abstract**

**Introduction:** This study examines the impact of economic indicators—namely purchasing power, pollution levels, gross domestic product (GDP) growth rates, and the ratio of real estate prices to income—on crime rates. Given that these relationships may vary depending on regional differences or socio-political dynamics, a careful analysis of these factors is essential for developing effective policies and crime prevention strategies for decision-makers.

**Method:** The research investigates the relationships between indicators affecting crime rates (purchasing power index, pollution index, GDP growth rate, and ratio of real estate prices to income) and crime rates using annual data from 60 countries spanning the period 2018–2023. The causal relationship between variables was analyzed using the System Generalized Method of Moments (System GMM). To ensure sufficient observations for the System GMM methodology and enhance the model's predictive power, a comprehensive dataset encompassing the economic, social, and environmental diversity of the 60 countries was employed.

**Results or Findings:** The System GMM results indicate that the variables of purchasing power, GDP growth rate, pollution, and the ratio of real estate prices to income exert positive and statistically significant effects on crime rates.

**Discussion or Conclusion:** The findings suggest that punitive approaches alone may be insufficient in combating crime. A holistic strategy combining education, employment, environmental policies, and social support mechanisms could yield more sustainable solutions and provide a framework to interpret the results, draw conclusions, and describe implications for the real world and future research.

*Keywords:* system GMM, economic activities, social activities, crime

*JEL Codes:* C23, K42, O1, R2, I3

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**Araştırma Makalesi**

**Ekonomik ve Sosyal Dinamiklerin Suç Oranları Üzerindeki Etkisinin Sistem  
GMM Yöntemi ile Analizi**

**Zekiye Örtlek<sup>a</sup> & Abdullah Kılıçarslan<sup>b</sup>**

**Öz**

**Giriş:** Bu çalışma, satın alma gücü, kirlilik düzeyi, gayri safi yurtiçi hasıla (GSYİH) büyüme oranları ve gelire göre konut fiyatları oranı gibi ekonomik göstergelerin suç oranları üzerindeki etkisini incelemektedir. Bu ilişkilerin bölgesel farklılıklar veya sosyo-politik dinamiklere bağlı olarak değişebileceği göz önünde bulundurularak, karar vericiler için etkili politikalar ve suç önleme stratejileri geliştirmek amacıyla bu dinamiklerin dikkatli bir şekilde analiz edilmesi önem taşımaktadır.

**Yöntem:** Çalışmada, 2018-2023 dönemine ait 60 ülkenin yıllık verileri kullanılarak, suç oranlarını etkileyen göstergeler (satın alma gücü endeksi, kirlilik endeksi, gayri safi yurtiçi hasıla büyüme oranı ve gelire göre konut fiyatları oranı) ile suç oranları arasındaki ilişkiler araştırılmıştır. Değişkenler arasındaki nedensellik ilişkisi, Sistem Genelleştirilmiş Momentler Yöntemi (Sistem GMM) ile incelenmiştir. Sistem GMM yöntemi için yeterli gözlem sağlamak ve modelin tahmin gücünü artırmak amacıyla, 60 ülkenin ekonomik, sosyal ve çevresel çeşitliliğini kapsayan geniş bir veri seti kullanılmıştır.

**Sonuçlar ya da Bulgular:** Sistem GMM yöntemi sonuçlarına göre; satın alma gücü, gayri safi yurtiçi hasıla büyüme oranı, kirlilik ve gelire göre konut fiyatları oranı değişkenlerinin, suç oranları üzerinde pozitif ve anlamlı etkileri olduğu ortaya konulmuştur.

**Tartışma ya da Yapılan Çıkarımlar:** Çalışmanın bulguları, suçla mücadelede yalnızca cezalandırıcı yaklaşımların yetersiz kalabileceğine işaret etmektedir. Eğitim, istihdam, çevre politikaları ve sosyal destek mekanizmalarını birleştiren bütünlük bir strateji ise daha sürdürülebilir çözümler üretebilir. Söz konusu bütünlük strateji aynı zamanda sonuçları yorumlamak, çıkarımlar geliştirmek ve hem gerçek dünya uygulamaları hem de gelecek araştırmalar için etkilerini tanımlamak üzere kavramsal bir çerçeve sunabilir.

*Anahtar Kelimeler:* sistem GMM, ekonomik faaliyetler, sosyal faaliyetler, suç

*JEL Kodlar:* C23, K42, O1, R2, I3

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## Giriş

Suç oranları, toplumların güvenliği ve refahı üzerinde önemli etkiler yaratan sosyal bir olgudur (Eren, 2021). Suçun nedenleri ve suç oranlarını etkileyen faktörler, sosyoloji, ekonomi ve hukuk gibi birçok farklı disiplin tarafından kapsamlı bir çerçevede incelenmektedir; ancak bu çalışmalarda genellikle ekonomik değişkenler daha fazla ön plana çıkmaktadır. Literatürde yer alan çalışmalarda suç oranlarını belirleyen bireysel ve cezai faktörlere öncelik verildiği, makroekonomik ve sosyal etkenlerin etkisinin ise genellikle göz ardı edildiği görülmüştür. Ancak, suç oranlarının sosyal, ekonomik ve çevresel değişkenlerle olan ilişkisi son yıllarda daha fazla ilgi çekmeye başlamış ve bu faktörlerin suç üzerindeki etkilerini inceleyen çalışmalar artmıştır (Devine vd., 1988; Gokmenoglu vd., 2022; Koshal & Koshal, 1975; Raj & Kalluru, 2023; Sugiharti vd., 2023; Wu vd., 2021).

Suçun en dikkat çekici yönlerinden biri, suç oranlarının zaman içinde ve farklı coğrafi bölgelerde belirgin biçimde değişkenlik göstermesidir. Bu durum, ilk kez Adolphe Quetelet'in 1835 tarihli "Sur l'Homme et le Développement de Ses Facultés Ou: Essai de Physique Sociale" adlı eserinde sistematik olarak ortaya konmuş ve günümüzde de geçerliliğini korumaktadır (Ormerod, 2006). Bu temel üzerine, Quetelet'nin bu tespitinden hareketle, sonraki yaklaşık iki yüzyılda suçun nedenlerine ilişkin kapsamlı kuramsal çerçeveler geliştirilmiştir. Bu çalışmalar, suç oranlarındaki değişkenliği hem toplumsal hem de bireysel düzeyde ele almakta; makroekonomik dinamikler (gelir düzeyi, işsizlik, gelir eşitsizliği) ile bireysel faktörlerin (aile yapısı, eğitim seviyesi, kişisel geçmiş) etkilerine odaklanmaktadır. Ekonomik büyüme, gelir eşitsizliği, işsizlik oranları ve çevresel bozulma gibi makroekonomik göstergeler, suç oranlarını etkileyen önemli değişkenler olarak literatürde yer bulmaktadır (Vargas, 2023). İşsizliğin toplumsal yapı ve ekonomi üzerindeki olumsuz etkileri, istihdam sorununu hem sosyal politika hem de iktisat disiplini açısından titizlikle incelenmesi gereken bir alan haline getirmiştir (Çolak & Kara, 2017). Özellikle gelir dağılımındaki eşitsizlikler ve ekonomik kalkınmadaki dengesizlikler (Özdemir, 2021), bireylerin suça yönelmesine neden olan başlıca unsurlar arasında yer almaktadır. Koshal ve Koshal (1975), ekonomik koşulların suç oranları üzerindeki belirleyici rolünü vurgulayarak, suçun sadece bireysel faktörlerle değil, aynı zamanda sosyo-ekonomik yapıyla da ilişkili olduğunu göstermiştir.

Ekonomik büyüme ile suç arasındaki bu ilişkiyi destekleyen birçok çalışma, hızlı ekonomik büyüme dönemlerinde gelir eşitsizliklerinin artması ve sosyal dengesizliklerin oluşmasıyla birlikte suç oranlarında da artış gözlemlendiğini ortaya koymaktadır (Jonathan vd., 2021; Pieszko, 2016). Bunun yanı sıra, sosyal ve çevresel faktörlerin de suç oranları üzerindeki etkileri literatürde kapsamlı bir şekilde incelenmektedir. Sosyal normlar, toplumsal dayanışma ve çevresel faktörler, bireylerin suça yönelmesini engelleyebilecek veya teşvik edebilecek önemli unsurlardır. Bu bağlamda, Buonanno vd. (2009), sosyal sermayenin suç oranları üzerindeki etkilerini inceleyerek, sivil normların ve sosyal ağların suç oranlarını nasıl etkilediğini ortaya koymuştur. Aynı şekilde, Chang (2011), çevresel tasarımın suçun önlenmesinde nasıl bir rol oynadığını araştırarak, mekânsal ve çevresel düzenlemelerin suç oranlarını azaltmadaki önemini vurgulamıştır.

Ekonomik ve sosyal faaliyetler ile suç oranları arasındaki ilişkiler karmaşık ve çok yönlüdür. Ekonomik büyüme, satın alma gücünün artması ve sosyo ekonomik göstergeler suç dinamiklerinin şekillenmesinde önemli bir rol oynamaktadır. Satın alma gücü, tüketici güveni ve ekonomik istikrar ile yakından ilişkilidir. Mali durumu daha iyi olan kişilerin zorunluluktan dolayı suça başvurma olasılığı daha düşük olduğundan, satın alma gücünün artması genellikle daha düşük suç oranları ile ilişkilidir. Bu ilişki, ücretlerin artırılmasını ve özellikle kırılğan

nüfuslar için adil ücretlendirmenin sağlanmasını amaçlayan politikaların önemini vurgulamaktadır.

Kirlilik endeksi gibi sosyoekonomik göstergeler, suç oranlarını dolaylı olarak etkileyebilecek çevresel koşulları yansıtabilir (Çadırcı & Aztimur, 2024; Demir & Ozcan, 2022; Sadana, 2023). Gelişmiş ve gelişmekte olan ülkelerin büyük çoğunluğunda yenilenebilir enerji tüketim fosil yakıtlara olan bağımlılık (Martins vd., 2019), çevresel sorunları ve yoksulluğu tetikleyerek bireyler üzerindeki stresi artırmakta ve yaşam kalitesini düşürmektedir (Gökten, 2015), bu durum ise suç oranlarında artışa zemin hazırlayabilmektedir. Yoksulluğun, sadece gelir seviyesinin düşüklüğü olarak algılanmasından ziyade, bireyin sosyal ve ekonomik çevreden dışlanmasıyla da ilişkili bir kavram olduğunu, bu durumun bireylerin suç işleme olasılıklarını artırarak makroekonomik faktörlerin suça olan etkisini derinleştirdiği göz ardı edilmemelidir (Gölçek vd., 2018). Ekolojik dengenin bozulmasına yol açan çevresel tahribatın (iklim değişikliği, biyoçeşitlilik kaybı, toprak kirliliği vb.) önlenmesine yönelik sürdürülebilir ekonomik ve ekolojik politikalar, sağlıklı toplum yapılarını güçlendirerek suçun azaltılmasına katkı sağlayabilir. Bu kapsamda, emlak fiyatlarının gelire oranı gibi ekonomik eşitsizlik göstergeleri, çevresel bozulmanın sosyal etkilerini analiz etmede kritik bir ölçüt olarak değerlendirilebilir. Emlak fiyatları ortalama gelirin erişemeyeceği kadar yükseldiğinde bir diğer ifadeyle yoksulluk, eşitsizlik ve gelir dağılımı problemleri artış gösterdiğinde (Çalışkan, 2016), bu durum sosyal gerilimin, ekonomik gerginliğin ve nihayetinde suç oranlarının artmasına yol açabilir. Satın alınabilirlik sorunları, haklarından mahrum bırakılma duygularına katkıda bulunabilir ve bireyleri mali gerçekleriyle başa çıkmaya çalışırken suç davranışına itebilir. Bu nedenle, konutları daha uygun fiyatlı hale getirmeyi amaçlayan politikalar, altta yatan bu gerilimleri azaltabilir ve suç oranlarının düşmesine katkıda bulunabilir. Bu ekonomik, sosyal ve çevresel göstergelerin karşılıklı etkileşimi, kapsamlı bir politika yaklaşımının gerekliliğine işaret etmektedir.

Suç oranlarını belirleyen faktörlerin ele alınması sadece ekonomik tedbirleri değil, aynı zamanda toplumsal bağları güçlendiren, yoksulluğu azaltan, eğitim ve istihdam olanaklarını iyileştiren sosyal girişimleri de gerektirmektedir. Ayrıca, ülkelerin kentsel yaşam koşullarını iyileştirmeyi amaçlayan çevre politikaları (Pata & Aydın, 2023), suç davranışına katkıda bulunan faktörlerin azaltılmasına hizmet edebilir. Sonuç olarak, ekonomik büyüme, satın alma gücü, çevresel koşullar ve konut satın alınabilirliğini dikkate alan ve bu faktörlerin ülkelerin performansı artıracak şekilde değerlendirilmesini içeren bütüncül bir strateji (Yaralı & Ergun, 2021), suçla mücadelede esastır. Bu nedenle, konutları daha uygun fiyatlı hale getirmeyi amaçlayan politikalar, altta yatan bu gerilimleri azaltabilir ve suç oranlarının düşmesine katkıda bulunabilir.

Literatürde, suçun nedenleri ve suç oranları üzerindeki etkileri genellikle ekonomik ve sosyal değişkenlerle bağlantılı olarak ele alınmaktadır (Graif vd., 2014; Lin, 2008; Kızılgöl & Selim, 2017; Velásquez-Giraldo vd., 2023). Çalışmalar, sosyo ekonomik faktörlerin (kişi başına düşen gelir ve işsizlik oranı vb.) yanı sıra sosyal yardımlar, gelir eşitsizliği ve çevresel olgular gibi çeşitli unsurların suç davranışlarını etkilediğini göstermektedir. Ancak kirlilik endeksi ve emlak fiyatlarının gelire oranı gibi göstergelerin suç oranları üzerindeki etkileri konusunda literatürde yer alan çalışmalar kısıtlıdır (Torres-Tellez, 2024). İspanya özelinde eşitsizliğin parasal olmayan boyutları kapsamında konut yoksunluğunun suçu nasıl etkilediği konusunu araştıran Torres-Tellez (2024), 2013-2019 dönemi için 16 İspanyol bölgesi verilerini kullanarak GMM üzerinden gerçekleştirdiği analizinde, literatürde yer alan çalışmalarla aynı doğrultuda (Freedman & Owens, 2011; Manea vd., 2023; Stansfield & Parker, 2013), uygun bir kentsel çevrede kaliteli ve uygun fiyatlı konuta erişim eksikliğinin suç artışına katkıda bulunduğunu tespit etmiştir. Bu doğrultuda, çalışma kapsamına konut fiyatlarına ilişkin bir

bağımsız değişken olarak “Emlak fiyatının gelire oranı” değişkeni eklenmiştir. Literatürde, suç oranlarının belirlenmesinde ekonomik koşullar ve sosyal yapılar gibi makro faktörlerin yanı sıra bireysel ve çevresel faktörlerin de önemli olduğu belirtilmektedir. Ancak, suç oranlarını etkileyen bu faktörlerin bir arada ve etkileşim içerisinde değerlendirilmesine yönelik çalışmalar sınırlıdır. Çalışma, suç oranlarını etkileyen faktörlerin etkileşimini ele alarak, literatürdeki boşluğa katkı sağlamayı amaçlamaktadır. Bu doğrultuda çalışmada ekonomik büyüme, satın alma gücü, kirlilik endeksi ve emlak fiyatlarının gelire oranı gibi göstergelerin suç oranları üzerindeki etkileri analiz edilecektir. Çalışma amacı doğrultusunda, suç oranları üzerinde dolaylı ve karmaşık etkiler yaratabileceği gerekçesiyle gelir dağılımı değişkeni çalışma kapsamına alınmamıştır. Ekonomik ve sosyal faaliyetlerin suç üzerindeki etkilerini incelemek, politikalar geliştirilmesine ve daha etkin müdahale stratejileri oluşturulmasına katkı sağlayacaktır. Çalışmada, suç oranlarını belirleyen faktörler daha kapsamlı bir perspektiften ele alınarak, suçla mücadelede ekonomik, sosyal ve çevresel politikaların önemini vurgulanmaktadır. Bu doğrultuda, çalışmanın ikinci kısmında ilgili literatür taraması yapılarak ekonomik ve sosyal faktörlerin suç oranları üzerindeki etkilerini inceleyen çalışmalara yer verilecektir. Üçüncü kısımda ise, 60 ülkeye ait 2018-2023 dönemi verileri kullanılarak uygulanan Sistem GMM analizinin sonuçları sunulacaktır. Elde edilen bulgular, dördüncü kısımda değerlendirilerek tartışma ve sonuç kısmı ile çalışma tamamlanacaktır.

### **Literatür Taraması**

Literatürde yer alan ekonomik ve sosyal faaliyetlerin suç oranları ile ilişkisine yönelik çalışmalardan bir kısmına Tablo 1’de özet olarak yer verilmiştir. Tablo 1’de yer alan çalışmalardan Koshal ve Koshal (1975), suçun nedenlerini ele alan çalışmalarında geleneksel suç teorilerinin ötesine geçerek suç oranlarının ekonomik ve sosyal değişkenlerle olan ilişkisini incelemişlerdir. İlgili çalışmada, suç oranlarını belirleyen temel faktörler olarak kişi başına düşen gelir, işsizlik oranı, göç oranı, iklim koşulları ve erkeklerin toplam nüfustaki payı tespit edilmiştir. Sosyo-ekonomik ve demografik değişkenlerin her birinin etkisini istatistiksel yöntemlerle test eden araştırmacılar, suç olgusunun açıklanmasında bireysel davranışlar veya salt cezai politikalar yerine, toplumsal çevrenin belirleyici rolünü ön plana çıkarmışlardır. Bu yaklaşımları, suç oranlarının sosyo-ekonomik koşullarla ilişkisini sistematik biçimde ortaya koyarak literatüre önemli bir katkı sunmuştur.

Devine vd. (1988) çalışmalarında, suç oranları üzerinde ekonomik zorlukların (işsizlik ve enflasyon gibi) etkisine dikkati çekmişlerdir. Literatürde yer alan önceki çalışmalarda, araştırmaların tek yönlü olarak sadece cezai önlemlere odaklanmasının bir eksiklik olduğunun belirtildiği çalışmada, devletin hem cezalandırıcı (ceza adaleti) hem de destekleyici (sosyal yardımlar) politikalarının önemine vurgu yapılmıştır. Sosyal yardımların, ekonomik sıkıntılardan etkilenen kişileri suçtan uzak tutarak yatıştırıcı bir rol oynadığı ifade edilmiştir. Suçla mücadelede sadece cezai yaptırımların değil, aynı zamanda sosyal yardımların da etkili olduğu tespiti yapılmıştır. Çalışmada, suç oranlarının sadece cezai yaptırımlarla değil, sosyal yardımlarla da azaltılabileceği değerlendirilmiş, literatüre daha kapsamlı bir sosyal kontrol perspektifi sunulduğu belirtilmiştir.

Weibull ve Edgar Villa (2005), geleneksel ekonomik suç modellerinden belirgin bir şekilde ayrılan çalışmalarında, bireylerin suça katılım kararlarında sosyal normların kritik rolünü sistematik biçimde analiz etmişlerdir. Geleneksel yaklaşımlar suçu, bireylerin yasal yaptırımlar ve maddi kazançlara dayalı rasyonel maliyet-fayda hesapları olarak ele alırken; Weibull ve Edgar Villa, özellikle suç işlendiğinde ortaya çıkan suçluluk ve utanç gibi içsel sosyal normların bu karar sürecindeki belirleyici etkisini vurgulamışlardır.

**Tablo 1***Ekonomik ve Sosyal Faaliyetlerin Suç Oranları ile İlişkisi*

Yazar	Ülke	Dönem	Yöntem	Sonuç	Ülke
Koshal ve Koshal (1975)	ABD	1960-1970	Teorik model	Sosyo-ekonomik çevrelerin suç oranları üzerinde önemli bir etkiye sahip olduğunu doğrulamaktadır.	ABD
Devine vd. (1988)	ABD	1948-1985	Zaman serisi	Suç oranlarını tespit etmede sosyal kontrol politikalar ve makroekonomik koşulların birlikte ele alınması gerekmektedir.	ABD
Ormerod (2006)	İngiltere, Galler, ABD	1950-1990	Teorik model	Benzer sosyal ve ekonomik koşullara sahip ülkelerde, oldukça farklı suç seviyelerinin ortaya çıkabilmektedir.	İngiltere, Galler, ABD
Weibull ve Edgar Villa (2005)	-	-	Teorik model	Hukuk uygulama politikaları, sosyal normları güçlendirmek veya zayıflatmak suretiyle suç oranları üzerinde kalıcı etkiler yaratabilmektedir.	-
Buonanno (2009)	İtalya	2000-2002	Panel veri	Dernekler ve sosyal normların güçlendirilmesi, suç oranlarını azaltmada etkili olmaktadır.	İtalya
Chang (2011)	Güney Kore	1990	Mekan çözümlemesi	Bina kullanım modelleri, hırsızlık oranlarını önemli ölçüde etkilemektedir.	Güney Kore
Asghar vd. (2016)	Pakistan	1984-2013	ARDL	Ekonomik faktörlerin yanı sıra politik ve sosyal faktörlerin de suç oranları üzerinde önemli rol oynamaktadır.	Pakistan
Pieszko (2016)	Polonya	1989	Kavramsal çerçeve	Sosyo-ekonomik faktörlerin suç oranlarını nasıl şekillendirdiğine dair kapsamlı bir bakış açısı sunmaktadır.	Polonya
Jonathan vd. (2021)	Dünya geneli	-	İkincil veri	Suç oranlarındaki artış, sosyo-ekonomik kalkınmayı olumsuz etkilemekte, gelir eşitsizliğini artırmakta ve yoksulluk seviyelerini yükseltmektedir.	Dünya geneli
Velásquez-Giraldo vd. (2023)	-	-	Simülasyon, Teorik model	Belirli suç türlerinin coğrafi bölgeler arasındaki sonuçları karmaşıktır.	-
Anozi ve Novianda (2023)	Endonezya	2013-2022	Sistem GMM	Yoksulluk, işsizlik ve nüfus artışı, Endonezya'da hem kısa hem uzun vadede suç oranlarını anlamlı biçimde artırmaktadır.	Endonezya

Açıklama. Yazar tarafından üretilmiştir.

Buonanno vd. (2009), sosyal sermayenin (özellikle sivil normlar ve dernek ağlarının) mülkiyet suçları üzerindeki etkisini, İtalya'nın eyalet düzeyindeki verileri üzerinden sistematik olarak incelemişlerdir. Geleneksel olarak sosyal sermaye, ekonomik gelişme ve toplumsal güvenle ilişkilendirilirken, ilgili çalışmada özellikle sosyal sermayenin suç davranışıyla olan bağlantısına odaklanılmıştır. Sivil normların bireylerde suç işleme durumunda ortaya çıkan suçluluk ve utanç duygularını artırdığı, suçun fırsat maliyetini yükselttiği ve böylece caydırıcı bir rol oynadığı belirtilmiştir. Dernek ağlarının suç dışı faaliyetlerin getirisini artırdığı, böylece suç işleme olasılığını azalttığı savunulan çalışmada, yazarlar, ilgili dernek ağlarının aynı zamanda suçlular için bir iletişim kanalı oluşturma ve suçları gizleme fırsatı sunma potansiyeline de değinmişlerdir. Çalışmada, sivil normların ve dernek ağlarının mülkiyet suçları üzerinde istatistiksel olarak anlamlı ve negatif bir etkiye sahip olduğu tespiti yapılmıştır.

Chang (2011), geleneksel çevresel tasarım (CPTED) yaklaşımlarının mimari mekan ve suç ilişkisiyle sınırlı kalmasını eleştirdiği çalışmada, suç önleme stratejilerini sosyal ve ekonomik boyutlarla genişletmektedir. Çalışmada, hırsızlık oranları üzerindeki mekânsal faktörlerin yanı sıra mahalle dayanışması, gelir dağılımı ve ekonomik hareketlilik gibi sosyal ve ekonomik değişkenlerin etkisi niceliksel ve niteliksel verilerle incelenmiştir. Suçun önlenmesinde sadece fiziksel çevre düzenlemelerinin değil, aynı zamanda toplumsal yapının güçlendirilmesi ve ekonomik adaletin sağlanmasının da önemli olduğu vurgulanmıştır.

Asghar vd. (2016) çalışması, sosyal, ekonomik ve politik faktörlerin suç oranları üzerindeki etkilerini ayrı ayrı modellerle ele almaktadır. Literatürde çoğu çalışma, bu faktörleri bir arada incelememekte ya da yalnızca belirli yönlerine odaklanmaktadır. Ancak çalışmada, bu faktörlerin suç oranlarına farklı şekillerde katkıda bulunduğunu analiz ederek, her bir faktörün bağımsız etkilerini ortaya koymaktadır. Özellikle, 11 Eylül olayının suç oranlarına etkisini ele alan ilk çalışmalardan biri olarak bu olayın terörizm ve organize suçlar üzerindeki artışa nasıl katkıda bulunduğunu vurgulamaktadır.

Pieszko (2016) çalışmada, suçun sosyo-ekonomik yapı ile ilişkisini analiz ederek suç oranlarını etkileyen faktörlerin çeşitliliğini incelemiştir. Geleneksel olarak, sosyo-ekonomik faktörlerin suç üzerindeki etkisi sıklıkla tartışılmış olsa da Pieszko, suç oranlarını etkileyen faktörlerin çeşitliliğine (ekonomik kalkınma, işsizlik, gelir eşitsizliği, yoksulluk, sosyal dışlanma ve demografik değişimler) ve sosyo-ekonomik koşulların dinamik etkilerine odaklanmıştır.

Jonathan vd. (2021) çalışması, suçun yalnızca bireyler üzerindeki etkilerini değil, toplumların ekonomik büyüme ve kalkınması üzerindeki olumsuz sonuçlarını da ele almaktadır. Suçun, yatırımcıları caydırma, sosyal düzeni bozma ve ekonomik faaliyetleri aksatma gibi çeşitli etkileriyle sosyo-ekonomik kalkınmayı nasıl engellediği üzerinde durulmaktadır. Bu bağlamda, suçun ekonomik büyüme üzerinde yarattığı negatif etkiler, literatürde önemli ölçüde göz ardı edilmiş bir alan olarak ele alınmıştır. Çalışma, özellikle gelişmekte olan ülkelerde suç oranlarının artmasının, yatırımcıları kaçırarak ekonomik kalkınmayı sekteye uğrattığını göstermektedir. Suç oranlarının yüksek olduğu bölgelerde yatırımcıların geri çekilmesi, ekonomik faaliyetlerin yavaşlaması ve işsizliğin artması gibi zincirleme etkiler, toplumların genel refah seviyesini düşürmektedir. Bu, literatürdeki eksikliklerden biri olan suçun sosyo-ekonomik kalkınmayı nasıl engellediği konusunda kapsamlı bir model sunmaktadır. Ayrıca, hükümetlerin bu durumu düzeltmek için alması gereken önlemler de detaylandırılmaktadır. Güvenlik güçlerinin modern ekipmanlarla donatılması, güvenlik personelinin eğitimi ve suç oranlarını azaltacak politikaların uygulanması gibi öneriler sunulmakta, böylece suçun ekonomik faaliyetler üzerindeki olumsuz etkilerini hafifletecek çözüm yolları önerilmektedir.

Velásquez-Giraldo vd. (2023), suç oranlarındaki değişkenliği açıklayan geleneksel ekonomik modellerin çoğunun, suçun bireyler arasında yayılma dinamiklerini yeterince ele almadığını vurgulamaktadır. Bu araştırma, sosyal ağlardaki etkileşimlerin suç oranları üzerindeki etkisini derinlemesine inceleyerek, suçun sosyal ve ekonomik koşullar altında nasıl yayıldığını modellemektedir. Araştırma, bireylerin suç işleme kararlarının sosyal ağlar içindeki diğer bireyler tarafından nasıl etkilendiğini analiz etmekte ve sosyal ağların yoğunluğunun ve düzensiz bağlantılarının suç oranlarını nasıl şekillendirdiğini göstermektedir. Daha yoğun ve eşitsiz bağlantılara sahip ağlarda, suç oranlarının daha büyük bir değişkenlik gösterdiği tespit edilmiştir.

Yukarıda özetlenen literatür çalışmalarında, suç oranlarını etkileyen ekonomik, sosyal ve çevresel faktörlerin karmaşık etkileşimlerinin kapsamlı bir şekilde ele alındığı ve cezai politikaların yetersizliğinin vurgulandığı görülmektedir. Bu çalışmada, geleneksel ekonomik ve sosyal göstergelere ek olarak kirlilik endeksi ile emlak fiyatlarının gelire oranının suç oranları üzerindeki etkisi; satın alma gücü endeksi, GSYH büyüme oranı ve diğer klasik değişkenlerle birlikte Sistem GMM yöntemi kullanılarak analiz edilmiştir. Çalışmanın özgün katkısı iki temel noktada öne çıkmaktadır. Birincisi, ekonomik göstergeler ile sosyal ve çevresel değişkenlerin etkileşimsel dinamikleri Sistem GMM çerçevesinde eşzamanlı olarak ele alınmıştır. İkincisi, son altı yılı (2018-2023) kapsayan ve 60 farklı ülkenin ekonomik, sosyal ve çevresel çeşitliliğini barındıran geniş bir panel veri seti üzerinden yürütülen analiz, politika önerileri için sağlam bir ampirik zemin sunmayı amaçlamaktadır.

## Veri ve Metodoloji

### Veri Seti

Bu çalışmada, seçilmiş 60 ülke<sup>1</sup> 2018-2023 dönemi yıllık verileri kullanılarak, satın alma gücü endeksi, kirlilik endeksi, GSYH büyüme oranı ve emlak fiyatının gelire oranının suç endeksi ile ilişkisi analiz edilmiştir.

Literatürde suç oranlarıyla ilişkili olduğu bilinen gelir eşitsizliği, yoksulluk, okuryazarlık ve kentleşme gibi sosyoekonomik faktörler, metodolojik nedenlerle analiz kapsamına dahil edilememiştir. Bu faktörlerin modele dahil edilmesi, çoklu doğrusal bağlantı sorununa yol açarak tahminlerin güvenilirliğini ve modelin açıklayıcı gücünü zayıflatma potansiyeli taşımaktadır. Bu nedenle, satın alma gücünün bireylerin ekonomik fırsatlarını, kirlilik düzeyinin çevresel stresi, GSYH büyüme oranının makroekonomik istikrarı ve emlak fiyatının gelire oranının sosyal stresi yansıttığı düşünülerek bu değişkenler modele dahil edilmiştir. Ancak, genç nüfus oranı, gelir dağılımı eşitsizliği ve eğitim seviyesi gibi önemli belirleyicilerin eksikliği, çalışmanın bir kısıtlılığı olarak değerlendirilmelidir.

Literatür taraması sonucunda seçilen değişkenler, suç oranları üzerinde etkili olan temel sosyo-ekonomik ve çevresel mekanizmaları yansıtmaktadır. Söz konusu ilgili değişkenler, suçun ekonomik istikrar, sosyal koşullar ve bireysel davranışlar (Gazilas, 2024) ile çok boyutlu ilişkisini kapsamlı biçimde açıklamaya katkı sunmaktadır. Satın alma gücü, bireylerin ekonomik fırsatlarını ve yasal geçim kaynaklarına erişimini (ekonomik teşvik) temsil etmek

<sup>1</sup>Arjantin, Avusturya, Bangladeş, Belarus, Belçika, Bosna Hersek, Brezilya, Bulgaristan, Kanada, Şili, Çin, Kolombiya, Hırvatistan, Çek Cumhuriyeti, Danimarka, Mısır, Estonya, Finlandiya, Fransa, Almanya, Yunanistan, Hong Kong, Macaristan, İzlanda, Hindistan, Endonezya, İrlanda, İsrail, İtalya, Japonya, Ürdün, Letonya, Lübnan, Malezya, Norveç, Pakistan, Peru, Filipinler, Polonya, Portekiz, Romanya, Rusya, Sudi Arabistan, Sırbistan, Singapur, Slovakya, Slovenya, Güney Afrika, İspanya, Sri Lanka, İsveç, İsviçre, Tayland, Türkiye, Ukrayna, Birleşik Arap Emirlikleri, Birleşik Krallık, ABD, Uruguay, Vietnam

üzere seçilmiştir; düşük satın alma gücünün suçu artırdığına dair güçlü literatür bulguları (Freeman, 1999; Maddan, 2014) bu seçimi desteklemektedir. Kirlilik düzeyleri, çevresel stres faktörlerinin bireysel psikoloji (stres, bilişsel bozulma) ve toplumsal dışlanma üzerindeki etkisini ölçmek amacıyla dahil edilmiştir. Walter vd. (2024) bu değişkenin saldırganlık ve sosyal bozulma yoluyla suça etkisini ortaya koymaktadır. GSYH büyüme oranı, makroekonomik istikrarın istihdam ve yatırım üzerinden suçla ilişkisini izlemek için kullanılmıştır; Raj ve & Kalluru (2023) ekonomik büyümenin suçu azalttığını, aynı zamanda yüksek suç oranlarının büyümeyi engelleyebileceğini vurgulamaktadır. Emlak fiyatının gelire oranı (Tita vd., 2006) yüksekliği sosyal stresi artırarak suça yol açma potansiyeli taşımaktadır.

Verilerin elde edilebilirliğine göre başlangıç ve bitiş yılları belirlenmiştir. Öncelikle 60 ülkenin seçilmesi, çalışmanın bulgularının genel geçer olmasını sağlamak ve farklı ekonomik, sosyal ve çevresel koşullara sahip ülkeler üzerinden kapsamlı bir analiz sunmak amacıyla yapılmıştır. Bu geniş ülke grubu, farklı coğrafi, ekonomik ve kültürel özelliklere sahip ülkeleri kapsadığı için sonuçlar daha geniş bir yelpazede değerlendirilebilir ve evrensel nitelikteki politika önerileri yapılabilir. Aynı zamanda bu çeşitlilik, suç oranlarının sadece belirli bir bölge veya ülkeye özgü olmadığını, küresel bir sorun olduğunu vurgulamaktadır.

Veri aralığının 2018-2023 olarak belirlenmesi, çalışmanın güncel veriler üzerine inşa edilmesini ve geçerliliğini artırmayı amaçlamaktadır. Bu dönem, dijital dönüşüm süreçlerinin etkisini yoğun bir şekilde hissettirdiği (Demirel & Yaralı, 2023), birçok ülkenin ekonomik, sosyal ve çevresel faktörlerde önemli değişimler yaşadığı bir zaman dilimini kapsamakta, bu da suç oranları üzerindeki etkileri daha belirgin hale getirmektedir. Özellikle COVID-19 pandemisi ile ekonomik ve sosyal yapıların değişimi, suç oranları üzerindeki etkilerin incelenmesi açısından önemli bir zaman dilimini temsil etmektedir.

Sistem GMM gibi dinamik panel veri analizlerinde, seçilen veri aralığı ve ülke sayısı analizlerin güvenilirliği açısından kritik öneme sahiptir. 60 ülkenin seçilmesi, bu yöntemin etkin kullanılabilmesi için yeterli sayıda gözlem sağlamak ve modelin tahmin gücünü artırmaktadır.

Veri aralığının 2018-2023 olması, gözlemlerin zaman içindeki değişimlerini analiz etme olanağı sağlamaktadır. Bu da Sistem GMM için ideal koşulları oluşturmaktadır. Bu gerekçelerle, 60 ülke ve 2018-2023 dönemi seçimi, çalışmanın hem bilimsel değerini artırmakta hem de geniş bir politika önerisi çerçevesi sunmaktadır.

Bu çalışmanın temel amacı, ekonomik ve sosyal dinamiklerin suç oranları üzerindeki etkisini araştırmak olup (1) nolu eşitlikte bu kapsamda literatürdeki çalışmalar (Akay, 2022; Anozı & Novianda, 2023; Anser vd., 2020; Buonanno & Montolio, 2008) izlenerek model oluşturulmuştur;

$$c_{it} = \beta_0 + \beta_1 c_{it-1} + \beta_2 ppi_{it} + \beta_3 ppri_{it} + \beta_4 gdpbuy_{it} + \beta_5 po_{it} + dum + \varepsilon_{it} \quad (1)$$

Eşitlikte  $c_1$  suç endeksini,  $i$  ülkeyi,  $t$  zamanı,  $ppi$  satın alma gücü endeksini,  $po$  kirlilik endeksini,  $gdpbuy$  GSYH büyüme oranını (yıllık %),  $ppri$  emlak fiyatının gelire oranını, dummy değişkeni,  $\varepsilon$  rassal hata terimini ifade etmektedir.

Çalışmada ekonomik ve sosyal dinamiklerin göstergelerinin suç oranları üzerindeki etkisi araştırılırken yerel satın alma gücü endeksi, kirlilik endeksi, emlak fiyatının gelire oranı,  $gdpbuy$  GSYH büyüme oranı (yıllık %) ve dummy değişkeni analize dahil edilmektedir.

Ekonomik ve sosyal dinamiklerin suç oranları üzerindeki etkisine yönelik veriler, WB ve Numbeo veri tabanından (“Numbeo”, 2024; “The World Bank”, 2024) derlenmiştir. Analizlerde kullanılan veri setine yönelik temel bilgilere Tablo 2’de yer verilmiştir.

**Tablo 2**

*Değişkenlere İlişkin Temel Bilgiler*

Değişken	Açıklamalar	Kısaltma	Periyod	Kaynak
Suç Endeksi	Endeks	c1	2018-2023	Numbeo
Satın alma gücü endeksi	Endeks	pp1	2018-2023	Numbeo
Emlak fiyatının gelire oranı	Emlak fiyatı/gelir oran	pp1r	2018-2023	Numbeo
GSYH Büyüme Oranı	Gayri safi yurtiçi hasıla büyüme oranı (yıllık %)	gdpbuy	2018-2023	WB
Kirlilik Endeksi	Endeks	po	2018-2023	Numbeo
dummy	2020, 2021, 2022, 2023	dum	2018-2023	

Açıklama. Yazar tarafından üretilmiştir. Serilerin doğal logaritmaları alınarak analiz edilmiştir. WB: World Bank, Numbeo

2020, 2021, 2022 ve 2023 yılları için dummy değişkenlerin kullanılma gerekçeleri ayrı ayrı değerlendirildiğinde, 2020 yılı için dummy değişkenin eklenme nedeni, özellikle COVID-19 pandemisi gibi geniş çaplı ve küresel bir olayın suç oranları üzerindeki olası ekonomik, sosyal ve çevresel etkilerini analiz etmektir. COVID-19 etkisini izole etmek için 2020 ve 2021 yılları 'pandemi=1', diğer yıllar '0' olarak kodlanmıştır. Bu tür değişikliklerin suç oranlarına yol açıp açmadığını belirlemek amacıyla, 2020 yılına ait dummy değişken modelde yer almıştır. Pandeminin etkisiyle, birçok ülkede ekonomik durgunluk, işsizlik, sağlık hizmetlerine erişimde zorluklar ve hareket kısıtlamaları gibi faktörler ortaya çıkmıştır. Bu durumların suç oranları üzerindeki etkisini değerlendirmek için 2020 yılına ait ayrı bir dummy değişken kullanmak, o yılın etkisinin modelde izole edilmesini sağlamak ve diğer yıllardan farklı olarak suç oranlarının neden ve nasıl değiştiğini ortaya koymaktadır. Örneğin, bazı çalışmalar pandeminin ekonomik etkilerinin suç oranlarında artışa yol açtığını, bazı bölgelerde ise karantina ve sokağa çıkma yasakları gibi önlemlerin suçu azalttığını göstermektedir (Ashby, 2020; Boman & Gallupe, 2020). 2021 yılı, pandeminin başlangıç dönemine kıyasla ekonomik toparlanma çabalarının ve pandemiye uyum süreçlerinin hız kazandığı, aynı zamanda aşuların yaygınlaşmaya başladığı bir dönem olarak öne çıkmaktadır (Halford vd., 2020; Nivette vd., 2021). Bu nedenle ilgili yıl için bir dummy değişken kullanmak, suç oranlarını etkileyebilecek bu tür gelişmeleri modele dahil etmeye olanak tanımaktadır. 2022 yılında pandeminin doğrudan etkileri azalmış ve birçok ülkede ekonomik faaliyetler normale dönmüştür. Bu dönemde işsizlik oranları, tüketici güveni ve ekonomik büyüme gibi makroekonomik göstergelerde meydana gelen değişiklikler, suç oranları üzerinde doğrudan veya dolaylı etkiler yaratabileceğinden dolayı dummy değişken eklenmiştir (IMF, 2023). 2023 yılı, pandeminin ekonomik ve sosyal etkilerinin büyük ölçüde geride kaldığı, ancak yeni ekonomik ve çevresel zorlukların ortaya çıktığı bir dönem olarak öne çıkmaktadır. Bu tür bir dummy değişken, 2023'teki özel dinamiklerin suç oranları üzerindeki etkilerini belirlemeye yönelik olarak kullanılmaktadır. 2023, pandemiden sonra ekonomik istikrarı yeniden sağlama çabalarının sürdüğü bir yıl olarak dikkat çekmektedir. Bu süreçte enflasyonla mücadele, işgücü piyasalarının yeniden

yapılanması ve ekonomik büyümenin sürdürülebilir hale getirilmesi gibi adımlar atılmıştır. Bu tür ekonomik faktörlerin suç oranları üzerinde olumlu veya olumsuz etkileri olabilmektedir. Ayrıca bu yılda, çevre politikaları ve kirliliğin azaltılmasına yönelik küresel çabalar artmıştır (International Monetary Fund (IMF) 2023; Intergovernmental Panel on Climate Change (IPCC), 2023). Tablo 3'te değişkenler arasındaki ikili korelasyonlar gösterilmektedir.

**Tablo 3**

*Korelasyon Katsayılarının Gösterimi*

	logcı	logppi	logppır	logpo	loggdpbuy	dum
logcı	1.0000					
logppi	0.577	1.0000				
logppır	0.683	0.478	1.0000			
logpo	0.740	0.441	0.737	1.0000		
loggdpbuy	-0.014	-0.062	0.048	0.107	1.0000	
dum	0.107	-0.015	0.098	0.068	0.227	1.0000

Açıklama. Yazar tarafından Stata 17 (Windows) kullanılarak hazırlanmıştır.

Tablo 3'te yer alan korelasyon katsayı değerleri, çoklu doğrusal bağlantı sorununun varlığını belirlemek açısından önemli bir gösterge olmaktadır. Açıklayıcı değişkenler arasındaki korelasyon katsayılarının mutlak değer olarak 0.81'i aşması, güçlü bir korelasyonun varlığını işaret etmektedir (Kennedy, 2008). Bu çerçevede, ikili korelasyon tablosunda sunulan analiz sonuçları incelendiğinde, açıklayıcı değişkenler arasında söz konusu kritik değerin üzerinde bir ilişkiye rastlanmamıştır.

**Tablo 4**

*Çoklu Doğrusal Bağlantı*

Değişken	VIF	1/VIF
logppır	2.36	0.423
logpo	2.28	0.439
logppi	1.35	0.742
loggdpbuy	1.08	0.926
dum	1.07	0.937
Mean VIF	1.63	

Açıklama. Yazar tarafından Stata 17 (Windows) kullanılarak hazırlanmıştır.

Tablo 4'te yer alan bağımsız değişkenlerin VIF değerlerini inceleyecek olursak; emlak fiyatının gelire oranı (ppır) (2.36), kirlilik endeksi (po) (2.28), satın alma gücü endeksi (ppi) (1.35), GSYH büyüme oranı (gdpbuy) (1.08), dummy değişkeni (1.07)'dir. Ortalama VIF değeri (1.63) 5'ten küçük olduğu için çoklu doğrusal bağlantı sorunu görülmemektedir (Koç & Deniz, 2019).

## Metodoloji

Bu alt başlıkta bölümün esas araştırma sorusunun yanıtını bulmaya yönelik olarak kullanılan ekonometrik tekniğin temel yönetsel yaklaşımı detaylı bir şekilde ele alınmaktadır. Analizde kullanılan veri seti, birden fazla zaman dilimini kapsamaması ve birden çok ülkeyi içermesi nedeniyle panel veri formatında incelenmektedir. Dinamik panel veri modelleri, statik modellerden temel olarak içerdikleri gecikmeli değişkenler aracılığıyla ayrılır ve bu özellikleri nedeniyle ekonometrik analizlerde sıklıkla tercih edilirler. Bu bağlamda, dinamik panel veri modelleri dağıtılmış gecikmeli modeller ve otoregresif modeller olmak üzere iki ana grupta incelenebilir. Dağıtılmış gecikmeli panel veri modellerinde, bağımsız değişkenlerin gecikmeli değerleri bağımsız değişkenler olarak kullanılırken; otoregresif panel veri modellerinde ise bağımlı değişkenin gecikmeli değerleri bağımsız değişkenler olarak kullanılmaktadır. Ama ortaya çıkardığı sorunlar nedeniyle genellikle dinamik modeller içerisinde otoregresif modeller öncelikle akla gelmektedir. Otoregresif panel veri modeli ise bir gecikme ile şu şekilde yazılabilmektedir (Yerdelen Tatoglu, 2020);

$$Y_{it} = \delta Y_{it-1} + \beta X'_{it} + \mu_i + u_{it} \quad (3)$$

Bağımlı değişkenin bir gecikmeli değeri (3) numaralı modelde bağımsız değişken olarak yer almaktadır. Bu modelde bir dönem gecikmeli bağımlı değişkenin modele dahil edilmesinin nedeni olarak suç oranlarının dinamik yapısının göz önünde bulundurulması ve önceki dönemdeki suç oranlarının mevcut dönem üzerindeki etkilerinin yakalanabilmesi gösterilebilmektedir. Dolayısıyla suç oranları genellikle zaman içinde süreklilik gösteren bir yapıya sahip olduğundan dolayı geçmiş dönemin suç düzeyi, mevcut dönemdeki suç oranlarını etkileyebilmektedir. (4) numaralı modelde ise gecikmeli bağımlı değişken dışında başka bir açıklayıcı değişkene yer verilmeyen model şu şekilde tanımlanmaktadır:

$$Y_{it} = \delta Y_{it-1} + \mu_i + u_{it} \quad (4)$$

Matematiksel olarak bu modellerin bilindik tahmin yöntemleriyle tahmini yapılabilmesine karşın tahmincilerin niteliklerinde tahmin neticesinde bozulmalar meydana gelebilmektedir. Gecikmeli bağımlı değişkenin bağımsız değişken olarak modelde bulunmasının neden olduğu içsellik sorunu en önemli problemi oluşturmaktadır. Genel olarak dinamik modellerde, geçmiş şoklar nedeniyle  $Y_{it-1}$ 'in  $u_{it}$  ile arasında bir korelasyon olduğu bilinmektedir. Panel veri modellerinde buna ek olarak  $Y_{it}$ ,  $\mu_i$ 'in bir fonksiyonu olduğu gibi  $Y_{it-1}$  de  $\mu_i$ 'in bir fonksiyonu olarak ortaya koyulmaktadır. Dolayısıyla (3) numaralı model  $Y_{it-1}$ 'in  $\mu_i$ 'yü de kapsayan hata terimi ile korelasyonlu olduğu yargısına ulaşılmaktadır. Bu nedenle katı dışsallık varsayımı bozularak tahminciler tutarsız ve sapmalı hale gelmektedir. Bu çalışmanın ampirik analizlerinde, bu çerçevede Sistem GMM yönteminin kullanılmasına karar verilmiştir (Özaytürk, 2023; Yağış, 2023). Zaman serisi boyutuna göre yatay kesit birim boyutunun büyük olması sebebiyle derlenen veri setini de göz önünde bulundurduğumuzda (T=6 ve N=60) Arellano ve Bover/Blundell ve Bond Sistem GMM tahmincisi kullanılacaktır. Bu tahminci, otoregresif parametre sayılarının çok fazla olduğu ya da birim etkinin varyansının hatanın varyansına oranının çok yüksek olduğu durumda zayıf etkiler ortaya çıkarmaktadır. Bununla birlikte T küçükken veya dengesiz panel verilerle çalışıldığı zaman birinci fark

dönüşümünün yine zayıf kalmasına neden olmaktadır. Bu sebeple birinci fark dönüşümü yerine önerilen bir başka dönüşüm yöntemi de ortogonal sapmalar veya ileri ortogonal sapmalar olmaktadır (Yerdelen Tatoglu, 2020). Arellano ve Bover (1995), dinamik panel veri modelleri için etkin araç tahmincisi olarak ortogonal sapmalar yöntemini önermektedir.

### **Analiz ve Bulgular**

Ekonomik ve sosyal faaliyetlerin suç oranları ile ilişkisine yönelik analiz için derlenen veri seti 60 ülke ve 6 yılı kapsamaktadır. Bu sebeple panel veri analizi teknikleri uygulanacaktır. Bu panel veri analizi içerisinde Dinamik panel veri yöntemi, küçük T ve büyük N tipi veri seti ile analizler gerçekleştirildiği için Sistem GMM yöntemi kullanılmıştır. Araç değişkenlerin geçerliliği, Sargan ve Hansen testleri ile karar verilmektedir. Sargan testi ile aşırı tanımlama kısıtlamaları test edilmektedir (Sargan, 1958). Bu bağlamda, Sargan ve Hansen testi için olasılık değerinin 0.05'ten büyük olması istenmektedir (H0: kabul edilir, H1: reddedilir). Hansen testinde bazen aşırı tanımlanmış model sayısı çoksa model güvenilirliğini kaybedebilir, bu bağlamda çalışmada sargan testi kullanılmıştır (Roodman, 2009).

H0: Araç değişkenler geçerlidir.

H1: Araç değişkenler geçerli değildir.

Veri setinin T=6 ve N=60 (T<N) olması nedeniyle, Birinci Fark GMM tahmincisinin uygulanması gözlem sayısında azalmaya yol açabilecektir. Bu durum, T'nin küçük, N'nin büyük olduğu paneller için sağlıklı sonuçlar vermemektedir. Bu nedenle, ileri ortogonal sapmaları kullanan Sistem GMM tahmincisi tercih edilmiş ve elde edilen bulgular aşağıda sunulmuştur (Yerdelen Tatoglu, 2020).

**Tablo 5***Sistem GMM Tahmin Sonuçları***Bağımlı Değişken: Suç Endeksi (log)**

	<b>Katsayı</b>	<b>Standart Hata</b>	<b>z</b>	<b>P&gt;z</b>
<b>Suç Endeksi (t-1)</b>	0.7957270	0.054	14.50	0.000***
<b>Satın Alma Gücü Endeksi (log)</b>	0.0000342	0.000	2.76	0.006***
<b>Emlak Fiyatı/Gelir Oranı (log)</b>	0.0965785	0.033	2.91	0.004***
<b>Kirlilik Endeksi(log)</b>	0.1119495	0.039	2.81	0.005***
<b>Gayri Safi Yurtiçi Büyüme Oranı (log)</b>	0.0362917	0.017	2.10	0.036**
<b>dummy</b>	0.1078165	0.032	3.35	0.001***
<b>Sistem GMM Tahmin Sonuçları</b>				
<b>Gözlem sayısı</b>	217			
<b>Grup sayısı</b>	59			
<b>Araç değişken sayısı</b>	10			
<b>AR(1) Süreci için Birinci Farklarda Arellano–Bond testi</b>	-3.37 [0.001]			
<b>AR(2) Süreci için Birinci Farklarda Arellano–Bond testi</b>	-0.18 [0.854]			
<b>Aşırı Belirlenim Kısıtlamaları için Sargan Testi</b>	7.26 [0.123]			

\*, \*\* ile \*\*\* sembolleri sırasıyla %10, %5 ve %1 düzeylerindeki istatistiksel anlamlılığı açıklamaktadır. Köşeli parantez içinde verilen değerler, olasılık değerlerini ifade etmektedir. Sistem GMM tahmini için dirençli standart hatalar raporlanmıştır. Analiz, Stata paket programında xtabond2 komutu kullanılarak gerçekleştirilmiştir.

Açıklama. Yazar tarafından Stata 17 (Windows) kullanılarak hazırlanmıştır.

Tablo 5, Sistem GMM tahmin sonuçlarını vermektedir. Panel verisi için elde edilen tahmin sonuçları şu şekildedir: Bağımlı değişken olarak ele alınan suç endeksinin bir dönem gecikmeli değeri, modele dahil edilmiştir. Suç endeksinin bir gecikmeli değeri ( $p > z$ ) 0.05 anlamlılık seviyesinden küçük olduğu tespit edilerek anlamlı sonuca ulaşılmıştır. Bununla birlikte, satın alma gücü endeksi ( $pp_1$ ) (0.0000342), kirlilik endeksi ( $po$ ) (0.005), GSYH büyüme oranı ( $gdpbuy$ ) (0.036) ile emlak fiyatı/gelir oranı ( $pp_1r$ ) (0.004) anlamlı ve pozitifdir. Yani emlak fiyatının/gelir oranında meydana gelen %1'lik bir artış suç oranlarını yaklaşık 0.096 oranında artırmaktadır. Bu kapsamda, kirlilik endeksinde meydana gelen %1'lik bir artış, suç oranını yaklaşık %0.111 oranında artırmaktadır. Benzer şekilde, GSYH büyüme oranındaki %1'lik bir artış suç oranını yaklaşık %0.036 oranında artırırken; satın alma gücü endeksindeki %1'lik bir artış ise suç oranını yaklaşık %0.0000342 oranında artırmaktadır. Özetleyecek olursak analizde kullanılan tüm bağımsız değişkenlerin suç oranlarını artırdığı sonucuna varılmaktadır. Sistem GMM tahminlerinde Sargan testi ( $p=0.123$ ) enstrüman geçerliliğini, AR(2) testi ( $p=0.854$ ) ise ikinci dereceden otokorelasyon olmadığını doğrulamaktadır.

GMM tahmin sonuçları incelendiğinde, birinci dereceden otokorelasyonun negatif olduğu tespit edilmiş ve %5 anlamlılık düzeyinde birinci dereceden otokorelasyonun (0.001) varlığı gözlemlenmiştir. 2. mertebeden otokorelasyon test sonuçlarının ise z olasılık değeri (0.854) 0,05'ten büyük olup otokorelasyon yoktur sonucuna ulaşılmaktadır. Sargan test sonuçlarına göre olasılık değeri (0.123) 0,05'ten büyük çıkararak aşırı tanımlama kısıtlamalarının geçerli olduğunu göstermektedir.

Genelleştirilmiş momentler tahmininde kullanılan araç değişkenlerin geçerliliğini değerlendirmek amacıyla Sistem GMM bir aşamalı ve iki aşamalı tahminicileri uygulanmıştır. Sargan test istatistiklerine göre, prob değeri 0.05'ten büyük olduğu için aşırı tanımlama kısıtlamalarının geçerli olduğu sonucuna ulaşılmıştır.

### **Tartışma**

Bu çalışma, ekonomik ve sosyal faaliyetlerin suç oranları üzerindeki etkilerini incelemekte ve bu bağlamda suç oranlarının ekonomik, sosyal ve çevresel faktörlerle etkileşimini ortaya koymaktadır. Suç oranlarının, yalnızca sosyo-ekonomik koşullardan değil, aynı zamanda çevresel ve kentsel dinamiklerden de etkilendiği literatürdeki çalışmalarla desteklenmektedir. Yapılan analizler, ekonomik büyüme, satın alma gücü ve kirlilik endekslerinin suç oranları üzerindeki rolünü ortaya koymaktadır.

Ekonomik büyüme oranının suç oranları üzerindeki pozitif etkisi, başlangıçta iktisadi beklentilerle çelişkili bir durum olarak, yani istenmeyen sonuçları beraberinde getirmesi (Yeter vd., 2021) olarak değerlendirilebilir. Genel olarak, ekonomik büyümenin refahı artırması ve yaşam standartlarını yükseltmesi beklenirken, Cömertler ve Kar (2007)'in çalışmalarında bu olgunun tam tersi bir sonucun gözlemlendiği belirtilmektedir; bir diğer ifadeyle, ekonomik büyümenin, kişi başına düşen gelirin artmasıyla birlikte suç oranlarını da artırdığı tespit edilmiştir. Kızılgöl ve Selim (2017) tarafından yapılan çalışmada da yüksek oranda kentleşmiş bölgelerin daha yüksek suç oranlarına sahip olduğu belirtilmiştir. Gelişen ekonomilerin bireylerin refah düzeyini artırması, suçtan elde edilecek getirilerin yükselmesine neden olabileceği varsayımı altında, bu durumun potansiyel suç faaliyetlerini teşvik eden fırsatları da beraberinde getirerek, uyuşturucu veya uyarıcı maddelere erişimin kolaylaşmasıyla birlikte illegal mal ve hizmet tüketimini artırabileceği, dolayısıyla suç oranlarının yükselmesine yol açabileceği (Aktaş & Nalçacı, 2022) göz önünde bulundurulduğunda; GSYH büyümesindeki %1'lik artışın suç oranını %0.036 oranında artırması bulgusu, Cömertler ve Kar (2007) ile Kızılgöl ve Selim'in (2017) çalışmalarını destekleyici kapsamda, teorik beklentilerin aksine gelişen bir olgu (Ikhsan & Amri, 2023; Kusuma vd., 2019) olarak dikkate alınmalıdır. Özellikle ekonomik büyümenin hızlı olduğu dönemlerde gelir dağılımındaki eşitsizliklerin artması (Kaygısız, 2018), suç oranlarının yükselmesine neden olabilir. Bu bulgu, Pieszko'nun (2016) sosyo-ekonomik faktörlerin suç oranlarını nasıl şekillendirdiğine dair değerlendirmelerini destekler niteliktedir.

Satın alma gücündeki artışın beklenenin aksine (Freeman, 1999) suç oranlarını yükseltmesi, göreceli yoksunluk teorisiyle temellendirilebilir. Ekonomik büyüme, gelir dağılımını bozarak düşük gelirli grupların yüksek gelirli grupların yaşam standartlarına erişememe hissini artırabilir. Bu durum, Koshal ve Koshal'ın (1975) vurguladığı gelir düzeyi-suç ilişkisi bağlamında, adaletsizlik algısını besleyerek suça yönelimi tetikleyebilir (Kaygısız, 2018). Benzer şekilde, GSYH büyümesinin suç oranları üzerindeki olumlu etkisi, fırsat teorisiyle tutarlıdır; GSYH büyümesi, gelir eşitsizliğini artırarak yoksulluk ve sosyal dışlanmayı derinleştirebilir, bu da bireylerin suça yönelme olasılığını artırarak (Cohen & Felson, 1979) suçu teşvik edebilir (Karpavicius vd., 2024).

Çevresel faktörlerin suç üzerindeki etkisine bakıldığında, kirlilik endeksinin suç oranlarını artırıcı etkisi dikkat çekicidir. Kirlilik ve çevresel bozulma, bireylerin yaşam kalitesini düşürerek stres seviyelerini artırabilir ve suça yönelimi tetikleyebilir. Bu bulgu, Batkeyev ve DeRemer (2023) ile Rau vd. (2024) gibi çalışmaların, çevresel koşulların suçla olan ilişkisine dair bulgularıyla örtüşmektedir. Batkeyev ve DeRemer (2023) çalışmalarında, yüksek hava kirliliğine sahip bir şehir olan Almatı'da, PM2.5 (çapı 2,5 mikron veya daha küçük olan ince partikül maddelerin) kirliliğindeki artışın beklenen suç oranını istatistiksel olarak anlamlı şekilde artırdığını, bu artışın özellikle mala karşı suçlarda ve hem küçük hem büyük ölçekli suçlarda gözlemlendiğini, ve artışın büyük ölçüde büyük suçlardan kaynaklandığını belirtmişlerdir. Rau vd. (2024) ise Minnesota'da yer alan okullar özelinde yapmış oldukları çalışmalarında, karbon monoksit (IRD=775.62), nitrojen dioksit (IRD=629.16) ve ince partikül madde (IRD=510.49) maruziyetinin yüksek düzeyde olduğu okullarda, düşük maruziyete kıyasla şiddet içeren disiplin olaylarında anlamlı artış olduğu ortaya koymuşlardır.

Emlak fiyatlarının gelire oranının suç oranları üzerindeki etkisine dair bulgular da kentsel gelişim ve suç arasındaki ilişkiye ışık tutmaktadır. Jonathan vd. (2021) ve Asghar vd. (2016) gibi çalışmalar, ekonomik ve sosyal yapıların suç oranları üzerindeki belirleyici rolünü vurgulamaktadır. Emlak fiyatlarının yüksek olduğu bölgelerde, düşük gelirli bireylerin bu bölgelerde barınma sorunları yaşaması, sosyal dışlanma ve suç oranlarının artmasına yol açabilir.

Bu çalışmada elde edilen bulgular, suç oranları üzerinde ekonomik ve sosyal dinamiklerin etkilerine ilişkin derinlemesine analizler sunması nedeniyle önemli bir katkı sağlamaktadır. Dolayısıyla, söz konusu sonuçların suçla mücadele stratejilerinin formülasyonuna rehberlik etmesi ve ekonomik genişlemenin suç üzerindeki olası olumsuz etkilerinin hafifletilmesine yönelik politikaların geliştirilmesinde değerli bir temel oluşturması beklenmektedir. Bu bağlamda bulgular, suçla mücadele politikalarının yalnızca cezai yaptırımlar ve güvenlik önlemleri ile sınırlı kalmaması gerektiğini; bunun yerine ekonomik, sosyal ve çevresel boyutların da politika tasarımında dikkate alınmasının zorunlu olduğunu ortaya koymaktadır. Bu durum, suç oranlarını azaltmaya yönelik daha kapsayıcı ve çok boyutlu stratejilerin geliştirilmesine zemin hazırlamaktadır. Çalışmada 2018-2023 dönemine ait 60 farklı ülkeye ilişkin verilerin kullanılması, elde edilen sonuçların hem genellenebilirliğini hem de uluslararası politika önerilerine referans oluşturma kapasitesini güçlendirmektedir. Çalışmada elde edilen bulgular doğrultusunda geliştirilebilecek somut politika önerileri şu şekildedir:

- Ekonomik boyut: Ekonomik büyüme ile suç oranları arasındaki pozitif ilişki dikkate alındığında, büyümenin daha adil ve kapsayıcı biçimde planlanması gerekmektedir. Bu kapsamda, düşük gelirli gruplara yönelik istihdam teşvikleri, sosyal yardım programları ve gelir dağılımını iyileştirici vergi politikaları uygulanabilir.
- Satın alma gücü: Satın alma gücündeki artışın suç oranlarını artırıcı etkisi, gelir artışının her birey için eşit fırsatlar yaratmaması ile ilişkili olabilir. Bu nedenle, temel ihtiyaçlara erişimi kolaylaştıracak sübvansiyon politikaları, konut ve gıda güvenliğini artırmaya yönelik sosyal politikalar geliştirilebilir.
- Çevresel boyut: Kirlilik endeksinin suç oranlarını artırıcı etkisi, çevresel koşulların sosyal davranışlar üzerindeki belirleyiciliğini göstermektedir. Bu doğrultuda, özellikle kentleşmenin yoğun olduğu bölgelerde hava ve çevre kirliliğini azaltıcı önlemler (yeşil alanların artırılması, emisyon kontrolleri, çevresel eğitim programları) suçun önlenmesine dolaylı katkı sağlayabilir. Özellikle dar gelirli

semtlerdeki hava kalitesini iyileştirmek için fabrikalara filtre takılması veya toplu taşıma sistemlerinin geliştirilmesi gibi önlemler, suçun toplumsal bağlamdaki olumsuz etkilerini azaltabilir. Aynı zamanda, ev sahibi olmanın zorlaşması da bir sorun teşkil etmektedir. Bu kapsamda da, kiraların düşürülmesi veya uygun fiyatlı toplu konut projelerinin desteklenmesi, konutlara erişimi kolaylaştırarak toplumsal refaha katkı sağlayabilir.

Bu bulgular, suçun yalnızca bireysel eğilimlerden ibaret olmadığını; aynı zamanda toplumsal, ekonomik ve çevresel koşullarla şekillendiğini ortaya koyarak literatüre çok boyutlu bir bakış açısı kazandırmaktadır. Suçla mücadele stratejilerinde yapısal faktörlere odaklanılması, daha sürdürülebilir ve etkili sonuçların elde edilmesini mümkün kılacaktır.

### Sonuç

Bu çalışma, 60 ülkeye ait 2018–2023 dönemi verilerini kullanarak ekonomik, sosyal ve çevresel göstergelerin suç oranları üzerindeki etkilerini dinamik panel veri analizi aracılığıyla incelemiş ve suçun çok boyutlu doğasına dair önemli kanıtlar sunmaktadır. Elde edilen sonuçlar, suç oranlarının yalnızca bireysel eğilimlerle değil, toplumların ekonomik istikrarı, çevresel kalitesi ve sosyal bütünleşme düzeyiyle yakından ilişkili olduğunu göstermektedir.

Çalışmada, ekonomik büyüme, satın alma gücü, kirlilik düzeyi ve emlak fiyatlarının gelire oranı gibi göstergelerin suç oranlarını artırıcı yönde etkiler yarattığı görülmektedir. Bu durum, ekonomik büyümenin tek başına refah yaratmadığını; büyümenin kapsayıcı, dengeli ve adil dağılımla desteklenmediği koşullarda gelir farklılıklarının toplumsal huzursuzluk, güvensizlik ve suça eğilim şeklinde yansıdığını göstermektedir. Bulgular, suçun ekonomik refah düzeyinden çok adalet algısı, fırsat eşitliği ve yaşam kalitesi unsurlarıyla yakından ilişkili olduğunu ortaya koymaktadır. Diğer bir ifadeyle, ekonomik göstergelerdeki bozulma yalnızca gelir kaybını değil, aynı zamanda bireylerin sosyal ve psikolojik dengelerini de etkilemekte; bu da suçu tetikleyen yapısal bir kırılma oluşturmaktadır.

Bu bağlamda, çevresel koşulların kötüleşmesi de ekonomik dengesizliklerle birlikte suç oranlarını artıran bir başka faktör olarak öne çıkmaktadır. Kirlilik düzeyindeki artış, bireylerin yaşam kalitesini düşürmekte, çevresel stres ve psikolojik baskıyı artırarak toplumsal gerilimi beslemektedir. Böylece suç, yalnızca ekonomik bir sorun değil; çevresel, sosyal ve psikolojik boyutları olan çok katmanlı bir olgu hâline gelmektedir. Ayrıca, emlak fiyatlarının gelire oranındaki yükselme ve satın alma gücündeki dengesizlikler, bireylerin barınma ve temel ihtiyaçlarını karşılama gücünü zayıflatarak sosyal dışlanmayı ve ekonomik baskıyı artırmaktadır. Bu koşullar, görece yoksunluk hissini derinleştirerek bireylerin suça yönelme olasılığını güçlendirmektedir. Dolayısıyla, gelir eşitsizlikleri, yaşam maliyetleri ve çevresel bozulma birlikte değerlendirildiğinde, suçun yalnızca bireysel değil, sosyo-ekonomik ve çevresel sistemlerin etkileşimiyle şekillenen bir sorun olduğu anlaşılmaktadır.

Araştırmanın sonuçları, suçla mücadelede cezai mekanizmaların tek başına yeterli olmadığını; ekonomik, çevresel ve sosyal politikaların bütüncül bir şekilde tasarlanması gerektiğini ortaya koymaktadır. Bu kapsamda, kapsayıcı büyüme stratejilerinin benimsenmesi, gelir dağılımının iyileştirilmesi, çevresel kalitenin artırılması ve konut erişilebilirliğinin sağlanması suçun temel nedenlerini zayıflatabilmektedir. Özellikle kentleşme politikalarında sosyal adaletin gözetilmesi, çevreye duyarlı planlama anlayışının benimsenmesi ve toplumsal dayanışmayı güçlendiren projelerin teşvik edilmesi önem taşımaktadır.

Çalışma, literatüre üç temel katkı sunmaktadır. Birincisi, ekonomik, sosyal ve çevresel göstergeleri aynı modelde ele alarak suçun nedenlerini disiplinler arası bir bakış açısıyla incelemektedir. İkincisi, Sistem GMM yöntemi kullanımıyla dinamik yapının ve olası içsellik problemlerinin güvenilir biçimde analiz edilmesini sağlamaktadır. Üçüncüsü ise, pandemi sonrası dönemin etkilerini kapsayan geniş bir veri setiyle güncel ve karşılaştırmalı bir çerçevede sunarak suçun küresel ölçekteki dinamiklerine ilişkin ampirik kanıtlar üretmektedir.

Bununla birlikte, gelir eşitsizliği, eğitim seviyesi, kentleşme oranı ve dijitalleşme göstergeleri gibi değişkenlerin modele eklenmesi, suçun yapısal belirleyicilerini daha derinlemesine anlamak açısından gelecek çalışmalara yön verebilir. Ayrıca, bölgesel ya da ülke bazında yapılacak karşılaştırmalı araştırmalar, suçun kültürel ve kurumsal belirleyicilerinin daha ayrıntılı incelenmesine olanak sağlayacaktır.

Sonuç olarak, bu çalışma suçun ekonomik, çevresel ve sosyal kökenlerine ışık tutarak yalnızca güvenlik temelli değil, kapsayıcı kalkınma, çevresel sürdürülebilirlik ve sosyal refah temelli politikaların önemini vurgulamaktadır. Suç oranlarını azaltmak, cezalandırma mekanizmalarından çok toplumsal adaletin tesisine, ekonomik fırsat eşitliğine ve yaşam kalitesinin iyileştirilmesine bağlı olmaktadır. Bu yönüyle araştırma, suçun nedenlerine yönelik daha adil, sürdürülebilir ve insani politika yaklaşımlarına katkı sunmaktadır.

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**Research Article**

**The Impacts of the Development Road Project on International Trade: A Pestel  
Analysis**

**Uğur Erdoğan <sup>a</sup>**

**Abstract**

**Introduction:** In recent years, changes in global supply chains, the growing need for energy security, and regional geopolitical transformations have increased the strategic importance of transportation infrastructures. In this context, the Development Road Project, launched under the leadership of Türkiye and Iraq, stands out as an alternative trade corridor connecting the Persian Gulf to Europe. The Development Road not only enhances economic integration between the two countries but also serves as a concrete example of Türkiye's strategy to expand its regional influence through transportation diplomacy. This study aims to reveal the potential impacts of the Development Road Project on international trade through a multidimensional analysis.

**Method:** Accordingly, the project's political, economic, socio-cultural, technological, environmental, and legal dimensions have been examined in detail using the PESTEL analysis method.

**Results or Findings:** The findings indicate that the project not only contributes to the trade volume between Türkiye and Iraq but also supports regional stability, facilitates the creation of new logistics hubs, and strengthens Türkiye's influence along the Middle Corridor. However, issues such as financing structure, security risks, regional competition, and infrastructure incompatibilities present significant challenges to the project.

**Discussion or Conclusion:** The Development Road Project offers a strategic opportunity for Türkiye to enhance its position in international trade and logistics in alignment with sustainable development goals.

*Keywords:* Development Road Project, transportation diplomacy, PESTEL analysis, international trade, trade corridors.

*JEL Codes:* F15, R42, F60

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**Araştırma Makalesi**

**Kalkınma Yolu Projesi'nin Uluslararası Ticaret Üzerindeki Etkileri: Pestel Analizi**

**Uğur Erdoğan<sup>a</sup>**

**Öz**

**Giriş:** Son yıllarda küresel tedarik zincirlerinde yaşanan değişimler, enerji güvenliği ihtiyacı ve bölgesel jeopolitik dönüşümler, ulaştırma altyapılarının stratejik önemini artırmıştır. Bu bağlamda, Türkiye ve Irak'ın öncülüğünde hayata geçirilen Kalkınma Yolu Projesi, Basra Körfezi'ni Avrupa'ya bağlayan alternatif bir ticaret koridoru olarak dikkat çekmektedir. Kalkınma Yolu sadece iki ülke arasındaki ekonomik entegrasyonu artırmakla kalmamakta aynı zamanda Türkiye'nin ulaştırma diplomasisi yoluyla bölgesel etki alanını genişletme stratejisinin de somut bir örneğini sunmaktadır. Bu çalışma, Kalkınma Yolu Projesi'nin uluslararası ticaret üzerindeki potansiyel etkilerini çok boyutlu bir analizle ortaya koymayı amaçlamaktadır.

**Yöntem:** PESTEL analizi yöntemiyle projenin politik, ekonomik, sosyo-kültürel, teknolojik, çevresel ve yasal boyutları detaylı şekilde incelenmiştir.

**Sonuçlar ya da Bulgular:** Bulgular, projenin sadece Türkiye-Irak ticaret hacmine katkı sağlamakla kalmayıp aynı zamanda bölgesel istikrarı desteklediğini, yeni lojistik merkezler oluşturduğunu ve Türkiye'nin Orta Koridor üzerindeki etkisini güçlendirdiğini ortaya koymaktadır. Bununla birlikte, finansman yapısı, güvenlik riskleri, bölgesel rekabet ve altyapı uyumsuzlukları gibi çeşitli zorlukların da projeye yönelik tehdit oluşturduğu görülmektedir.

**Tartışma ya da Yapılan Çıkarımlar:** Kalkınma Yolu Projesi, uluslararası ticaret ve lojistikte stratejik konumunu güçlendirmek isteyen Türkiye açısından sürdürülebilir kalkınma hedefleriyle uyumlu bir fırsat sunmaktadır.

**Anahtar Kelimeler:** Kalkınma Yolu Projesi, ulaştırma diplomasisi, PESTEL analizi, uluslararası ticaret, ticaret koridorları.

*JEL Kodlar:* F15, R42, F60

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## Giriş

Küreselleşme süreciyle birlikte ekonomiler arasındaki karşılıklı bağımlılığın artması ve sınırların ekonomik anlamda önemini yitirmesi, ulaştırma ve lojistik sektörlerini ulusal ve uluslararası düzeyde oldukça stratejik ve önemli unsurlar hâline getirmiştir. Bu gelişmeler doğrultusunda, yük taşımacılığı yalnızca ekonomik faaliyetlerin destekleyicisi değil, aynı zamanda küresel tedarik zincirlerinin sürekliliği açısından da temel bir bileşen olarak görülmektedir. Artan ticaret hacmi, çeşitlenen tüketim yapıları ve zamana duyarlı lojistik çözümlerin gerekliliği, taşımacılık sektörünü sürdürülebilir kalkınmanın ve ekonomik entegrasyonun anahtarı konumuna getirmiştir.

Ulaştırma, günümüzde uluslararası ticaretin temel yapı taşlarından biri haline gelerek küresel ticaretin en dinamik gündem maddelerinden biri olarak öne çıkmaktadır. Özellikle Çin başta olmak üzere Asya kıtasında yoğunlaşan küresel üretim merkezleri, mal ve hizmetlerin dünya geneline etkin biçimde ulaştırılabilmesi için yeni altyapı ve ulaşım yatırımlarının hız kazanmasına neden olmuştur. Bu gelişme, yalnızca artan küresel ticaret hacmini desteklemekle kalmamış; aynı zamanda yeni ticaret yollarının keşfini ve devletlerarası ticari ilişkilerde yeni bölgesel kümelenmelerin oluşumunu da beraberinde getirmiştir.

Çin'in son yıllarda özellikle Kuşak ve Yol Girişimi kapsamında yaptığı büyük ölçekli lojistik yatırımlar, Asya-Avrupa ekseninde büyük bir lojistik ağ inşasına olanak tanımıştır. Ancak jeopolitik riskler, küresel ekonomik dalgalanmalar ve bu projenin tek merkezli yapısına ilişkin eleştiriler, Kuşak ve Yol Girişimi'nin uluslararası lojistik ihtiyacını tek başına karşılayamayacağına dair endişeleri gündeme getirmiştir. 2025 yılı haziran ayında İran ve İsrail arasında ortaya çıkan çatışmada petrol ticareti için önemli bir geçiş güzergahı Hürmüz Boğazı'nın kapanma durumu ciddi bir risk meydana getirmiştir. Bu bağlamda Kalkınma Yolu Projesi önemli bir alternatif potansiyeli taşımaktadır.

2023 yılında Hindistan'da gerçekleştirilen G7 Zirvesi'nde tanıtılan Hindistan-Ortadoğu-Avrupa Koridoru (IMEC), başta Türkiye olmak üzere birçok ülkenin dikkatini yeni sürece yönlendirmiştir. Türkiye ise, bu jeostratejik fırsatı değerlendirerek, bölge ülkeleri ile imzaladığı iş birliği protokolleri aracılığıyla alternatif bir lojistik koridor oluşturma girişimlerini hızlandırmıştır. Bu doğrultuda hayata geçirilmesi planlanan Kalkınma Yolu Projesi, yalnızca ekonomik değil, aynı zamanda bölgesel istikrarı destekleyen ve sınır ötesi ticari iş birliklerini teşvik edici bir potansiyele de sahiptir. Bu bağlamda Kalkınma Yolu Projesi, yalnızca ikili ticaret hacmini artırma potansiyeline sahip değil, aynı zamanda Körfez ülkeleri ve Avrupa Birliği gibi üçüncü aktörlerin de sürece dâhil olmasına imkân tanımaktadır. Çalışma kapsamında Türkiye ve Irak'ın öncülüğünü üstlendiği Kalkınma Yolu Projesi hakkında genel bilgilendirmeler yapılarak projenin önündeki fırsatlar ve tehditler ile potansiyeli değerlendirilmektedir. Bu bağlamda çalışma, Kalkınma Yolu Projesi'nin çok boyutlu etkilerini ortaya koyarak uluslararası ticaret perspektifine katkı sunmaktadır. Literatürde Kalkınma Yolu Projesi'ne ilişkin çalışmalar henüz oldukça yenidir ve uluslararası ticaret üzerindeki etkilerini ele alan araştırma sayısı sınırlıdır. Bu bağlamda mevcut çalışma, PESTEL analizi yaklaşımıyla söz konusu boşluğu doldurmayı hedeflemektedir.

### **Küresel Ticaret Koridorları ve Türkiye'nin Ulaştırma Diplomasisi**

Günümüzde birçok bölgede yaşanan güvenlik sorunları, mevcut ulaşım güzergâhlarının güvenliğini tehdit etmekte ve bu nedenle daha uzun mesafeli, zaman açısından daha maliyetli alternatif ticaret yollarının tercih edilmesini zorunlu kılmaktadır. Bu durum, uluslararası ticaretin toplam maliyetlerini ve tedarik sürelerini artırmakta, dolayısıyla küresel tedarik zincirlerinin etkinliğini ve sürekliliğini olumsuz yönde etkilemektedir (Baz, 2024).

Küresel ticarete ülkeler arasındaki rekabetin belirleyici unsurlarından biri, ihracat ve ithalat ürünlerinin mümkün olan en kısa sürede çıkış noktasından varış noktasına ulaştırılabilmesidir. Lojistikteki bu zaman hassasiyeti, yalnızca ekonomik kazanımları değil, aynı zamanda ülkelerin jeostratejik önemini de doğrudan etkilemektedir. Bu nedenle, coğrafi olarak stratejik bir avantaja sahip olmayan birçok ülkenin dahi, uluslararası ticaret koridorlarında yer alabilmek ve transit geçiş avantajlarından faydalanabilmek amacıyla çeşitli girişimlerde bulunduğu görülmektedir.

Türkiye'nin ulaştırma diplomasisi çerçevesinde, Orta Koridor boyunca yüksek kapasiteli ve verimli bir demiryolu taşımacılığı altyapısının tesis edilmesi yönündeki stratejik hedefleri, bölgedeki ulaştırma güzergâhlarının önemini artırmaktadır. Bu kapsamda, Türkiye; Azerbaycan ve Gürcistan ile iş birliği içerisinde Bakü-Tiflis-Kars (BTK) demiryolu hattının inşasında öncü bir rol üstlenmiştir. Söz konusu hat, Orta Koridor'un kritik bir parçası olarak, Anadolu üzerinden kesintisiz demiryolu taşımacılığına olanak tanımakta ve Avrupa ile Asya arasındaki ticari entegrasyonu güçlendirmektedir (Aykan, 2024).

Türkiye, topraklarının bir bölümünün Avrupa'da, diğer kısmının ise Asya'da yer alması nedeniyle önemli bir jeopolitik konuma sahiptir. Türkiye'nin Asya'dan Avrupa'ya ve Akdeniz'den Karadeniz'e uzanan uluslararası geçiş güzergâhları üzerinde bulunması, ayrıca Kafkasya ve Orta Doğu'ya olan coğrafi yakınlığı, küresel ticaret ve lojistik açısından stratejik bir avantaj sağlamaktadır (Sayan, 2024). Özellikle çevre bölgelerde yer alan ülkelerin başta petrol ve doğalgaz olmak üzere çeşitli mal ve hammaddelerini uluslararası pazarlara ulaştırma sürecinde, kullanılan hava, kara ve deniz taşımacılığı rotalarının önemli bir kısmı doğrudan ya Türkiye topraklarından ya da yakın çevresinden geçmektedir. Bu durum, Türkiye'yi yalnızca bir transit ülke değil, aynı zamanda küresel ticaret ve enerji akışında kilit bir lojistik merkez hâline getirmektedir.

Bağlantı projeleri ve ulaştırma koridorları, yalnızca teknik altyapı yatırımları değil; aynı zamanda çok paydaşlı yatırım ve fayda ilişkileri içeren stratejik projelerdir. Bu tür projelerde hem yatırımcılar hem de faydalanıcılar açısından, koridorların geçtiği ülkeler ve bölgeler bölgesel ve küresel düzeyde artan stratejik öneme sahip olmaktadır. Genellikle bu güzergâhlar, zaten coğrafi olarak en uygun rotalar olduğundan, bu bölgeler uzun süre boyunca potansiyel ancak atıl kalan stratejik değerlerini, söz konusu projelerle birlikte aktif ve vazgeçilmez jeopolitik varlıklara dönüştürmektedir (Öztürk, 2024).

Tarihte Tebriz, Erzurum, Tokat ve Bursa üzerinden geçen İpek Yolu ile Basra, Bağdat ve Halep güzergâhından ilerleyen Baharat Yolu, bölge halkları arasında ekonomik iş birliğini teşvik etmiş; bu ticaret yolları sayesinde bilim, sanat ve sanayi alanlarında kayda değer gelişmeler yaşanmıştır. Bu bağlamda, Kalkınma Yolu Projesi, tarihi ticaretin yeniden canlandırılması ve geçmişte ticaretle birlikte gelişen sosyal ve kültürel yapının ihyası açısından stratejik öneme sahiptir (Baskın & Özgöker, 2024).

### **Türkiye – Irak Dış Ticareti ve Uluslararası Ticaretteki Yansımaları**

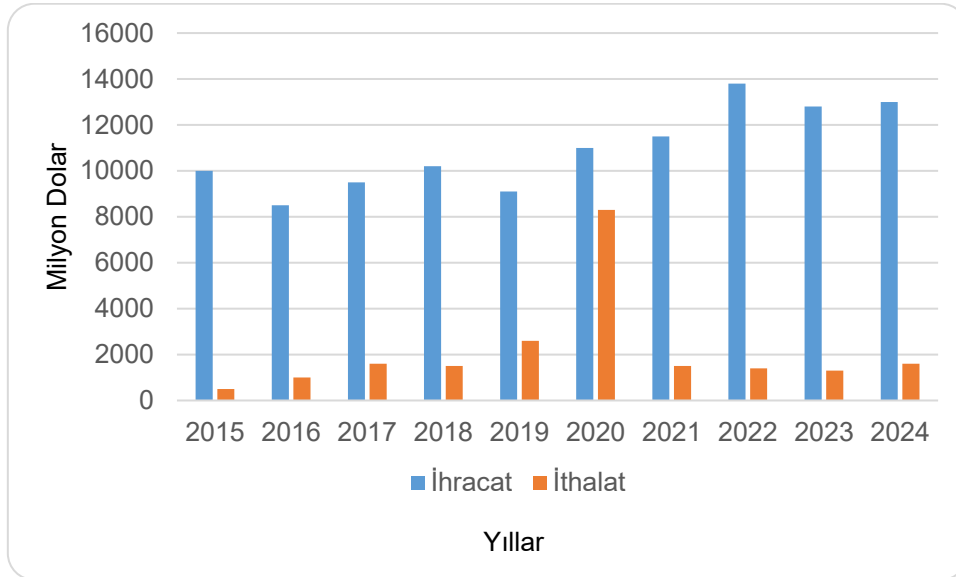
Irak, küresel ölçekte ekonomik olarak petrole en yüksek düzeyde bağımlı ülkelerden biri konumundadır. Son on yıllık dönemde petrol gelirleri, ülkenin ihracat gelirlerinin %99'undan fazlasını, hükümet bütçesinin yaklaşık %85'ini ve gayrisafi yurt içi hasılasının %42'sini oluşturarak ekonomik yapının büyük oranda tek bir sektöre dayandığını ortaya koymuştur (World Bank, 2023). Irak, OPEC üyesi ülkeler arasında Venezuela, Suudi Arabistan ve İran'ın ardından dördüncü sırada yer almaktadır. Irak, petrol ihracatını Basra Körfezi, Türkiye'nin Ceyhan Limanı ve Ürdün üzerinden gerçekleştirmektedir. Nitekim petrol fiyatlarındaki uluslararası dalgalanmalar, Irak ekonomisini doğrudan etkilemekte; gelir

istikrarını ve bütçe planlamasını kırılgan hâle getirmektedir. Ayrıca geçmişte uzun süreli ekonomik ambargoların uygulanması ve ülke içindeki güvenlik sorunlarının süreklilik arz etmesi, Irak'ın küresel ekonomik sistemle bütünleşmesini ciddi biçimde zorlaştırmıştır.

Şekil 1'de görüldüğü üzere 2015–2024 dönemine ait dış ticaret verileri, Türkiye ile Irak arasında istikrarlı ve karşılıklı bağımlılığa dayalı bir ticaret ilişkisi bulunduğunu ortaya koymaktadır. Grafik verisine göre Türkiye'nin Irak'a ihracatı, 2015 yılında yaklaşık 10 milyar dolar seviyesinde iken 2020 yılında kısa süreli bir düşüş göstermiş; ancak takip eden yıllarda yeniden yükselişe geçerek 2022 yılında 13,7 milyar dolara ulaşmıştır. 2024 yılı itibarıyla ihracat 13 milyar dolar düzeyinde gerçekleşmiştir. Öte yandan ithalat rakamları görece daha düşük seviyelerde seyretmekte olup 2020 yılında 8,2 milyar dolarla zirve yaptıktan sonra yeniden düşüş eğilimine girmiştir. Bu durum, Türkiye'nin Irak ile olan ticaretinde sürekli ve yüksek düzeyde dış ticaret fazlası verdiğini göstermektedir.

### Şekil 1

*Türkiye'nin Irak ile Dış Ticareti (2015-2024)*



Açıklama. Türkiye İstatistik Kurumu [TÜİK] (Çevrimiçi), Dış Ticaret İstatistikleri, ülkelere göre dış ticaret verilerinden alınmıştır, 2025.

Sektörel anlamda Tablo 1 incelendiğinde, Türkiye'nin Irak'a ihracatında öne çıkan ilk 10 sektör, toplam ihracatın çeşitliliğini ve tarım, sanayi ve teknoloji temelli üretimin bütünleşik yapısını ortaya koymaktadır. 2024 yılı itibarıyla en yüksek ihracat, 2,1 milyar dolar ile "Hububat, Bakliyat, Yağlı Tohumlar ve Mamulleri" sektöründe gerçekleşmiştir. Bu sektörü sırasıyla "Kimyevi Maddeler ve Mamulleri" (1,15 milyar \$), "Mobilya, Kâğıt ve Orman Ürünleri" (1,14 milyar \$) ve "Elektrik ve Elektronik" (810 milyon \$) sektörleri takip etmektedir. Bu veriler, Türkiye'nin gıda, temel tüketim ürünleri ve orta teknolojiye dayalı sanayi ürünlerinde Irak pazarında önemli bir ihracatçı konumunda olduğunu göstermektedir.

**Tablo 1***Türkiye'nin Irak'a İhracatındaki İlk 10 Sektör (2024 Yılı)*

Sektör	Miktar (x1000\$)
Hububat, Bakliyat, Yağlı Tohumlar ve Mamulleri	2.147.436
Kimyevi Maddeler ve Mamulleri	1.158.286
Mobilya, Kağıt ve Orman Ürünleri	1.143.138
Elektrik ve Elektronik	810.161
Çelik	682.725
Su Ürünleri ve Hayvansal Mamuller	590.407
Hazır giyim ve Konfeksiyon	559.832
Demir ve Demir Dışı Metaller	549.579
Mücevher	452.321
Yaş Meyve ve Sebze	393.121

Açıklama. Türkiye İhracatçılar Meclisi (Çevrimiçi), Irak Bilgi Notu verilerinden alınmıştır, 2025.

İthalat açısından Tablo 2 incelendiğinde ise Türkiye'nin Irak'tan satın aldığı ürünler sınırlı sektörlerde yoğunlaşmaktadır. 2024 yılında ithalatın büyük bir kısmı, 1,66 milyar dolar ile “Kimyevi Maddeler ve Mamulleri” sektöründen oluşmuştur. Diğer sektörlerin ithalat hacmi ise oldukça sınırlı kalmıştır. Örneğin “Mobilya, Kâğıt ve Orman Ürünleri” 62 milyon dolar, “Demir ve Demir Dışı Metaller” 49 milyon dolar, “Elektrik ve Elektronik” ise sadece 1,3 milyon dolar seviyesinde gerçekleşmiştir. Bu durum, Türkiye'nin Irak'tan gerçekleştirdiği ithalatın hem hacimsel hem sektörel çeşitlilik bakımından sınırlı kaldığını, dolayısıyla iki ülke arasındaki ticaret yapısının Türkiye lehine olduğunu göstermektedir.

**Tablo 2***Türkiye'nin Irak'tan İthalatındaki İlk 10 Sektör (2024 Yılı)*

Sektör	Miktar (x1000\$)
Kimyevi Maddeler ve Mamulleri	1.664.024
Mobilya, Kağıt ve Orman Ürünleri	62.103
Demir ve Demir Dışı Metaller	49.392
Hububat, Bakliyat, Yağlı Tohumlar ve Mamulleri	11.919
Meyve Sebze Mamulleri	10.891
Deri ve Deri Mamulleri	10.313
Mücevher	6.472
Su Ürünleri ve Hayvansal Mamuller	3.624
Yaş Meyve ve Sebze	2.009
Elektrik ve Elektronik	1.355

Açıklama. Türkiye İhracatçılar Meclisi (Çevrimiçi), Irak Bilgi Notu verilerinden alınmıştır, 2025.

Günümüzde dünyanın en büyük ham petrol ithalatçısı konumunda bulunan Çin Halk Cumhuriyeti, yaklaşık 50 milyar doları bulan ticaret hacmiyle Irak'ın en büyük dış ticaret ortağıdır. Çinli enerji şirketleri, Irak'ta onun üzerinde petrol ve doğalgaz sahasında aktif faaliyet göstermekte olup, ülkenin toplam petrol ihracatının yaklaşık %35'lik kısmını ithal etmektedir (Çalışkan, 2024). Enerji ithalatının büyük bölümünü Orta Doğu kaynaklı olarak temin eden ve dünya ekonomisinde ikinci sırada yer alan Çin, bu bölgeye olan stratejik bağımlılığının farkında olarak Arap ülkeleriyle siyasi ve ekonomik ilişkilerini çeşitlendirme ve derinleştirme eğilimi göstermektedir (White & England, 2022). Bu durum, Çin'in sadece enerji güvenliği ekseninde değil, aynı zamanda bölgesel altyapı projeleri ve bağlantı stratejileri üzerinden de Orta Doğu ile olan ilişkilerini uzun vadeli iş birliklerine dönüştürme hedefinde olduğunu ortaya koymaktadır.

Türkiye ile Irak arasında son dönemde artan diplomatik temaslar, iki ülkenin ekonomik ve stratejik iş birliklerini derinleştirme yönündeki iradesini ortaya koymaktadır. Bu bağlamda, Kalkınma Yolu Projesi, Basra Körfezi'nden Türkiye üzerinden Avrupa'ya uzanacak yeni bir ulaşım ve ticaret koridoru oluşturmayı hedeflemektedir. Proje, sadece fiziksel altyapı yatırımı olmanın ötesinde, bölgesel entegrasyonu güçlendirme ve ekonomik kalkınmayı teşvik etme potansiyeline sahiptir. Taraflar arasında imzalanan mutabakatlarla projenin hayata geçirilmesi yönünde somut adımlar atılmıştır. Bu gelişmeler, Türkiye'nin ulaştırma diplomasisi çerçevesinde, uluslararası ticaretteki rolünü pekiştirme ve bölgesel iş birliğini artırma çabalarının bir yansımasıdır. Birleşik Arap Emirlikleri ve Katar gibi Körfez ülkelerinin projeye ilgisi, Kalkınma Yolu Projesi'nin bölgesel ve küresel ölçekte stratejik değerini artıran bir unsur olarak değerlendirilmektedir (Öztürk, 2025). Rusya üzerinden geçen Kuzey Koridoru ile Rusya ve İran'ı birbirine bağlayan Kuzey-Güney Koridoru'na karşılık, Türkiye üzerinden geçen Orta Koridor ve Kalkınma Yolu önemli birer alternatif olarak ortaya çıkmaktadır. Bunun yanı sıra, Çin'in Kuşak ve Yol Girişimi kapsamında geliştirdiği Çin-Pakistan Ekonomik Koridoru'nun denize açılan noktası olan Gwadar Limanı'na ulaşan yüklerin, Basra Körfezi üzerinden geçerek Kalkınma Yolu aracılığıyla Avrupa'ya taşınması öngörülmektedir (Çevik, 2025).

Körfez ülkelerinin projeye yakınlık göstermesi, Çin'in enerji güvenliği ve Kuşak-Yol Girişimi ile bağlantıları, Avrupa Birliği'nin enerji arz güvenliği ve alternatif lojistik hatlara duyduğu ihtiyaç dikkate alındığında, proje uluslararası ticaret ağlarının yeniden şekillenmesine katkı sağlayabilecek stratejik bir girişim olarak öne çıkmaktadır. Bu bağlamda Kalkınma Yolu Projesi hem bölgesel entegrasyonu hem de küresel ticaretin güvenli, sürdürülebilir ve çeşitlendirilmiş rotalar üzerinden işlenmesini destekleyecek önemli bir fırsat sunmaktadır.

### **Kalkınma Yolu Projesi**

Ülkelerin kendi toprakları üzerinden bağlantı projeleri başlatmaları, onları yalnızca ticari değil aynı zamanda bölgesel ve küresel düzeyde vazgeçilmez siyasi aktörler hâline getirmektedir. Kalkınma Yolu Projesi de bu bağlamda hem Türkiye hem de Irak'ın stratejik derinliğini ve çok boyutlu dış politika kapasitesini artıran bir girişim olarak değerlendirilmektedir (Orhan & Oflaz, 2024).

Türkiye ve Irak, Kalkınma Yolu Projesi öncülüğünde yalnızca ekonomik bir koridor inşa etmekle kalmayıp, aynı zamanda uzun vadeli istikrarlarını güçlendirme yönünde stratejik bir yatırım gerçekleştirmektedir. Oysa Orta Doğu bağlamında uzun vadeli istikrar, oldukça nadir ve değerli bir unsur olup; bölgenin hızla değişen siyasi dengeleri, sık sık patlak veren çatışmalar ve yapısal krizler, kalkınma projelerinin sürdürülebilirliğini büyük ölçüde zorlaştırmaktadır (Yılmaz, 2024).

Türkiye ve Irak arasındaki ekonomik, lojistik ve siyasi etkileşim, taraflar arasındaki tüm farklılıkları ikincil hâle getirecek düzeyde hayati bir iş birliği zeminine dönüşebilecek potansiyeldedir. Bu yönüyle Kalkınma Yolu Projesi, yalnızca bir ulaştırma ve altyapı yatırımı değil; aynı zamanda ikili ilişkilerdeki kronik sorunları aşmaya katkı sağlayacak stratejik bir iş birliği aracı olarak da değerlendirilmektedir. Karayolları, demiryolları, enerji iletim hatları ve iletişim altyapılarını içeren Kalkınma Yolu Projesi'nin, sırasıyla 2028, 2033 ve 2050 yıllarına tekabül eden üç aşamada tamamlanması planlanmaktadır (Anadolu Ajansı, 2023). Bu büyük ölçekli altyapı hamlesi, yalnızca Irak'ı değil; Avrupa'dan Körfez ülkelerine kadar uzanan geniş bir bölgeyi etkileme potansiyeline sahiptir.

## Şekil 2

### Kalkınma Yolu Güzergahı



Açıklama. Bu şekil Mapcreator programı vasıtasıyla oluşturuldu. Arial font bu program tarafından desteklenmemektedir.

Günümüzde Asya ile Avrupa arasındaki uluslararası ticaret ve taşımacılık akışı büyük ölçüde Kızıldeniz üzerinden Süveyş Kanalı rotasına ya da Ümit Burnu üzerinden geçen Cape Rotası'na dayanmaktadır. Son dönemde Yemen'de faaliyet gösteren Ensarullah (Husiler) tarafından gerçekleştirilen saldırılar nedeniyle Kızıldeniz güvenliği zayıflamış, bu da birçok küresel taşıyıcının Süveyş Kanalı yerine Cape Rotası'nı tercih etmesine yol açmıştır. Ancak bu rota değişimi ciddi zaman kaybına neden olmaktadır; zira Cape Rotası üzerinden yapılan sevkiyatların ortalama süresi yaklaşık 45 gün iken, Süveyş üzerinden bu süre 35 gün civarındadır. Bu noktada Kalkınma Yolu Projesi, lojistik açıdan oyun değiştirici bir potansiyele sahiptir. Projenin tamamlanması hâlinde, Basra Körfezi'nden başlayarak Türkiye üzerinden Avrupa'ya ulaşan taşıma süresinin yaklaşık 25 güne kadar düşmesi öngörülmektedir. Bu süre, yalnızca Süveyş rotasına göre değil, mevcut tüm alternatiflere göre önemli bir zaman avantajı sunmakta ve projenin küresel taşımacılık sistemine yeni bir soluk getirme potansiyelini ortaya koymaktadır (Anadolu Ajansı, 2024).

Kalkınma Yolu Projesi, yaklaşık 1.200 kilometrelik demiryolu ve otoyol altyapısıyla, Irak'ın güneyindeki Büyük Faw Limanı'ndan başlayarak Türkiye üzerinden Avrupa'ya kadar uzanacak stratejik bir lojistik koridor oluşturmayı hedeflemektedir. Projenin tamamlanmasıyla, Basra ile Türkiye arasındaki taşımacılık süresinin yaklaşık 20 saate düşmesi öngörülmekte olup, bu durum transit ticarete önemli bir zaman ve maliyet avantajı yaratacaktır. Projenin yılda 4 milyon konteyner ve 22 milyon ton yük taşıma kapasitesine ulaşması beklenmektedir. Böylece Irak ve Körfez ülkelerinin Avrupa ve Orta Asya ile olan ticaret entegrasyonu yeni bir ivme kazanacaktır (Alaca, 2024). Bu altyapı yatırımları, özellikle Orta Doğu, Körfez Bölgesi ve Güneydoğu Asya ülkelerine yönelik ihracatın kayda değer biçimde artmasını sağlayacaktır. Kalkınma Yolu, Kuşak ve Yol Girişimi'ne doğrudan bir alternatif teşkil etmekten ziyade, Orta Koridor ekseninde bölgesel entegrasyonu derinleştiren tamamlayıcı bir proje niteliği taşımaktadır (Oral, 2024). Türkiye'nin bu projeye verdiği teknik ve diplomatik destek, ülkenin

uluslararası ticarete lojistik merkez olma stratejisiyle doğrudan örtüşmekte ve ulaştırma diplomasinin somut bir tezahürü olarak değerlendirilmektedir.

Kalkınma Yolu Projesi'nin stratejik katkılarından biri, Orta Doğu ve Asya kıtasında yer alan ülkeler arasında ve özellikle Türk Devletleri arasında küresel ticaretin önemli aktörlerini sürece entegre etme potansiyelidir. Bu proje, söz konusu geniş coğrafyada bütüncül bir ulaştırma ve ekonomik entegrasyon anlayışının altyapısını oluşturarak bölgesel iş birliğini daha da ileriye taşımayı amaçlamaktadır. Türkiye'nin jeopolitik konumu ve bölgesel diplomasi kapasitesi sayesinde bu entegrasyonun uygulamaya geçirilmesi mümkün hale gelmektedir. Kalkınma Yolu Projesi'nin, Zengezur Koridoru ve Orta Koridor ile entegrasyonu sağlandığında ise ortaya çıkacak yeni lojistik eksen, sadece bölgesel değil küresel ölçekte de etkili bir ticaret ağına dönüşecektir. Bu çerçevede, Türk Devletleri, Türkiye ve İran, Asya'nın bu yeni kuşak ticaret ve ulaşım sisteminin başlıca aktörleri arasında yer alacaktır (Orhan & Oflaz, 2024).

Kalkınma Yolu Projesi'nin temel altyapı bileşeni, Irak'ın Basra Körfezi kıyısında yer alan Faw Limanı'dır. Irak'ın güneyinde konumlanan bu liman, projenin başlangıç noktası olmasının yanı sıra, bölgesel ticaretin yeniden şekillendirilmesinde stratejik bir rol üstlenmektedir. Liman kompleksi, yalnızca bir yükleme-boşaltma alanı değil; aynı zamanda kuru yük terminalleri, petrol iskeleleri, tersane altyapısı ve deniz üssünü de kapsayan çok işlevli bir yapıda tasarlanmaktadır. Böylece, karayolu ve demiryolu taşımacılığı yoluyla malların daha esnek ve verimli şekilde taşınması mümkün olacak, ulaştırma altyapısının bütüncül işleyişi sağlanmış olacaktır (Agboklou et al., 2024). Tamamlandığında, Faw Limanı'nın Orta Doğu'nun en büyük limanlarından biri haline gelmesi öngörülmektedir (Rogers, 2021).

Kalkınma Yolu Projesi'nin inşası ve bu hattın Faw Limanı ile entegrasyonu, yalnızca ekonomik değil, aynı zamanda toplumsal düzeyde de önemli dönüşümlere yol açma potansiyeline sahiptir. Projenin güzergâhında yer alacak koridorlar ve transit geçiş hatları, yalnızca Irak özelinde değil, bu projeden fayda sağlayacak diğer ülkelerde de sosyal yapıyı dönüştürebilecek etkiler yaratacaktır. Yeni ulaşım bağlantılarının kurulması, bölgesel hareketliliği artırarak kültürel etkileşimleri, yerel kalkınmayı ve istihdam olanaklarını güçlendirecektir (Rahiman et al., 2024). Bu yönüyle proje, altyapı yatırımı olmanın ötesinde sosyoekonomik entegrasyon süreçlerine katkı sağlayan çok boyutlu bir kalkınma aracı olarak değerlendirilmektedir. Ayrıca, Faw Büyük Limanı ile Avrupa arasındaki bağlantının kurulmasına öncelik verilmesi ve bu hat üzerindeki ulaştırma altyapısının hızla tamamlanması, Irak'ın küresel tedarik zincirlerine entegrasyonunu kolaylaştırarak bölge ülkelerine yüksek düzeyde ekonomik getiri sağlayacaktır (Kocakaya, 2024).

Kalkınma Yolu Projesi, özellikle Irak ve Türkiye açısından ekonomik açıdan cazip fırsatlar sunmakla birlikte, aynı zamanda bu iki ülkenin bölgesel ve küresel jeopolitikteki stratejik değerini artırma potansiyeline de sahiptir. Petrol ve doğalgaz boru hatları üzerinden geçen bölgeler ve ülkeler zamanla jeopolitik açıdan kilit öneme sahip aktörler hâline gelmektedir. Bu durum Türkiye'nin uzun süredir enerji merkezi olma hedefinin temel motivasyonlarından biridir. Benzer şekilde, demiryolu, otoyol ve denizyolu gibi ticaret ve lojistik hatları da geçtiği ülkelerin stratejik önemini kayda değer biçimde artırmaktadır (Öztürk, 2024).

Kalkınma Yolu Projesi'nin hayata geçirilmesiyle birlikte Irak ve bölge ülkeleri açısından çok yönlü ekonomik, lojistik ve jeopolitik faydaların elde edilmesi öngörülmektedir. Bu bağlamda projeden şu temel beklentiler öne çıkmaktadır:

- Ticaret Hacminin Artırılması: Irak'ın sahip olduğu doğal kaynaklar ile üretim kapasitesinin, başta Türkiye olmak üzere Avrupa pazarlarına daha kısa sürede ve daha

düşük maliyetle ulaştırılması, ülkenin dış ticaret hacmini önemli ölçüde artırma potansiyeli taşımaktadır.

- Bölgesel Entegrasyonun Güçlendirilmesi: Projenin, Türkiye ve Irak arasında ekonomik ilişkilerin yanı sıra sosyal, kültürel ve politik etkileşimi de artırarak bölgesel entegrasyonu desteklemesi beklenmektedir.
- Modern İpek Yolu'nun Oluşturulması: Kalkınma Yolu, tarihsel İpek Yolu'nun çağdaş bir uzantısı olarak kurgulanmakta ve Asya, Avrupa ile Orta Doğu arasındaki ticaret akışını yeniden canlandırmayı hedeflemektedir. Bu yönüyle proje, kıtalar arası bağlantısallığın stratejik bir bileşeni hâline gelmektedir.
- Lojistik Maliyetlerin Azaltılması: Güzergâhın mevcut ulaşım rotalarına kıyasla daha kısa ve operasyonel açıdan daha verimli olması, taşımacılık ve lojistik alanında maliyetlerin azaltılmasına doğrudan katkı sağlayacaktır. Bu durum hem Irak hem de bölgedeki paydaş ülkeler için rekabet avantajı doğuracaktır.
- Bölgesel İstikrarın Artırılması: Projenin sağlayacağı ekonomik canlanmanın, uzun yıllardır çeşitli güvenlik ve siyasi krizlerle karşı karşıya olan bölgede istikrarı teşvik edici bir etki yaratması hedeflenmektedir. Ekonomik kalkınma ile birlikte toplumsal refahın artması, siyasi tansiyonların düşmesine zemin hazırlayabilecektir (Özçubukçu, 2024).

Türkiye; 85 milyonu aşan nüfusu, 1 trilyon doları geçen ekonomik büyüklüğü ve geniş jeopolitik nüfuz alanı ile söz konusu altyapı koridorundan en fazla fayda sağlayabilecek ülkelerden biri konumundadır. Projenin mutabakat ortaklarından biri olan Birleşik Arap Emirlikleri (BAE) de, son yıllarda özellikle Afrika kıtasında enerji, deniz taşımacılığı ve madencilik gibi sektörlerde gerçekleştirdiği 90 milyar doları aşan doğrudan yatırımlarla dikkat çekmekte ve yükselen bölgesel bir güç olarak öne çıkmaktadır (Pilling, 2024). Bu durum, Kalkınma Yolu Projesi'nin yalnızca bir ulaşım altyapısı değil, aynı zamanda bölgesel güçler arası stratejik iş birliğini somutlaştıran bir kalkınma platformu olduğunu göstermektedir.

Filistin, Suriye ve diğer bölgelerdeki çatışmaların sona erdirilmesi, bölge halklarının refahı ve güvenliği için ortak bir pazar yapısının oluşturulması, tüm tarafların çıkarına olacak politikaların üretilmesi ve gelecekteki tehditlerin ortak hareketle bertaraf edilmesi gerekmektedir. Bu yönde atılacak ilk ve somut adımlardan biri olarak Kalkınma Yolu Projesi değerlendirilmektedir. Bu nedenle, tüm aktörlerin projeye iyi niyetle katkı sunması ve destek vermesi büyük önem taşımaktadır (Baskın & Özgöker, 2024).

Projenin siyasi ve askeri düzeyde çeşitli zorluklarla karşılaşma olasılığı da dikkate değerdir. İlk olarak, projeye taraf veya ortak olarak dâhil edilmemiş olan bazı dışlayıcı bölgesel aktörlerin kendi stratejik çıkarları doğrultusunda Kalkınma Yolu Projesi'ni çeşitli yollarla sabote etme yönünde adımlar atabileceği öngörülmektedir (Koç, 2025). Bu bağlamda İran, Suudi Arabistan ve İsrail, projeye doğrudan dâhil olmayan ve dolayısıyla Kalkınma Yolu'na karşı dengeleyici hamleler geliştirmesi muhtemel başlıca bölgesel aktörler arasında yer almaktadır. Özellikle İran'ın, Irak içerisindeki dini, siyasi ve askeri gruplarla olan güçlü bağları göz önüne alındığında, projeyi sekteye uğratma kapasitesinin Suudi Arabistan ve İsrail'e kıyasla daha yüksek olduğu değerlendirilmektedir. Öte yandan, IMEC (Hindistan-Ortadoğu-Avrupa Ekonomik Koridoru) gibi alternatif projelerin hayata geçmesini arzulayan Suudi Arabistan ve İsrail'in, Kalkınma Yolu'nun bu koridorun önünü kesme ihtimaline karşı temkinli davrandıkları bilinmektedir (Hasan, 2024).

İkinci olarak, ABD ve Çin gibi büyük güçlerin, Kalkınma Yolu Projesi'ni kendi küresel bağlantı projelerine potansiyel bir rakip olarak görme ihtimali bulunmaktadır. Bu bağlamda söz konusu küresel aktörlerin, müttefiklerini ve bölgesel ortaklarını Kalkınma Yolu Projesi'nden uzak tutarak projenin meşruiyetini ve uygulanabilirliğini zayıflatma yönünde diplomatik ve ekonomik araçlara başvurma ihtimalleri göz ardı edilmemelidir.

Son olarak, projenin hayata geçirilmesinde karşı karşıya kalınacak en temel zorluklardan biri de Irak'ın içsel kırılganlıklarıdır. Ülkede varlığını sürdüren etnik ve mezhepsel fay hatları, çok sayıda silahlı ve siyasi oluşumun bir arada bulunması ile birleştiğinde, istikrarsızlık riskini önemli ölçüde artırmaktadır. Dahası, Irak'taki iç aktörlerin özellikle İran'la olmak üzere dış aktörlerle olan yoğun ilişkileri, iç güvenlik ve siyasi denge açısından yapısal bir bağımlılık ve kırılganlık yaratmaktadır. Örneğin, İsrail'in Gazze'ye yönelik saldırıları sonrasında ortaya çıkan bölgesel gerilimlerde Irak'ın, bir yandan İran-ABD hattında, diğer yandan İran-İsrail ekseninde çatışmalı pozisyonlara sürüklenmesi, ülkenin jeopolitik kırılganlığını somut biçimde ortaya koymaktadır.

Kalkınma Yolu Projesi'nin karşı karşıya olduğu en önemli sorunlardan biri de yüksek maliyetidir. Bazı tahminler, Faw Limanı da dâhil olmak üzere projenin başlangıç aşamasındaki toplam maliyetini 12 milyar dolar olarak öngörürken, diğer bazı kaynaklar bu rakamı 17 milyar dolar seviyesinde tahmin etmektedir (Baz, 2024). Söz konusu tahminler projenin kapsamı ve gerekli bütçe tahsisine ilişkin Irak'taki kamu kurumları arasında fikir birliği bulunmadığını göstermektedir. Irak hükümeti, projenin temel altyapı unsurları olan Faw Limanı, karayolu ve demiryolu bağlantıları için kamu finansmanını kullanmayı planladığını belirtmiştir. Öte yandan, yol güzergâhı boyunca inşa edilecek atölye, otel, restoran ve benzeri hizmet tesisleri gibi tamamlayıcı unsurların özel sektör yatırımlarıyla finanse edilmesi öngörülmektedir. Ancak bu yaklaşımın pratiğe dönüşüp dönüşmeyeceğine dair net bir güvence bulunmamaktadır. Geçmişte Irak'ta hayata geçirilmesi planlanan birçok büyük ölçekli altyapı ve kalkınma projesi, yönetimsel zafiyetler ve kurumsal yozlaşma nedeniyle başarısızlığa uğramış ya da kaynak israfı nedeniyle tamamlanamamıştır. Bu durum, yalnızca uygulama kapasitesini değil, aynı zamanda büyük ölçekli projeler için gereken finansal kaynakların etkili ve şeffaf biçimde kullanılmasını da ciddi biçimde sekteye uğratmaktadır (Hasan, 2024).

Bölgesel ölçekte ise proje, Rusya ve İran öncülüğündeki Kuzey-Güney Ulaştırma Koridoru ile Hindistan, Körfez ülkeleri ve Ürdün'ün dahil olduğu Hindistan-Ortadoğu-Avrupa Ekonomik Koridoru (Yeşil Koridor) gibi büyük ölçekli rekabetçi projelerden kaynaklanan önemli jeoekonomik baskılarla karşılaşmaktadır (Yaseen, 2024).

Kalkınma Yolu Projesi'nin bölgesel ticaret ve lojistik açısından artan stratejik önemine paralel olarak, son yıllarda bu alanda akademik çalışmaların yoğunluk kazanmaya başladığı görülmektedir. Çevik (2025) tarafından yapılan çalışmada Kalkınma Yolu Projesi'nin fırsat ve zorluklarını incelemiştir. Çalışmada projenin istikrarsız bir coğrafyadan geçmesine rağmen küresel ticaret koridorlarının kavşağında bulunması ve Türkiye'nin Ortadoğu ile artan ilişkileri sayesinde hem bölgesel istikrarın güçlenmesine katkı sağlayabileceği hem de Türkiye'nin uluslararası nüfuzunu artırmada stratejik bir rol üstlenebileceği vurgulanmaktadır.

Aykan (2024) tarafından gerçekleştirilen araştırmada, Kalkınma Yolu Projesi'nin ekonomik etkileri değerlendirilmiş ve ülkelerin yatırım değerini artırma potansiyeli Pearson korelasyonu yöntemiyle incelenmiştir. Çalışmada, özellikle gümrük sistemlerinin rakip uluslararası koridorlara kıyasla daha hızlı hizmet verecek şekilde geliştirilmesi, altyapının modernize edilmesi ve sevkiyat sürelerinin kısaltılmasının Kalkınma Yolu'nun etkinliği açısından kritik olduğu ortaya konulmuştur.

Çamaş (2024), Kalkınma Yolu Projesi'ni Çin ve Hindistan'ın bölgedeki nüfus mücadelesi bağlamında ele almış ve projenin bölgesel dengeleri dönüştürme potansiyeline dikkat çekmiştir. Çalışmada, güçlü bir altyapı ve etkin bir işletme modeliyle sürdürüldüğü takdirde Kalkınma Yolu'nun zamanla Çin ve Hindistan rekabetinin merkezinde konumlanarak bölgenin stratejik odak projesi haline gelebileceği ileri sürülmektedir.

Akgüngör ve ark. (2024) tarafından gerçekleştirilen çalışmada Kalkınma Yolu Projesi'nin Türkiye'deki yolcu ve yük taşımacılığı üzerindeki etkileri incelenmiştir. Türkiye ve Irak arasındaki ithalat, ihracat, nüfus ve kişi başına düşen GSYH gibi parametreler kullanılarak Diferansiyel Gelişim Algoritması ile tahmin modelleri geliştirilmiştir. Modelleme sonucunda, 2050 yılına kadar Kalkınma Yolu Projesi'nin yolcu talebini yaklaşık %35, yük talebini ise %30 oranında artıracakları öngörülmüştür.

Ahmad ve Al-Aidami (2025) tarafından yapılan çalışmada Büyük Fav Limanı'nın Irak'ın Doğu-Batı bağlantısındaki stratejik rolü vurgulanmış; limanın taşımacılık maliyetlerini ve sürelerini azaltarak yabancı yatırımları çekebileceği, istihdam yaratabileceği ve Kalkınma Yolu Projesi ile birlikte bölge ülkelerinin uluslararası ekonomik entegrasyonunu hızlandıracağı belirtilmiştir.

### **Araştırma Yöntemi ve Bulgular**

Bu çalışma, Türkiye'nin ulaştırma diplomasisi stratejisinin uluslararası ticaret üzerindeki yansımalarını Kalkınma Yolu Projesi özelinde analiz etmeyi amaçlamaktadır. Araştırmada nitel araştırma yaklaşımı benimsenmiş ve betimsel analiz yöntemi kullanılmıştır. Bu doğrultuda, projenin çok boyutlu etkilerini ortaya koymak amacıyla PESTEL analizi çerçevesinde değerlendirme yapılmıştır. PESTEL analizi; politik, ekonomik, sosyal, teknolojik, çevresel ve hukuki boyutlarıyla dış çevresel faktörlerin sistematik biçimde incelenmesine olanak sağlayan bir stratejik analiz yöntemidir.

PESTEL analizi, ilgili çevredeki temel değişim etkenlerini tanımlamak ve analiz etmek amacıyla kullanılan araçlardan biridir. PESTEL, politik, ekonomik, sosyal, teknolojik, hukuki ve doğal çevre unsurlarının baş harflerinden oluşan bir kısaltmadır. Bu analiz türü, bir kuruluşun faaliyetlerini değerlendirmeye yönelik olarak gerçekleştirilen kurumsal bir denetim olup, dış çevrede yer alan ve kuruluşun başarısını etkileyen çeşitli faktör ve güçlerin belirlenmesine olanak tanımaktadır.

PESTEL analizi, farklı disiplinlerde yaygın olarak başvurulan ve araştırma konusunu etkileyen dış çevresel faktörleri incelemeye yönelik bir analiz aracıdır. Bu yöntem, stratejik karar alma süreçlerine katkı sunmak amacıyla kullanılmakta olup; özellikle kısa, orta ve uzun vadeli hedeflerin belirlenmesi, gelecek senaryolarının oluşturulması ve eylem planlarının yapılandırılması gibi uygulamalarda önemli bir çerçeve sunmaktadır. Bu yönüyle PESTEL analizi, stratejik planlama sürecinin ilk aşamalarında başvurulan temel değerlendirme tekniklerinden biri olarak kabul edilmektedir (Kırar & Olgun, 2024).

Analiz sürecinde öncelikle konuya ilişkin akademik literatür, resmi raporlar, uluslararası kuruluşların yayınları, ilgili bakanlıkların strateji belgeleri ve güncel medya haberleri taranmıştır. Bu kaynaklardan elde edilen bilgiler, PESTEL çerçevesindeki altı boyuta göre tasnif edilmiştir.

Her bir boyut için aşağıdaki adımlar izlenmiştir:

1. Veri ve Argümanların Toplanması: Kalkınma Yolu Projesi'ne dair ekonomik göstergeler, politik açıklamalar, teknolojik gelişmeler, çevresel etkiler ve hukuki düzenlemeler belirlenmiştir.
2. Kategorilerin Oluşturulması: Elde edilen bilgiler, PESTEL'in altı temel başlığına göre sınıflandırılmıştır.
3. Analitik Yorumlama: Her kategori altında, projenin uluslararası ticarete olası etkileri tartışılmış, fırsatlar ve riskler belirlenmiştir.
4. Bulguların Sunumu: Analizden elde edilen bulgular, çalışmanın bulgular bölümünde ayrıntılı şekilde aktarılmıştır.

## Bulgular

**Tablo 3**

### *Kalkınma Yolu Pestel Analizi Sonuçları*

<b>Politik Etkenler</b>	<b>Ekonomik Etkenler</b>
Türkiye, Irak, BAE ve Katar arasında imzalanan mutabakatlarla diplomatik iş birliği güçlenmiştir.	Proje ile Basra'dan Avrupa'ya kesintisiz ticaret koridoru kurulabilir.
Irak'ta iç politik istikrarsızlık ve mezhepsel kutuplaşma riski bulunmaktadır.	Irak'ın bütçesel kırılganlığı ve yatırım finansmanındaki belirsizlikler sürdürülebilirlik açısından zayıf yönlerdir.
Türkiye'nin ulaştırma diplomasisi kapsamında dış politik vizyonuna katkı sağlamaktadır.	Lojistik maliyetlerin düşmesi ve ihracatın artması öngörülmektedir.
Bölgesel güçlerin projeye yönelik siyasi pozisyonları jeopolitik risk unsuru oluşturmaktadır.	Projenin 12–17 milyar dolar arası maliyeti yatırımcıları zorlayabilir.
Kamu kurumlarında siyasi karar alma süreçlerinin yavaş işlemesi uygulamaları geciktirebilir.	Yıllık 4 milyar dolar gelir ve 100 bin istihdam beklentisi ekonomik büyümeye katkı sağlar.
Türkiye, Irak, BAE ve Katar arasında imzalanan mutabakatlarla diplomatik iş birliği güçlenmiştir.	Proje ile Basra'dan Avrupa'ya kesintisiz ticaret koridoru kurulabilir.
Irak'ta iç politik istikrarsızlık ve mezhepsel kutuplaşma riski bulunmaktadır.	Irak'ın bütçesel kırılganlığı ve yatırım finansmanındaki belirsizlikler sürdürülebilirlik açısından zayıf yönlerdir.
Projenin, bölgesel barış ve istikrara katkı sağlaması beklenmektedir.	Türkiye ile Irak arasındaki ticaret hacmi 2024 yılında 18 milyar dolara ulaşmıştır.
<b>Sosyal Etkenler</b>	<b>Teknolojik Etkenler</b>
İstihdam artışı, toplumsal refahı artırabilir.	Modern demiryolu ve lojistik altyapısı teknolojik gelişmeyi teşvik eder.
Etnik ve mezhepsel çeşitliliğe sahip bölgelerde uyum sorunları yaşanabilir.	Irak'ın altyapı yetersizlikleri teknoloji entegrasyonunu geciktirebilir.
Göç ve yerinden edilme riski, sosyal çatışmaları tetikleyebilir.	Dijital ulaştırma sistemleri aracılığıyla takip ve kontrol sistemleri kurulabilir.

Toplumsal entegrasyon ve kültürel etkileşim projesiyle teşvik edilebilir.

Sınır bölgelerinde refahın artması Türkiye'nin bölgesel istikrarına katkı sağlayarak sosyal kalkınma yoluyla güvenli ticaret koridorları tesis edebilecektir.

### **Çevresel Etkenler**

Demiryolu kullanımı ile karbon emisyonlarında düşüş sağlanabilir.

ÇED (Çevresel Etki Değerlendirmesi) süreçlerinin eksikliği çevresel tehdit doğurabilir.

İnşaat süreci doğal çevre ve tarım alanlarında tahribata yol açabilir.

AB Yeşil Mutabakatı ile uyumlu taşımacılık altyapısı Türkiye'nin sürdürülebilir ticaret politikasıyla entegredir.

Modern demiryolu ve lojistik altyapısı teknolojik gelişmeyi teşvik eder.

Türkiye'nin teknoloji ihracatı potansiyeli artarak deneyim noktasında Kalkınma Yolu'na know-how transferi sağlayabilir.

### **Hukuki Etkenler**

Projenin tarafları arasında imzalanan mutabakatlar hukuki dayanak oluşturmaktadır.

Irak'ta yasal altyapının zayıf olması yatırım güvenliğini tehdit etmektedir.

Uluslararası geçiş ve gümrük düzenlemelerine uyum zorunluluğu söz konusudur.

Türkiye'nin gümrük ve transit uygulamaları sayesinde yatırımcı ve ihracatçılar için güvenli bir ticaret ortamı tesis edilmektedir.

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**Açıklama.** Yazar tarafından üretilmiştir.

Çalışma kapsamında gerçekleştirilen PESTEL analizi, Kalkınma Yolu Projesi'nin çok katmanlı etkilerini değerlendirmeye olanak sağlamıştır. Bulgulara göre projenin başarısı, yalnızca ekonomik değil, aynı zamanda politik, sosyal, teknolojik, çevresel ve hukuki faktörlerle de doğrudan ilişkilidir.

### ***Politik Faktörler***

Proje, Türkiye, Irak, Birleşik Arap Emirlikleri (BAE) ve Katar arasında imzalanan mutabakatlarla önemli bir diplomatik iş birliği fırsatını ortaya çıkarmıştır. Türkiye'nin ulaştırma diplomasisi aracılığıyla dış politik vizyonuna katkı sağlaması, projenin en güçlü yönlerinden biridir. Ayrıca çok taraflı iş birliği, Orta Doğu'da uzun süredir devam eden istikrarsızlık ortamında bölgesel bir denge unsuru olarak değerlendirilmektedir.

Bununla birlikte, Irak'ta devam eden iç politik istikrarsızlık, mezhepsel kutuplaşma ve İran ve Suudi Arabistan gibi bölgesel güçlerin farklı pozisyonları ciddi jeopolitik riskler barındırmaktadır. Kamu kurumlarında karar alma süreçlerinin yavaş işlemesi ise uygulamaları geciktirebilecek diğer bir olumsuzluktur. Sonuç olarak, Kalkınma Yolu Projesi politik açıdan güçlü bir iş birliği zemini sunsa da bölgenin kırılğan siyasi yapısı projenin sürdürülebilirliği açısından bazı riskler taşımaktadır.

### ***Ekonomik Faktörler***

Kalkınma Yolu Projesi'nin en önemli hedeflerinden biri ekonomik değer sağlamaktır. Proje sayesinde Basra'dan Avrupa'ya kesintisiz bir ticaret koridoru kurulması, lojistik maliyetlerin düşmesi ve bölge ülkelerinin ihracatının artması beklenmektedir. Yıllık yaklaşık 4 milyar dolar gelir ve 100 bin kişilik istihdam potansiyeli, ekonomik büyüme açısından kayda değer bir katkı sağlayabilecektir. Türkiye ile Irak arasındaki ticaret hacminin 2024 itibarıyla 18 milyar dolara ulaşması, Katar ve BAE ile ticari ilişkilerin artması projenin ekonomik zemininin güçlü olduğunu göstermektedir.

Öte yandan, Irak'ın bütçesel kırılğanlığı ve yatırım finansmanındaki belirsizlikler projenin sürdürülebilirliğini tehdit eden zayıf yönlerdir. Projenin 12–17 milyar dolar arasında değişen yüksek maliyetleri, yatırımcılar açısından ciddi bir yük oluşturabilir. Dolayısıyla,

ekonomik açıdan Kalkınma Yolu Projesi, bölgesel ticareti canlandırma potansiyeline sahip olmakla birlikte, finansman ve maliyet boyutunda riskler içermektedir.

### ***Sosyal Faktörler***

Projenin sosyal etkileri arasında istihdam artışı ve bölgesel refahın yükselmesi ilk sırada gelmektedir. Sınır bölgelerinde refah seviyesinin artması, Türkiye'nin bölgesel istikrarına katkı sağlayabilir ve güvenli ticaret koridorları tesis edilmesine olanak tanıyabilir. Ayrıca, ulaştırma altyapısının gelişmesi toplumsal entegrasyonu ve kültürel etkileşimi artırarak sosyal uyum sürecini destekleyebilir.

Buna karşın, Irak'ın etnik ve mezhepsel çeşitliliğe sahip bölgelerinde güzergâhın geçişi, sosyal uyum sorunlarını ve güvenlik risklerini tetikleyebilir. Göç ve yerinden edilme ihtimali, toplumsal çatışmaları derinleştirme potansiyeline sahiptir. Sonuç itibarıyla, proje toplumsal dayanışmayı güçlendirme fırsatı sunsa da sosyo-kültürel kırılmalıkların yönetilmesi kritik önem taşımaktadır.

### ***Teknolojik Faktörler***

Kalkınma Yolu Projesi, modern demiryolu ve lojistik altyapısı aracılığıyla Irak'ın teknolojik kapasitesini dönüştürebilecek bir potansiyele sahiptir. Dijital ulaştırma sistemleri ve kontrol mekanizmaları, bölgesel taşımacılığın verimliliğini artırabilir. Ayrıca, Türkiye'nin teknoloji ihracatı potansiyeli sayesinde projeye know-how transferi yapılması mümkündür.

Bununla birlikte, Irak'ın mevcut altyapı yetersizlikleri ve dijital geçiş konusundaki hazırlıksızlığı, teknoloji entegrasyonunun önünde engel oluşturmaktadır. Dolayısıyla, proje teknolojik modernizasyonu destekleme gücüne sahip olmakla beraber, altyapı eksiklikleri nedeniyle entegrasyon sürecinde zorluklarla karşılaşabilir.

### ***Çevresel Faktörler***

Demiryolu kullanımının yaygınlaştırılması, karbon emisyonlarının azaltılmasına katkı sağlayabilir. Ayrıca, Avrupa Birliği'nin Yeşil Mutabakat politikalarıyla uyumlu taşımacılık altyapısı, Türkiye'nin sürdürülebilir ticaret politikalarıyla entegre bir yapı sunmaktadır.

Buna karşın, inşaat sürecinde doğal çevre ve tarım alanlarında tahribat oluşması ve ÇED (Çevresel Etki Değerlendirmesi) süreçlerinin eksikliği ciddi çevresel tehditler barındırmaktadır. Karayolu ağırlıklı taşımacılığın ön planda kalması halinde karbon emisyonlarının artması riski söz konusudur. Sonuç olarak, proje çevresel sürdürülebilirliğe katkı sağlayabilecek olsa da doğa ve tarım alanlarının korunmasına yönelik önlemler kritik önem arz etmektedir.

### ***Hukuki Faktörler***

Türkiye, Irak, BAE ve Katar arasında imzalanan mutabakat zaptları, projenin hukuki temelini oluşturmaktadır. Türkiye'nin gümrük ve transit uygulamaları sayesinde yatırımcı ve ihracatçılar için görece güvenli bir ticaret ortamı tesis edilmektedir. Bununla birlikte Irak'ta yasal altyapının zayıf olması, yatırım güvenliği açısından ciddi riskler barındırmaktadır. Uluslararası geçiş ve gümrük düzenlemelerine uyum sürecinde yaşanacak sorunlar, projenin hukuki açıdan zayıf yönünü oluşturmaktadır. Dolayısıyla, Kalkınma Yolu Projesi'nin hukuki boyutta başarısı, taraf ülkeler arasında imzalanacak uzun vadeli ve bağlayıcı uluslararası anlaşmaların kurumsallaşmasına bağlıdır.

Gerçekleştirilen PESTEL analizi, Kalkınma Yolu Projesi'nin başarısının yalnızca ekonomik getirilerle sınırlı olmadığını; politik, sosyal, teknolojik, çevresel ve hukuki boyutların

da belirleyici olduğunu göstermektedir. Her bir faktör hem fırsatlar hem de riskler barındırmakta; dolayısıyla projenin başarısı çok boyutlu stratejilerin geliştirilmesine bağlı kalmaktadır.

### Sonuç

Küresel ekonomik yapının yeniden şekillendiği bir dönemde, ulaşım altyapısı ve lojistik hatları yalnızca ticaretin bir aracı değil, aynı zamanda uluslararası ilişkilerde stratejik bir enstrüman olarak ön plana çıkmaktadır. Türkiye'nin dış ticaret stratejilerinde ulaştırma diplomasisi ekseninde konumlandığı Kalkınma Yolu Projesi, bu kapsamda dikkat çeken çok yönlü bir girişimdir. Irak'ın güneyindeki Faw Limanı'ndan başlayarak Türkiye üzerinden Avrupa'ya uzanacak demiryolu ve karayolu hatlarını içeren bu proje, yalnızca ekonomik değil, aynı zamanda siyasi ve jeopolitik bir vizyona sahiptir.

Çalışmada PESTEL analizine dayalı olarak ulaşılan bulgular, Kalkınma Yolu Projesi'nin uluslararası ticaretin yeniden şekillenmesinde önemli rol oynayabileceğini göstermektedir. Özellikle ekonomik boyutta, Irak'ın petrol dışı bir ekonomiye geçiş sürecine katkı sağlama potansiyeli taşıyan proje, Türkiye açısından ise uluslararası lojistik ağlar içerisinde merkezî bir konum elde etme fırsatı sunmaktadır. Bununla birlikte, bölgedeki siyasi istikrarsızlık, finansman belirsizlikleri, Irak'ın iç güvenlik sorunları ve bölgesel projelerle yaşanabilecek rekabet gibi etmenler, projenin uygulanabilirliği açısından dikkatle yönetilmesi gereken dezavantajlı koşullar arasında yer almaktadır.

Bu kapsamda, projenin başarısı açısından teknik altyapı yatırımlarının yanı sıra çok taraflı diplomatik ilişkilerin güçlendirilmesi, finansman çeşitliliğinin sağlanması ve bölgesel istikrarın korunması hayati öneme sahiptir. Türkiye'nin ulaştırma diplomasisini etkin biçimde yürütmesi ve projenin bölgesel ortaklarla iş birliği içerisinde sürdürülmesi, yalnızca dış ticaret kapasitesini artırmakla kalmayacak; aynı zamanda ülkenin jeostratejik değerini ve diplomatik nüfuzuna da katkı sağlayacaktır. Bu bağlamda Türkiye ve Irak başta olmak üzere Katar, BAE gibi ülkelerin Kalkınma Yolu Projesi'ni sadece bir altyapı yatırımı olarak değil, bölgesel kalkınma ve barış inşası için stratejik bir platform olarak değerlendirmesi gerekmektedir.

Sonuç olarak, Kalkınma Yolu Projesi; ekonomik çeşitlenme, bölgesel entegrasyon ve lojistik maliyetlerin düşürülmesi gibi çok yönlü etkileriyle yalnızca Irak ve Türkiye için değil, aynı zamanda Avrupa, Asya ve Körfez ülkeleri için de önemli fırsatlar sunmaktadır. Bu fırsatların somut kazanımlara dönüşebilmesi, kapsamlı bir stratejik planlama, sürdürülebilir finansman modeli ve diplomatik denge gerektirmektedir. Bu nedenle Türkiye'nin projeye ilişkin politikalarında uzun vadeli vizyonunu koruyarak, bölgesel güvenliği ve ekonomik iş birliğini önceleyen çok yönlü bir yaklaşım benimsemesi önerilmektedir. Böylelikle Türkiye, hem uluslararası lojistikte önemli bir rekabet avantajı sağlayacak, hem de yeni pazarlara girme fırsatıyla uluslararası ticarete ihracat potansiyelini artıracaktır.

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The author declared that the ethical rules for research and publication followed while preparing the article.

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